

The Missing Catalogue.

UNIVERSITY OF OULU / 2026-2027

Prerequisites: curiosity.

3,482 collected courses, organized by theme and alphabetically within each theme. Includes course content, learning outcomes and source links.

About this edition

Collected 30 October 2026 from the public Peppi study guide. All discovered course pages were collected; 2,577 programme and grouping pages remain deferred. This is not a verified complete inventory of university courses.

Theme groupings are editorial and based on the recorded subject. Each course appears once in this PDF, under its first matching theme; the app supports multiple themes. Official English text is used where available. Finnish fallbacks are marked. Faculty and department ownership were not supplied in the course records.

Course descriptions do not guarantee a scheduled implementation or eligibility. Consult the linked Peppi record before enrolling. Independent project; not an official University of Oulu service.

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Biology & environment

757619S | Advanced course in bioinformatics

5 ECTS | Bioscience, Biology, Computational Biology | Advanced Studies | English

Person in charge: Juan Galarza Pavia

Content

Students work directly with a sample dataset throughout the course, gaining practical experience with modern bioinformatics workflows. Students are expected to have previous experience with R and/or Python. The course continues from Fundamentals of Bioinformatics (NA00AK46), complements the theoretical background from Introduction to Population Genetics and Molecular Ecology (NA00AK27), and uses the command-line skills introduced in Data Wrangling (NA00AR18). The lectures introduce the main stages and principles of bioinformatics data analysis. Most of the course centers on practical work with large datasets, giving students experience in managing and analyzing real biological data.

Learning outcomes

Upon completion of the course, students are expected to possess a strong practical skill set, demonstrating proficiency in using programming languages and command-line tools for bioinformatics analyses. Furthermore, students should be well-prepared with the ability to effectively apply their knowledge to real-world datasets.

[Official course record: 757619S](#)

751651S | Advanced identification in animals

4-8 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Marko Mutanen

Content

The course includes independent learning of Finnish species of a selected animal group (e.g. fishes; birds; mammals; a group of invertebrates) as well as learning of their biology, distribution and the red book status. Museum collections, literature and web pages are used. The number of credits depend on the extent of the species group or groups.

Student can get 5 cr from passed ornithological station bird ringing exam.

Learning outcomes

The course introduces students to the identification of a selected animal group to the species level. It also provides an overview of the group's biology, distribution, and conservation status. After completing the course, students will possess strong foundational skills to further develop their expertise in invertebrate biodiversity.

[Official course record: 751651S](#)

752608S | Advanced identification of plant species I

6 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Independent studying of herbarium samples. Contact to the responsible teacher to start the course.

Learning outcomes

Advanced identification of the vascular plants of Finland.

Generic skills: Independent learning in a museum environment develops initiative and taking responsibility for one's own learning (Well-being and self-development). Using digital materials to support learning (Communication, interaction and digital skills).

[Official course record: 752608S](#)

752625S | Advanced identification of plant species II

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Independent studying from herbarium specimens. Contact the responsible person to start studying.

Learning outcomes

Identification of an ecological species group or a systematic group: Aquatic plants, Forest plants (+mosses & lichens), Meadow plants (+mosses & lichens), Peatland plants (+mosses & lichens), Fell plants (+mosses & lichens) and Species of primeval forest (incl. mosses, lichens and fungi), Aphyllophorales (wood-inhabiting fungi or Mosses).

Generic skills: Independent learning in a museum environment develops initiative and taking responsibility for one's own learning (Well-being and self-development). Using digital materials and applications to support learning (Communication, interaction and digital skills).

[Official course record: 752625S](#)

755627S | Advanced population ecology

5 ECTS | Ecology | Advanced Studies | English

Person in charge: Veli-Matti Pakanen

Content

The course gives an overview of available capture-recapture methods by showcasing different modelling approaches, estimable parameters and the questions that can be asked with different kinds of data on marked animals or plants along with the associated problems with different models and data. The main focus is on methods developed for open populations. The course introduces the students to capture-recapture research through a detailed path from data collection to model construction, goodness fit tests, model selection and finally conclusions. In addition, the course introduces specific models that enable modelling population growth rates from capture-recapture data and estimation of nest success using daily nest survival models. The course introduces basics in AIC model selection. In the practicals students use program MARK to analyze real long-term data collected from natural populations. The course includes an independent research section where students analyze data and give presentations of their results in groups.

Learning outcomes

Aim is to learn the use of methods that rely on individual based data of marked animals (e.g. bird ringing) or plants to estimate and model different demographic rates. These methods are vital for ecologists as they are important in population ecology and conservation biology, but also widely used in evolutionary ecology and behavioural ecology whenever survival and local recruitment are the response variables.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Sustainability, responsibility and ethics skills; Multidisciplinary skills; Communication, interaction, and digital literacy.

[Official course record: 755627S](#)

NA00AQ46 | Applied population and conservation ecology

1-5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Veli-Matti Pakanen

Content

This course teaches methods that are used to collect demographic data (capture-recapture data and nest data) from avian populations. The main focus is on collecting individual-based data from tit populations in Hietasaari in Oulu. The students will learn different kinds of field work that are commonly conducted in population studies during one year. The course will involve marking tits with individually identifiable colour ring combinations during the autumn, monitoring survival of individuals across the winter by resighting colour code combinations with binoculars in late autumn and late winter, maintaining nest boxes and bird feeders, monitoring timing of breeding and nest success and ringing parents and their chicks. The course will be conducted in the field, but some introductory lectures are given before each phase of fieldwork. In addition to this and depending on the circumstances, there may be possibilities to take part in other field work such as wader research on coastal meadows and vole trapping.

Learning outcomes

Students learn practical field skills and methods for collecting long-term ecological data that are commonly used especially in ornithological population-, behavioural- and conservation biology.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Sustainability, responsibility and ethics skills; Communication, interaction, and digital literacy.

Official course record: [NA00AQ46](#)

NA00BB39 | Applied population and conservation ecology

1-5 ECTS | Ecology | Intermediate Studies | Finnish

Person in charge: Veli-Matti Pakanen

Content

This course teaches methods that are used to collect demographic data (capture-recapture data and nest data) from avian populations. The main focus is on collecting individual-based data from tit populations in Hietasaari in Oulu. The students will learn different kinds of field work that are commonly conducted in population studies during one year. The course will involve marking tits with individually identifiable colour ring combinations during the autumn, monitoring survival of individuals across the winter by resighting colour code combinations with binoculars in late autumn and late winter, maintaining nest boxes and bird feeders, monitoring timing of breeding and nest success and ringing parents and their chicks. The course will be conducted in the field, but some introductory lectures are given before each phase of fieldwork. In addition to this and depending on the circumstances, there may be possibilities to take part in other field work such as wader research on coastal meadows and vole trapping.

Learning outcomes

Students learn practical field skills and methods for collecting long-term ecological data that are commonly used especially in ornithological population-, behavioural- and conservation biology.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Sustainability, responsibility and ethics skills; Communication, interaction, and digital literacy.

Official course record: [NA00BB39](#)

755321A | Aquatic ecology field course

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Kaisa-Leena Huttunen, Wille-Pekka Lepo

Content

Basics of freshwater ecology. Demonstrations of the most frequently-used biological sampling methods. Identification of the most common freshwater fishes, invertebrates, zooplankton and aquatic bryophytes.

Learning outcomes

After the course student knows the basic methods for biological sampling in freshwater ecosystems and is able to identify the most common freshwater taxa.

Generic skills:

after the course, the student

- is able to use analytical, critical and creative thinking in choosing research methods and handling ecological samples
- understands the importance of wellbeing and self-improvement skills in field- and identification work
- starts to identify the ethical, sustainability and responsibility principles related to ecological research
- has improved their interaction and communication skills

[Official course record: 755321A](#)

750366A | Bachelor of Science final examination

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Heikki Helanterä, Anna Ruotsalainen, Anna-Maria Pirttilä, Seppo Rytönen

Content

Examinations on books related to B.Sc. thesis subject. Books are agreed with the responsible teacher. All the books are recommended to be done on the same exam in the Electronic Examination system (EXAM).

Bioscience (Genetics)

- Klug, W. S., Cummings, M. R., Spencer, C.A ja Palladino M.A.: Concepts of Genetics (11. ed or later). Two options: EITHER emphasis on Molecular genetics or OR Emphasis on Population and evolution genetics, please check the corresponding pages from the responsible teacher as they may depend on the edition you are reading.

Responsible person Prof. Heikki Helanterä

Bioscience (Plant physiology)

- Mauseth, J.D. 2016. An introduction to plant biology. 6th ed.

Or other literature agreed with responsible person Prof. Anna Maria Pirttilä

Ecology

Recommended for all ecology students

- Manuel C. Molles Jr. & Anna A. Sher 2018. Ecology: concepts and applications. McGraw-Hill Education, New York (5 ECTS cr)

Responsible teacher: Sepoo Rytkönen.

By separate agreement students can do book exams from the following list in the academic year 2025-2026..

Ecology (Animal ecology)

Exam entity (5 cr, ca. 100 p / 1cr) may be chosen from the books

- Bennett, P.M. & Owens, I.P.F. 2002. Evolutionary ecology of birds. Life histories, mating systems and extinction. – Oxford University Press. 206 p.
- Hanski, I. 2007. The Shrinking world. – Gaudeamus, 263 p. (2 cr)
- Davies, N.B. Krebs, J.R. & West, S.A. 2012. An introduction to behavioural ecology. – Blackwell, 441 p. (4 cr).
- Mayr, E. 1998 This is biology
- Primack, R.B. 2012. A primer of conservation biology (4th ed). – 309 p. (2 cr).
- Smith, J.N.M., Keller, L.F., Marr, A.B. & Arcese, P. 2006. Conservation and biology of small populations. – Oxford University Press. 205 p. (2 cr)
- Stringer, C. 2012. Vain yksi jäi. Miten meistä tuli ainoa ihmislaji? 280 s. (2 cr).
- Townsend, C.R., Begon, M. & Harper, J.L. 2014. Essentials of ecology. Blackwell. 440 p. (4 cr)

Or other literature agreed with the responsible person Dr Seppo Rytkönen. Book have to be agreed before the student signs up to Examinarium

Ecology (Plant ecology)

- Ridge, I. (ed.) 2002: Plants. – Oxford (4 cr)
- Salonen, V. 2006: Kasviekologia. – WSOY (3 cr)
- Timonen, S. & Valkonen, J. (eds.) 2013: Sienten biologia. – Gaudeamus (5 cr)

Or other literature agreed with the responsible person Dr Annu Ruotsalainen. Book have to be agreed before the student signs up to Examinarium

Learning outcomes

Student will understand basic methods, results and theories in ecology, physiology or genetics.

Official course record: [750366A](#)

750332A | Bachelor of Science maturity exam

0 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Lumi Viljakainen

Content

After completing the Bachelor of Science Thesis, the student writes an essay in his/her native language on the thesis to demonstrate a good command of the language and the topic. The maturity exam will be done in the Electronic Examination system (EXAM).

Learning outcomes

The student is well acquainted with the subject of the thesis and shows good first language skills.

Official course record: [750332A](#)

754359A | Bachelor of Science seminar and thesis workshop

0 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Seppo Rytönen

Content

The seminar deals with scientific communication extensively. It supports the writing of the B.Sc. thesis. The course is carried out by writing and presenting a seminar on a topic related to student's own thesis. Topics for the lecture section also include the drafting of theses and scientific articles, scientific methods and channels of communication, writing technique, publishing forums, and scientific referral practice. The seminar includes the Information Acquisition course 030005P (1 cr), see Science Library Pegasus.

Learning outcomes

Student knows the technical and ethical principles of scientific writing and publishing. She/he has the capability to make a scientific review (BSc thesis) and present it clearly as a poster or an oral presentation.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- International and multicultural competence
- Sustainability, responsibility and ethical competence
- Multidisciplinary and interdisciplinary skills
- Communication, interaction and digital skills

Official course record: [754359A](#)

754360A | Bachelor of Science thesis

10 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Lumi Viljakainen

Content

Independent research work on a scientific subject in agreement with the supervisor. Supervisors may be the teachers and researchers of the Ecology and Genetics Research Unit, or PhD-students, in which case the other supervisor must be a unit teacher. The student may have several supervisors. The supervisor may be from another unit, university (also abroad), or a research institute, but in that case, the other supervisor must be a unit teacher. The subject must be agreed on with the supervisor. The subject can be the student's own or suggested by the supervisor or a research group. The thesis is always based on published literature. After having completed the thesis, the student writes a maturity exam. A list of the B.Sc. thesis topics and detailed instructions are on the course Moodle pages.

Learning outcomes

After completing the course, the student will be able to:

- search for and critically evaluate scientific literature
- plan and carry out a written review on a biology subfield of personal interest
- reflect on their own performance and seek support when needed
- present the topic of their own thesis orally

Official course record: [754360A](#)

750124P | Basics of ecology

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Seppo Rytönen

Content

The course gives a student a basic idea about ecological interactions in individual-, population-, community- and ecosystem levels. In individual level the focus is on environmental demands of plants and animals. In population level the birth- and death rate of age groups and their effect on population growth is focused. In interactions between different species the emphasis is on how the competition between species leads to differentiation of niches. Predation is viewed as the regulatory effect on the population dynamics of prey populations. In community level the biodiversity and the patterns of succession are the main questions. In ecosystem level the emphasis is on energy flows and nutrient cycling. Evolution and adaptation are important in different fields of ecology.

Learning outcomes

After completion of the course both biology and minor studies students understand better function of nature and the ecological phenomena in individual, population, community and ecosystem level.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- International and multicultural competence
- Sustainability, responsibility and ethical competence
- Communication, interaction and digital skills

Official course record: [750124P](#)

752388A | Basics of tissue culture

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna-Maria Pirttilä

Content

Aseptic cultures are started from different plant parts (root, stem, leaves, buds, seed embryos) and different types of plants. In the course, you will learn how the various plant hormones in the growth medium determine whether shoots, roots or undifferentiated cells (callus) are formed. Endophytic inoculations and acclimatization are done for plants.

Learning outcomes

After completing the course, the student will be able to apply the basic skills related to sterile work (aseptic work in laminar flow hood), preparing culture media and in vitro culture.

Official course record: [752388A](#)

750173P | Biogeography

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Laura Kvist

Content

The course introduces basic models and theories of distribution of organisms in the environment, offering historical, evolutionary, geographical, climatic and ecological explanations. It also introduces research methods used in biogeography and offers understanding on human impact on distributions and a special part of distributions of biota in Finland.

Learning outcomes

The course introduces students to basic concepts of biogeography, patterns of distribution and historical and present factors affecting the distribution. The student will have an understanding also of how human impact changes distributions and how the Finnish biota has been formed.

Official course record: [750173P](#)

754331A | Biological and microbiological indoor environment

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Janne Koskimäki, Ulla Haverinen-Shaughnessy

Content

The lectures cover the biology of the built environment, which includes microbes (bacteria, protozoa, fungi), viruses and insects, and their identification and growing conditions. Methods of measurement and sampling. Interpretation of the measurement results. Reporting and information on results.

In this course, the student

- critically analyses indoor environment measurement data and forms evidence-based conclusions
- communicates findings clearly in written and oral formats, using digital tools when appropriate.
- collaborates on multidisciplinary indoor environment assessments and incorporates cross-disciplinary perspectives
- follows ethical and safe research practices and recognises the sustainability and societal relevance of indoor environment solutions

Learning outcomes

The lectures cover the biology of the built environment, which includes microbes (bacteria, protozoa, fungi), viruses and insects, and their identification and growing conditions. Methods of measurement and sampling. Interpretation of the measurement results. Reporting and information on results.

Official course record: [754331A](#)

NA00AT80 | Biology Journal Club

1-3 ECTS | Biology | Advanced Studies | English

Person in charge: Lumi Viljakainen

Content

Schedule and topics of the sessions to be announced.

Learning outcomes

The Biology Journal Club is arranged by the postdocs and PhD students in the Ecology and Genetics Research Unit, if resources allow. Topics and specific teaching methods vary by the organizers.

[Official course record: NA00AT80](#)

750657S | Biology subject teacher pro gradu thesis

20-40 ECTS | Biology | Advanced Studies | Finnish

Person in charge: Lumi Viljakainen

Content

Literary work which in general includes experimental research work. The student gets profoundly acquainted with a certain special field in biology teaching (didactics) or executes research work in biology.

Learning outcomes

The student knows the research methods in a specific field of biology teaching or biological research. The student is conversant with the field of thesis and is able to scientific thinking, estimating the results, analysing, drawing conclusions and scientific communicating.

[Official course record: 750657S](#)

NA00AK28 | Biology subject teacher's master's thesis

30 ECTS | Biology | Advanced Studies | Finnish

Person in charge: Lumi Viljakainen, Seppo Rytönen

Content

Literary work which in general includes experimental research work. The student gets profoundly acquainted with certain special fields in biology teaching (didactics).

Learning outcomes

After completing the course, the student will be able to:

- apply teaching methods used in a specific field of biology or become familiar with biology education (curriculum, teaching methods)
- independently make analytical and critical inferences based on large datasets, and creatively generate and apply new knowledge
- present the results of their own research both in writing and orally

[Official course record: NA00AK28](#)

755608S | Bird ecology and conservation

2 ECTS | Ecology | Advanced Studies | English

Person in charge: Seppo Rytönen, Veli-Matti Pakanen

Content

The course is loosely based on the text book (Sutherland, WJ et al. 2010. Bird ecology and conservation) and follows its subtitles; however, teachers also present ongoing studies of local ornithologists. Major subjects are: bird diversity survey methods, bird census and survey techniques, breeding biology, birds in the hand, estimating survival and movement, telemetry, migration, Information from dead and dying birds, techniques in physiology and genetics, diet and foraging behavior, habitat assessment, conservation management of endangered birds, exploitation, and habitat management. Birds are the taxonomic reference group, but the theoretical framework is that of general ecology.

Learning outcomes

The student will achieve basic information about bird ecology and bird ecology research methods. She/he will also learn how basic research is related to applied research, especially conservation biology of birds.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- International and multicultural competence
- Sustainability, responsibility and ethical competence
- Communication, interaction and digital skills

[Official course record: 7556085](#)

752362A | Botanical collection and digital herbarium

2-6 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Herbarium may contain solely vascular plants or combined with mosses and lichens.

Learning outcomes

Independent practice of species identification. In the physical herbarium-part, familiarization with the work stages related to herbarium specimens.

Generic skills: Communication, interaction and digital skills. The course develops taking responsibility for one's own studies (including scheduling) and communication skills. In digital herbarium part observations and species identification using iNaturalist application

[Official course record: 752362A](#)

752662S | Botanical collection and digital herbarium

2-6 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Herbarium may contain solely vascular plants or combined with mosses and lichens.

Learning outcomes

Independent practice of species identification. In the physical herbarium-part, familiarization with the work stages related to herbarium specimens.

Generic skills: Communication, interaction and digital skills. The course develops taking responsibility for one's own studies (including scheduling) and communication skills. In digital herbarium part observations and species identification using iNaturalist application.

[Official course record: 752662S](#)

687832P | Climate, history and culture

5 ECTS | Environmental Humanities and Social Sciences | Basic Studies | Finnish

Person in charge: Esa Ruuskanen

Content

Climate change is already a well-known phenomena in natural sciences. The causes and consequences of the on-going climate change are however also cultural, political, economic and social, calling for the analyses and perspectives of the humanities and social sciences. Climate change research in these fields is motivated by the need to increase understanding of values, notions, ideas, policies and issues of power and the need to provide historically, culturally and socially aware approaches, recommendations and solutions. The course provides a diverse understanding of how human history is linked to climate history and how climate and climate change become part of cultural and societal issues, phenomena, and challenges.

Learning outcomes

After completing the course, the student:

- is able to analyze how the changing climate has influenced cultures, politics, economy and societies in the long term
- can describe the main cultural and social causes and consequences of the ongoing human-based climate change
- can employ some key arguments, concepts and perspectives of the environmental humanities and environmental social sciences in the research and debate on climate change.

[Official course record: 687832P](#)

755630S | Community ecology

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anu Eskelinen

Content

Effects of biotic (e.g. interspecific competition, predation, herbivory) and abiotic (e.g. environmental conditions, climate) factors communities, temporal and spatial variation of community structure and species richness and diversity at different scales, metacommunities, biodiversity and ecosystem functioning, experimental and observational research with communities, detection of human impacts on biotic communities. Contents may vary depending on the used literature.

Learning outcomes

Students understand and can explain the essential concepts of modern community ecology and can critically evaluate and analyze community ecological research and scientific literature. Students can evaluate the consequences of human activities on natural communities. Students can express opinions and engage in scientific discussion in a group. Students will acquire communication skills.

[Official course record: 755630S](#)

NA00AK33 | Computational biology Master's seminar

5 ECTS | Computational Biology | Advanced Studies | English

Person in charge: Juan Galarza Pavia

Content

Instructions for the Master's thesis and interactive reporting of the work in progress.

Learning outcomes

The seminar deepens the student's scientific communication and information retrieval skills.

NA00AK42 | Computational biology Master's thesis

30 ECTS | Computational Biology | Advanced Studies | Finnish

Person in charge: Juan Galarza Pavia

Content

Literary work.

Learning outcomes

The student will explore his/her personal interest within computational biology and identify potential topics of interest. The supervisor can assist in narrow down potential topics based on data availability, time frame, and resources available. The student will then conduct a thorough literature review to understand the current state of the chosen area of interest, identify gaps in knowledge and propose research questions or hypotheses that will be addressed in the thesis.

Official course record: [NA00AK42](#)

NA00AK31 | Computational biology research training

5-10 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Juan Galarza Pavia

Content

Minimum training period is one month full day work 5 ECTS cr. Student can obtain 10 ECTS credits for two months training which is the minimum for the traineeship funding paid by the University to the employer.

Learning outcomes

The aim of the course is for students to gain work experience in the field of computational biology. Student applies the theoretical knowledge gained during the studies in practice.

Official course record: [NA00AK31](#)

757109P | Concepts of genetics

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Heikki Helanterä

Content

Understanding mechanisms of heritability and methods of genetic research is central for understanding evolution and biodiversity, health and disease, animal and plant breeding as well as our own traits.

This course introduces heritability and genetics research at the levels of individuals, populations and molecules.

Part 1. Mendelian genetics, including the basics of evolutionary, population and quantitative genetics.

Part 2. Molecular genetics: replication, transcription, translation, genetic code, mutations, repair of DNA.

Part 3. Selected topics on developmental genetics, and genetics of health and diseases.

Learning outcomes

To understand and apply basic concepts of genetics, at Mendelian and molecular level.

Generic skills: analytical thinking about applying concepts of genetics.

Official course record: [757109P](#)

757122P | Concepts of genetics for biochemists

3 ECTS | Biology | Basic Studies | Finnish

Person in charge: Heikki Helanterä

Content

Part 1. Mendelian genetics, including the basic of quantitative and population genetics and Part 3. Selected topics on developmental genetics, and genetics of health and diseases.

Learning outcomes

To understand and apply basic concepts of genetics, at Mendelian and molecular level.

Generic skills: analytical thinking about applying concepts of genetics

[Official course record: 757122P](#)

756347A | Conservation of biodiversity

5 ECTS | Biology | Intermediate Studies | English

Person in charge: Veli-Matti Pakanen

Content

Concept, its history and global patterns of biodiversity. Overview of the main threats and mechanisms affecting biodiversity loss. Consequences of biodiversity loss in all levels of biological hierarchy. Methods for halting biodiversity loss. Current species and habitat type specific issues with a Finnish perspective.

Learning outcomes

Students know the central concepts of biodiversity, threats to it globally and locally, and basic theory and applications for the conservation of biodiversity.

Generic skills: Analytical, critical and creative thinking; International and multicultural skills; Sustainability, responsibility and ethics skills; Multidisciplinary skills; Communication, interaction, and digital literacy

[Official course record: 756347A](#)

NA00AR18 | Data wrangling

5 ECTS | Computational Biology | Advanced Studies | English

Person in charge: Juan Galarza Pavia

Content

This course covers Unix/Linux tools and command-line basics, including fundamental commands and navigation techniques. Students gain experience with Bash scripting and with external command-line tools for downloading and managing large datasets from public repositories. The course also introduces the handling of common text-based and bioinformatics data formats through the command line, including FastQ, SAM/BAM, and VCF.

Learning outcomes

The course on Unix/Linux tools for data manipulation and wrangling introduces the use of command-line tools in Unix/Linux environments for handling and analyzing Next-Generation Sequencing (NGS) data as well as other common alphanumeric data formats. Students gain practical experience with command-line tools, scripting, and basic bioinformatics workflows used to process, organize, and examine large datasets.

[Official course record: NA00AR18](#)

755320A | Developmental biology-histology

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Veli-Matti Pakanen

Content

Developmental biology will cover the forming of embryonic tissue layers (gastrulation), embryonic induction, signal molecules and the differentiation of the most important tissues and organs (organogenesis). Histology will first cover various tissue types, their cell types and matrix composition. Thereafter, the microscopic structure and tissue composition of various organs and organ systems will be covered.

Learning outcomes

After completing the developmental biology part of the course the student is able to name the most important events of embryonic development and the related structural changes. The student is also able to describe the principles of gene regulation related to embryonic development. After completing the histology part of the course the student can describe the various tissue types and the microscopic structure of important organs and is also able to identify tissue types and organs from microscopic sections.

Generic skills: Analytical, critical and creative thinking; Multidisciplinary skills; Communication, interaction, and digital literacy

[Official course record: 755320A](#)

687835A | Energy, culture and society

5 ECTS | Environmental Humanities and Social Sciences | Intermediate Studies | Finnish

Person in charge: Esa Ruuskanen

Content

The energy humanities represent a new multidisciplinary research field that wants to cross traditional disciplinary boundaries. The field is motivated by the need to consider energy not only as a natural, technical and economic issue but also as a complex cultural and social issue. Energy is essential to sustain human life. Energy is also something that becomes part of lifestyles, politics, the economy, and power structures. The last centuries marked a transition to the widespread use of fossil fuels which, on the one hand, generated unprecedented economic growth, but, on the other hand, accelerated environmental risks. The Energy, Culture and Society course offers a diverse understanding of how human history is linked to the ways in which different energy resources are used and what kind of ecological, political and social factors are associated with fundamental changes in the energy system, both internationally and nationally.

Learning outcomes

After completing the course, the student is able to:

- analyze how energy production and consumption are linked to cultural and social issues and how energy production and consumption have affected communities and societies
- is able to perceive the challenges and opportunities associated with the ongoing energy transition at international and national levels
- is able to employ the arguments and concepts of the energy humanities in their thesis

[Official course record: 687835A](#)

687833A | Environmental and climate ethics

5 ECTS | Environmental Humanities and Social Sciences | Intermediate Studies | Finnish

Person in charge: Kari Väyrynen

Content [Finnish source]

Ympäristöetiikka korostaa perinteisen ihmisten välisiin suhteisiin rajoittuvan etiikan jättävän suotta eläimet ja luonnon erilaisine arvoineen (ekologinen tasapaino, terveys, kauneus) ja oikeuksineen (itsensä toteuttaminen) eettisen ajattelun ulkopuolelle. Ympäristöarvot ovat monentyyppisiä luontoon kytkeytyviä hyviä asioita taloudellisesta arvosta luonnon ekologiin ja esteettisiin arvoihin. Ympäristön kokonaisarvo muodostuu näiden monien arvojen kokonaisuutena. Eläinetiikka puolestaan purkaa perinteistä jyrkkää rajanvetoa ihmisen ja eläimen välillä. Ihmisen erityispiirteet kuten järki ja tekninen osaaminen eivät perustele eläinten ja luonnon sulkemista etiikan ulkopuolelle. Ympäristöetiikan uusimpana suuntauksena ilmastoetiikka tarkastelee ihmistoiminnan vaikutuksia ilmakehään. Sekä ympäristö- että ilmastoetiikka kehittelevät lopulta poliittisia normeja yhteiskunnan rakenteiden ja elämäntavan muuttamiseksi kestävämmälle pohjalle.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- osaa tunnistaa ja analysoida ympäristöetiikan keskeisiä ongelmia ja hahmottaa ympäristöetiikan suhdetta eettisen ajattelun perinteisiin
- osaa muodostaa kuvan ympäristöetiikan erilaisista osa-alueista kuten eläinetiikasta, ilmastoetiikasta sekä ympäristöarvojen tutkimuksesta ja näiden suhteesta ympäristöpolitiikkaan
- osaa hahmottaa ilmastoetiikan erityisiä kysymyksiä ympäristöetiikan uusimpana ajankohtaisena osa-alueena

Official course record: 687833A

687831P | Environmental history of the Arctic

5 ECTS | Environmental Humanities and Social Sciences | Basic Studies | Finnish

Person in charge: Ritva Kylli

Content [Finnish source]

Arktisen alueen historia on kytkeytynyt alueen haastaviin ilmastollisiin olosuhteisiin. Alueen kasvi- ja eläinlajit sekä alkuperäiskansat sopeutuivat elämään alhaisten lämpötilojen, lyhyen kasvukauden ja ankarien talvien oloissa. Haastavat ilmastolliset olosuhteet ja toisaalta etenevä ilmastomuutos vaikuttavat myös nykyajan Arktisen alueen kulttuureihin, talouteen ja luontoon. Arktinen ympäristöhistoria -opintojaksolla tutustutaan alueen monisyiseen historiaan esihistorialliselta ajalta alkaen, alueen kulttuurien ja taloudellisen toiminnan luontoperustaisuuteen sekä alueella vaikuttaneisiin ja vaikuttaviin, ajoittain ristiriitaisiin intresseihin luonnonvarojen hallinnasta ja käytöstä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- osaa eritellä Arktisen alueen muutosten kytkeytymistä ilmastollisiin, kulttuurisiin ja yhteiskunnallisiin tekijöihin pitkällä ajanjaksolla
- osaa hahmottaa kolonialismin, teollistumisen ja suurvaltapolitiikan vaikutuksia Arktisen alueen luonnolle sekä alkuperäiskansojen kulttuureille ja elinkeinoille
- osaa soveltaa ympäristöhistorian argumentteja, käsitteitä ja näkökulmia opinnäytetyössään ja tutkimuksessaan

Opintojakso tukee Oulun yliopiston geneeristen taitojen osaamistavoitteita edistämällä opiskelijan kestävyys- ja vastuullisuustaitoja, analyttisen, kriittisen ja luovan ajattelun taitoja sekä viestintä-, vuorovaikutus- ja digitaitoja. Opintojakson verkkokurssi antaa valmiuksia oman tieteenalan syvällisempään ymmärtämiseen sekä taitoja suhtautua sen tutkimusasetelmiin kriittisesti, analysoivasti ja uudistavasti.

Official course record: 687831P

750626S | Environmental impact assessment (EIA) and ecological inventory of natural resources

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Seppo Rytönen

Content

The course gives an overview of Environmental Impact Assessment (EIA) and its tasks according to the present legislation of the European Community. The course includes ecological impacts on e.g. hydrology, water quality, ecology, ecological inventories of nature. Course includes obligatory exercise work.

Learning outcomes

After finishing the course student get acquainted to inventory approaches of natural ecosystems and is able to apply knowledge to environmental impact assessments. Student has skills to fulfill environmental impact assessments based on different types of case studies. Additionally, student knows the legal procedure to act as responsible person for EIA.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility and ethical competence
- Multidisciplinary and interdisciplinary skills
- Communication, interaction and digital skills

[Official course record: 750626S](#)

750372A | Evolution and systematics of organisms

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Marko Mutanen, Risto Virtanen

Content

The course provides an insight into the biological evolution and evolutionary processes reflected by the systematic classification of the organisms. Also basics of phylogenetic inference, concepts of systematics and classification are introduced.

Learning outcomes

The students will learn a broad overview of the diversity of life-forms, the evolutionary history of life and the principles of biological classification.

[Official course record: 750372A](#)

754330A | Evolutionary and behavioural ecology

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Heikki Helanterä

Content

The course deals with the main features of evolution and provides an introduction to the fundamentals of behavioural ecology. The main emphasis is on evolutionary ecology, animal social behaviour, and interactions between individuals. Themes that will be discussed include: natural selection, sexual selection, evolution of life histories, coevolution, reproductive behaviour, evolution of social behaviour and cognition. The course teaches the skills to critically evaluate evolutionary research and popular science. Attending the lectures is highly recommended.

Learning outcomes

Deepen students' knowledge about evolution and natural selection; which processes affect fitness and adaptation. In addition, the course provides a background into the evolution of animal behaviour and the significance of behaviour and training in the logic of hypothesis testing through examples and discussions.

Generic skills:

Analytical and critical thinking, communication skills.

[Official course record: 754330A](#)

750349A | Examinations on optional topics in biology

2-10 ECTS | Biology | Intermediate Studies | Finnish, English

Person in charge: Heikki Helanterä, Anna Ruotsalainen, Seppo Rytönen, Anna-Maria Pirttilä, Anu Eskelinen

Content

Examinations on books, which are not compulsory in any other course unit.

Learning outcomes

Student independently concerns him/herself to special issues in biology.

[Official course record: 750349A](#)

750649S | Examinations on optional topics in biology

2-10 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Heikki Helanterä, Anna Ruotsalainen, Seppo Rytönen, Anna-Maria Pirttilä

Content

Examinations on books, which are not compulsory in any other course unit.

Learning outcomes

Student independently concerns him/herself to special issues in biology.

[Official course record: 750649S](#)

752642S | Field course in arctic-alpine ecology and vegetation

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Risto Virtanen

Content

Arctic-alpine ecosystems as one the main biomes of the world. Plant and animal species of arctic-alpine areas. Vegetation and ecology of NW Fennoscandian mountain areas. Plant-herbivore interactions in tundra ecosystems. (analytical, critical and creative thinking skills, well-being and self-development skills, international and multicultural skills, sustainability, responsibility and ethics skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills).

Learning outcomes

By passing this course a student is able to identify plant and animal species, nature types, vegetation of NW Fennoscandian mountain areas, understand ecology of northern ecosystems, ecological interactions and adaptation. Advanced training in experimental and observational field research.

[Official course record: 752642S](#)

755313A | Field identification of birds

1-5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Seppo Rytönen

Content

The student will learn the basics of avian field identification by familiarizing him/herself with the local bird fauna in different biotopes. The method is self-learning with keeping a notebook of the field observations.

Learning outcomes

The aim of the course is to get a basic level of field identification of Finnish birds.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility and ethical competence
- Communication, interaction and digital skills

[Official course record: 755313A](#)

754629S | Field skills for ecologist

1-10 ECTS | Ecology | Advanced Studies | English

Person in charge: Seppo Rytönen, Veli-Matti Pakanen

Content

Self-learning.

Learning outcomes

Student learns in some field of ecology special skills enabling expertise not acquired in basic courses (bird ringing license, biomonitoring methods in plant, aquatic and terrestrial ecology, animal tracking, etc.)

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility and ethical competence
- Multidisciplinary and interdisciplinary skills
- Communication, interaction and digital skills

[Official course record: 754629S](#)

750656S | Final examination in biology

10 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Heikki Helanterä, Anna-Maria Pirttilä, Timo Muotka, Anna Ruotsalainen

Content

Exam books have to be agreed with the responsible teacher in beforehand (before the student signs in to EXAM-system).

ECOLOGY MAJOR

Animal ecology specialisation (prof. Timo Muotka in autumn semester 2026; prof. Marko Mutanen in spring semester 2027):

- Begon, M., Townsend, C.R. & Harper, J.L. 2006: Ecology. From Individuals to Ecosystems. - Blackwell, 658 p., (8 cr)
 - Ridley, M. 2004: Evolution - Blackwell, 198 o. (pages 347-520 ja 590-613), (2 cr) or
 - Futuyma, D.J. 2005: Evolution - Sinauer, 200 s. (chapters 2-6, 13, 15-16, 21), (2 cr).
- Or other literature agreed with the responsible person.

Plant ecology books (doc. Annu Ruotsalainen):

- Begon, M., Townsend, C.R. & Harper, J.L. 2006: Ecology. From Individuals to Ecosystems. - Blackwell (8 cr) (e-book available)
- Chapin, F.S.III, Matson, P.A. & Mooney, H.A. 2002: Principles of Terrestrial Ecosystem Ecology. - Springer (4 cr)
- Crawford, R.M.M. 2008: Plants at the Margin. - Cambridge (5 cr) (e-book available)
- Gurevitch, J., Scheiner, S.M. & Fox, G.A. 2021: The Ecology of Plants. - Oxford (6 cr)
- Keddy, P.A. 2007: Plants and Vegetation. Origins, Processes, Consequences. - Cambridge (6 cr)

Or other literature agreed with the responsible person.

GENETICS AND MOLECULAR BIOLOGY MAJOR

Genetics books (prof. Heikki Helanterä)

- Lewins Genes XII 2012. - Jones & Bartlett. (10 cr).
- Hamilton, M.B. 2009: Population genetics. - Wiley-Blackwell (4 cr).
- Frankham, R. et al. 2010: Introduction to Conservation genetics. - Cambridge Univ. Press. (6 cr).
- Hahn, M.W. 2018: Molecular population genetics. - Oxford University Press (4cr).
- Charlesworth, B. & Charlesworth, D. 2009: Elements of evolutionary genetics. - Roberts & Co. (7cr).
- Saitou, N. 2018: Introduction to Evolutionary genomics. - Springer. (5cr).
- Pevsner, J. 2015: Bioinformatics and Functional Genomics. - Wiley & Sons. (10cr).
- Strachan, T. & Read, A. 2019. Human molecular genetics - Taylor & Francis. (8cr).
- Jobling, M.A. et al. 2013. Human evolutionary genetics. - Garland. (7cr).
- Brock Biology of Micro-organisms 2022. - Pearson. (For the relevant parts)
- Thompson & Thompson Genetics in Medicine 2016. - Elsevier. (6cr).

Or other literature agreed with the responsible person.

Plant molecular biology specialisation (prof. Anna Maria Pirttilä)

Taiz L., Møller IM, Murphy A., Zeiger: Plant Physiology and Development (2022), 7. painos, ISBN: 9780197577240

Heidt W., Piechulla B., Plant Biochemistry (2021) Kindle Edition 5. painos ISBN: 978-0128186312

Or other literature agreed with the responsible person.

BIOLOGY MAJOR (students who will do didactic MSc thesis)

Books agreed with the responsible teacher.

Learning outcomes

Student will understand profoundly own major's essential methods, results and theories.

[Official course record: 750656S](#)

NA00AK46 | Fundamentals of bioinformatics

5 ECTS | Biology | Intermediate Studies | English

Person in charge: Lumi Viljakainen

Content

Introduction to searching DNA and protein sequences and related information in various databases, exploring genome structure, sequence-based gene prediction and annotation, pairwise and multiple sequence alignment, and an overview of next-generation sequencing technologies.

Learning outcomes

After completing the course, the student will be able to:

- use various DNA and protein sequence databases
- explain and use the basic methods to analyze nucleotide and protein sequences
- make analytical inferences with guidance and critically evaluate data
- develop general and field-specific language skills in a foreign language
- communicate and present effectively to an international audience

[Official course record: NA00AK46](#)

AY754135P | Fundamentals of molecular genetics (OPEN UNI)

2 ECTS | Biology | Basic Studies | Finnish

Person in charge: Johanna Honka

Content

All living organisms have DNA as their genetic material. The human genome consists of 3 billion base pairs of DNA, including 21,000 genes which are responsible for coding proteins and RNAs integral for life. Molecular genetics is a field of biology which studies genes and their function at the molecular level, and how RNA and proteins together produce living cells and organisms. Understanding genetic functions at the molecular level allows us to comprehend how organisms develop, function, pass genetic information to the next generation and how genetic changes can lead to diseases. In this course you will learn how DNA is replicated, how mutations are repaired, how DNA recombines, protein synthesis and how genes are regulated. In addition, the most common molecular genetics research tools are presented.

The central contents:

DNA replication and repair, PCR and sequencing, recombination, transcription, translation, gene regulation.

Learning outcomes

Learn concepts of genetics at the molecular level.

[Official course record: AY754135P](#)

754655S | Genomics in biodiversity research

5 ECTS | Biology | Advanced Studies | English

Person in charge: Stefan Prost

Content

Molecular techniques in the laboratory, such as DNA extraction, sequencing library preparation and nanopore sequencing. Bioinformatic analyses of sequencing data and basic phylogenetics. How to write and publish a scientific article.

Learning outcomes

The students will learn about genomic methods used in biodiversity research, and will gain hands-on experience with new molecular technologies, such as nanopore sequencing. After the course the students will also know the basics about using Unix systems and how to analyze 'big' genomic data. The last part of the course will teach students about the processes of writing and publishing science articles.

[Official course record: 754655S](#)

757615S | Human genetics

5 ECTS | Bioscience | Advanced Studies | Finnish

Person in charge: Heikki Helanterä

Content

E.g. Human evolution and population history, hereditary diseases and genetic research methods, natural selection in contemporary populations, explanatory power of genetics and its criticism.

Learning outcomes

To understand human genetics and Homo sapiens as a biological species in the light of modern genetics and evolutionary theory.

Generic skills: Analytical and critical thinking about the explanatory power of genetics, ability to discuss principles of genetics and their application across disciplinary borders, ability write text on genetics for a lay audience.

[Official course record: 757615S](#)

687834A | Humans and the environment

5 ECTS | Environmental Humanities and Social Sciences | Intermediate Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Examining the relation between the protection of environment and the protection of cultural heritage in the context of cultural anthropology and archaeology; learning about the ways in which different civilisations and communities have reacted to change in the environment in a global context; examining the climate change from the chronological perspective provided by archaeology and cultural anthropology; studying interaction between humans, animals and nature; familiarising with the central concepts and perspectives of contemporary research in environmental anthropology.

Learning outcomes

Students will be able to define the relationship between protecting cultural heritage and protecting the environment. Students will also be able explain the fundamentals of the interaction between people and the environment, as well as the fundamentals of the concept of nature from a chronological perspective. Students will be able to discuss how specific cultures have adapted to their environments. Students will also be able to define human being's relation to animals and to their immediate environment. In addition, students will be able to define the cultural factors that control these relations. Students will also be able to discuss contemporary environmental questions and their effects on local communities.

[Official course record: 687834A](#)

NA00BC63 | Identification of animals, invertebrates

4 ECTS | Biology | Basic Studies | Finnish, English

Person in charge: Marko Mutanen

Content

During the spring semester (16 h lectures in Finnish, 16 h exercises, exam) the invertebrate taxa occurring in northern Europe are learned mostly superfamily or family level using specimens and photographs.

Learning outcomes

The primary goal is to learn identifying higher taxa of invertebrate animals with help of representative specimen samples and The primary goal of this course is to develop the ability to identify major higher taxa of invertebrate animals using representative specimen samples and photographs. The course focuses on groups that occur in Northern Europe. In addition to identification skills, students will learn the basic life histories and key biological characteristics of the focal taxa. After completing the course, students will be able to apply this knowledge in research as well as in various professional contexts. They will also possess strong foundational skills for further learning and will be well prepared to identify invertebrate animals to the species level when required.

[Official course record: NA00BC63](#)

NA00BC62 | Identification of animals, vertebrates

4 ECTS | Biology | Basic Studies | Finnish, English

Person in charge: Veli-Matti Pakanen

Content

Learning the most common Finnish vertebrates from museum samples.

Learning outcomes

Main goal is to learn to identify Finnish animal species (vertebrate) from museum samples.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Communication, interaction, and digital literacy

[Official course record: NA00BC62](#)

756311A | Identification of garden plant species

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Independent study of approximately 400 listed species in the Botanical Gardens (handout in Finnish, scientific names). Contact responsible teacher to get the course handout.

Learning outcomes

Knowledge of garden and crop species

[Official course record: 756311A](#)

NA00BC61 | Identification of plant species

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Ca. 270 vascular plants, mosses and lichens (herbarium specimens) are studied based on a course handout. Part of the species are demonstrated in exercises.

Learning outcomes

Identification of boreal plant species as herbarium specimens.

Generic skills: Contact learning in small groups and partly digital teaching material develop communication, interaction and digital skills.

Official course record: [NA00BC61](#)

NA00AV07 | Introduction to ancient DNA

2 ECTS | Biology | Advanced Studies | Finnish

Person in charge: Laura Kvist, Suvi Olli, Johanna Honka

Content

Ancient DNA opens the door to the past in an unprecedented way. In this course, which can be completed independently at your own pace, we go through what ancient DNA actually is, from where we can get it and how it can be analyzed. Also, the ancient DNA laboratory of the University of Oulu will be introduced through video presentations. If you want to know how ancient communities, mammoths, Neanderthals and much more can be studied genetically, this course is for you.

Learning outcomes

After this course, students understand what ancient DNA is and how it can be studied. Students also get an overview of ancient DNA studies from Finland and abroad. After this course, students can independently make analytical inferences and evaluate data critically.

Official course record: [NA00AV07](#)

NA00BC09 | Introduction to ancient DNA

2 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Laura Kvist, Suvi Olli, Johanna Honka

Content

Ancient DNA opens the door to the past in an unprecedented way. In this course, which can be completed independently at your own pace, we go through what ancient DNA actually is, from where we can get it and how it can be analyzed. Also, the ancient DNA laboratory of the University of Oulu will be introduced through video presentations. If you want to know how ancient communities, mammoths, Neanderthals and much more can be studied genetically, this course is for you.

Learning outcomes

After this course, students understand what ancient DNA is and how it can be studied. Students also get an overview of ancient DNA studies from Finland and abroad. After this course, students can independently make analytical inferences and evaluate data critically.

Official course record: [NA00BC09](#)

AY00AV43 | Introduction to ancient DNA (OPEN UNI)

2 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Laura Kvist, Suvi Olli, Johanna Honka

Content

Ancient DNA opens the door to the past in an unprecedented way. In this course, which can be completed independently at your own pace, we go through what ancient DNA actually is, from where we can get it and how it can be analyzed. Also, the ancient DNA laboratory of the University of Oulu will be introduced through video presentations. If you want to know how ancient communities, mammoths, Neanderthals and much more can be studied genetically, this course is for you.

Learning outcomes

After this course, students understand what ancient DNA is and how it can be studied. Students also get an overview of ancient DNA studies from Finland and abroad.

Official course record: [AY00AV43](#)

750122P | Introduction to cell biology and physiology

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Henrika Honkanen

Content

****Welcome to the fascinating world of cells!****

This course takes you on a journey through the fundamentals of life across four themes:

****Key Contents****

****1. Animal Cell Biology****

Explore chemical bonds, properties of macromolecules, and cell organelles. Learn how the cell membrane and ion channels function, and how chemical messages are transmitted into the cell to initiate processes. Additionally, we will cover the structural support of cells and their adhesion to each other. With this knowledge, you will understand how cells form tissues and organs, which are the building blocks of your body.

****2. Plant Cell Biology****

Delve into the organelles of plant cells and their unique features. Understand how plant cells differ from animal cells and how they function. Plants are the foundation of life, and it is fascinating to know what they are made of and how they work.

****3. Genetics****

What are DNA and genes? How do they guide the construction and functioning of our bodies? Study the structure of DNA, chromosomes, and the genome. Learn about the cell cycle and its regulation, as well as mitosis and meiosis. Discover how heredity works and how genes influence life. Understand how these molecules and processes together create the diversity of life and enable its continuous development.

****4. Animal Physiology****

Learn about key physiological systems and functions, such as the digestive system, circulation, metabolism, immune defense, nervous system, and musculature. Understand how these systems work together to sustain life.

Learning outcomes

The learning objectives of the course are

- * **Animal Cell Biology**: Understand the chemistry, structure, and communication of cells.
- * **Plant Cell Biology**: Identify the unique features and functions of plant cells.
- * **Genetics**: Understand the role of DNA and genes in heredity and the diversity of life.
- * **Animal Physiology**: Identify and explain the key physiological systems of the body and their interactions.
- * **Generic skills**: In this course, students develop communication, interaction, and digital skills. Upon successful completion of the course, the student:
 - * is able to communicate key biological concepts and phenomena clearly and appropriately in written form;
 - * uses digital learning environments and tools, including artificial intelligence, fluently to support course assignments, communication, and information seeking;
 - * is able to search for, evaluate, and ethically and critically utilise biological information from digital sources.

[Official course record: 750122P](#)

NA00AK32 | Introduction to computational biology

3 ECTS | Computational Biology | Advanced Studies | English

Person in charge: Juan Galarza Pavia

Content

Computational biology is an interdisciplinary field that combines principles from biology, computer science, and mathematics to study biological systems using computational tools and techniques. It involves the development of algorithms and mathematical models to analyze and interpret biological data, such as DNA and protein sequences, cellular networks, and biological pathways. By harnessing the power of computation, researchers in computational biology can simulate and predict the behavior of complex biological systems, identify new drug targets, and discover potential treatments for diseases. This course will provide an in-depth appreciation of the role that computational biology plays in advancing our understanding of fundamental biological processes, from the molecular level to entire ecosystems, and its numerous applications in medicine, biotechnology, and environmental science.

Learning outcomes

The idea is to give mathematics and biology students a comprehensive overview of what is computational biology.

[Official course record: NA00AK32](#)

NA00BB59 | Introduction to ecological methods

3 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Seppo Rytkönen

Content

The aim of the course is to introduce the students in scientific modes of argumentation and research methods in modern ecology. Both the empirical and theoretical methods and their relationship in theory growth are discussed. Hypothesis testing; observational method, experimental method and comparative method are the empirical methods introduced. Autumn semester ends in a seminar where scientific publications are analysed.

Learning outcomes

Students are familiar to scientific method and can recognize scientific information from pseudo-scientific and other descriptions and explanations about surrounding world. Students have learned to assess the uncertainty of information and can also evaluate the quality of information with respect to its theoretical and applied value. Students also learn to build a valid theoretical or empirical strategy to solve scientific problems.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility and ethical competence
- Communication, interaction and digital skills

Official course record: NA00BB59

AY754134P | Introduction to ecology (OPEN UNI)

2 ECTS | Biology | Basic Studies | Finnish

Person in charge: Seppo Rytönen

Content [Finnish source]

Opintojakso antaa peruskäsityksen ekologisista vuorovaikutussuhteista elottoman ja elollisen luonnon välillä. Kurssin johdantoluennolla tutustutaan lyhyesti ekologisen tutkimuksen eri tasoihin, aina yksilötasolta populaatio-, yhteisö- ja ekosysteemitasolle. Toisella luentokerralla tutustutaan luonnonhistoriaan ja evoluutioon, eli siihen, miten eliöt ovat jakautuneet kovin epätasaisesti maapallon eri osiin ja mitkä elottoman luonnon tekijät ohjaavat tätä biodiversiteetin jakautumista niin maa- kuin vesiympäristöissä. Biodiversiteetin ymmärtämiseksi tutustutaan kaiken taustalla vaikuttavaan evoluutioon, eli lajien perinnölliseen muunteluun, luonnonvalintaan ja sopeutumiseen. Kolmannella luennolla käsitellään tarkemmin ympäristöön sopeutumista tärkeimpien fysikaalisten tekijöiden suhteen – lämpötila, vesi, energia ja ravinto/ravinteet. Lopuksi laajennetaan ympäristökäsitettä elottomasta elolliseen, eli kuinka yksilön ympäristöä määrittävät myös oman ja muiden lajien yksilöt, eli sosiaaliset suhteet.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelijat osaavat tärkeimmät elottoman ja elollisen luonnon väliset suhteet, jotka ohjaavat luonnon toimintaa, ja osaavat tunnistaa ekologisen organisaation päätasot, eli yksilö-, populaatio-, yhteisö- ja ekosysteemitason ilmiöt.

Geneeristen taitojen osaamistavoitteet:

- Analyttisen, kriittisen ja luovan ajattelun taidot
- Hyvinvoinnin ja itsensä kehittämisen taidot
- Kansainvälisyys- ja monikulttuurisuustaidot
- Kestävyys-, vastuullisuus- ja eettisyystaidot
- Viestintä-, vuorovaikutus ja digitaidot

Official course record: AY754134P

754322A | Introduction to hydrobiology

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Timo Muotka

Content

Hydrography and physical and chemical properties of lakes and streams. Structure and ecological interactions in freshwater ecosystems (bacteria, phyto- and zooplankton, insects and other invertebrates, fishes). Most important biological interactions (competition, predation, parasitism, mutualism) and food web structure. Human influence on inland water biodiversity and ecosystem functions.

Learning outcomes

Basic knowledge of inland water ecosystem functioning and biodiversity. Basic concepts of hydrobiology necessary for further studies in freshwater ecology.

Official course record: [754322A](#)

756351A | Introduction to population ecology

5 ECTS | Biology | Intermediate Studies | English

Person in charge: Laura Kvist

Content

Student learn the basics of population ecology with an emphasis to conservation biology. The topics include demography, life history strategies, and dynamics of populations in space and time. Usage of matrix models to calculate basic population parameters and analyze population viability. Comparison of population's performances and metapopulation dynamics are addressed. In exercises, dynamics of populations are analysed with matrix models and simulation programs.

Learning outcomes

Basic skills in theory and methods of population ecology.

Official course record: [756351A](#)

NA00BB62 | Introduction to population genetics and molecular ecology

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Lumi Viljakainen, Laura Kvist

Content

Fundamentals of population genetics (genetic variation, linkage disequilibrium, genetic drift, effective population size, population structure, gene flow, mutation, selection), relationships between molecular and adaptive variation, phylogenetic methods, and phylogeography. Application of molecular methods for identification of species, sex, and individuals, behavioral ecology (mating systems, cooperation, mating success), and conservation.

Learning outcomes

After completing the course, the student will be able to:

- describe the key theories and concepts of population genetics
- identify molecular biology methods that can be used for species, sex, and individual identification, as well as in behavioral ecology and conservation genetics
- apply the learned theories and methods to the study of natural populations
- to make analytical inferences with guidance, critically examine data, and develop creative solutions based on selected data
- work constructively in a team, negotiate, and allocate tasks
- design, carry out, and present a scientific poster as a group project

Official course record: [NA00BB62](#)

687830P | Introduction to the environmental humanities and social sciences

5 ECTS | Environmental Humanities and Social Sciences | Basic Studies | Finnish

Person in charge: Esa Ruuskanen (OY), Leena Suopajarvi (LAY)

Content

The environmental humanities and environmental social sciences represent transdisciplinary fields that combine methods, perspectives, concepts and theories from several disciplines. Both are motivated by the need to increase understanding of the complex interaction between culture, society and nature, and to participate and influence the current debate on the environment and climate change. The course examines the basics of the environmental humanities and environmental social sciences and their opportunities to provide scholars, citizens and societies with critical and creative perspectives to environmental issues. After completing the course, the student recognizes the cultural and social roots of current environmental issues and challenges.

Learning outcomes

After completing the course, the student:

- is able to outline the disciplinary roots of the environmental humanities and environmental social sciences in general
- is able to describe some key research ambitions the environmental humanities and environmental social sciences pose
- is able to examine environmental issues critically, using the concepts and approaches of the environmental humanities and social sciences

[Official course record: 687830P](#)

750659J | Introductory essay of Ph. D. research

4 ECTS | Biology | Post-graduate Studies | English

Person in charge: Laura Kvist

Content

Theories, methodology and progress of a specific research area.

Learning outcomes

Student is familiar with theories, methods and recent progress of his/hers own research area.

[Official course record: 750659J](#)

NA00AT79 | Joint events of the Biology degree programme

0 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Lumi Viljakainen

Content

All common events of the Biology Degree Programme have been compiled under this course code so that students and staff can be informed about the event schedules right at the beginning of the academic year. This is not an actual course, but a time management tool, so the course will not be graded, and no credits will be given. Participation in the events is voluntary, except for the Presentation of Research Groups and Career Evening, which are mandatory for first-year students.

The 'What's Up' events provide information about current issues in the degree programme.

In the Curriculum Development Days, you will have the opportunity to influence the development of the Biology Degree Programme curriculum.

At the Degree Programme Coffee Events, you can meet teachers in a relaxed atmosphere and discuss course and study-related matters.

In the Research Group Presentations, you will get a comprehensive overview of the research activities of the Ecology and Genetics Research Unit, which will help in finding project work positions, internships, and thesis work opportunities.

At the Biology Student Guild Feedback Day, a representative of the guild will present the feedback collected by the guild on teaching and study guidance.

In the Career Evening, you will hear career stories from biology graduates and have discussions with professionals from the working life.

Learning outcomes

By participating in the joint events, you will receive information about current issues in the degree programme, gain a better understanding of internship and employment opportunities, have the chance to influence the development of the curriculum and experience a sense of community during coffee breaks with teachers and students.

[Official course record: NA00AT79](#)

750329A | Kaamos symposium

2 ECTS | Biology | Intermediate Studies | English

Person in charge: Anu Eskelinen

Content

The Kaamos Symposium consisting of presenting current research projects is held every year at the end of autumn period. Through presenting their research and obtaining feedback from the audience (students and the staff members) post graduate students gain experience in holding a scientific presentation.

Learning outcomes

Students get acquainted with preparing, presenting and evaluating scientific presentations.

Students can independently design a scientific presentation and present research results in a scientific conference either as an oral or poster presentation. Students are able to engage in scientific discussion about their own research topic when answering questions from the audience. Student develop skills in listening and being able to reflect essential information from scientific talks.

[Official course record: 750329A](#)

750629S | Kaamos symposium

2-4 ECTS | Biology | Advanced Studies | English

Person in charge: Anu Eskelinen

Content

The Kaamos Symposium consisting of presenting current research projects is held every year at the end of autumn period. Through presenting their research and obtaining feedback from the audience (students and the staff members) post graduate students gain experience in holding a scientific presentation.

Learning outcomes

Students get acquainted with preparing, presenting and evaluating scientific presentations. Students can independently design a scientific presentation and present research results in a scientific conference either as an oral or poster presentation. Students are able to engage in scientific discussion about their own research topic when answering questions from the audience. Students develop skills in listening and being able to reflect essential information from scientific talks.

[Official course record: 750629S](#)

750929J | Kaamos-symposium

2 ECTS | Biology | Post-graduate Studies | English

Person in charge: Timo Muotka

Content

The Kaamos Symposium consisting of presenting current research projects is held every year at the end of autumn period. Through presenting their research work and projects and obtaining feedback from the audience (students and the staff of the department) post graduate students gain experience in holding a scientific presentation.

Learning outcomes

Students get acquainted to preparing, presenting and evaluating a scientific oral presentation.

[Official course record: 750929J](#)

NA00AQ13 | Macro fungi

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Demonstrations of macrofungi in the field, basics of identification, ecology and distribution.

Learning outcomes

Knowledge of the most important large fungi and the basics of fungal ecology. Generic skills: Communication, interaction and digital skills. A collaborative mushroom exhibition is maintained in the course hall, which develops interaction skills. Making species observations and identifying species in the iNaturalist application.

[Official course record: NA00AQ13](#)

NA00AQ14 | Macro fungi

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

Demonstrations of macrofungi in the field, basics of identification, ecology and distribution.

Learning outcomes

Knowledge of the most important large fungi and the basics of fungal ecology. Generic skills: Communication, interaction and digital skills. A collaborative mushroom exhibition is maintained in the course hall, which develops interaction skills. Making species observations and identifying species in the iNaturalist application.

[Official course record: NA00AQ14](#)

750678S | Master of science seminar

5 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Veli-Matti Pakanen, Lumi Viljakainen

Content

Instructions for the Master's thesis and interactive reporting of the work in progress.

Learning outcomes

The seminar deepens the student's scientific communication and information retrieval skills.

Generic skills: Analytical, critical and creative thinking; International ja cultural skills; Multidisciplinary skills; Communication, interaction, and digital literacy.

[Official course record: 750678S](#)

750632S | Maturity exam

0 ECTS | Biology | Advanced Studies | Finnish

Person in charge: Lumi Viljakainen

Content

After completing the thesis, Ecogen students will write a maturity exam (if not done in the B.Sc. degree) in the Electronic Examination system (EXAM). For a Finnish student who has already done a maturity exam for the B.Sc. degree the M.Sc. maturity exam will be the abstract of the M.Sc. thesis that the student loads to the Laturi system.

Learning outcomes

The student presents and analyzes research material, methods and results.

[Official course record: 750632S](#)

757620S | Methods in genomics and genomics evolution

5 ECTS | Bioscience | Advanced Studies | Finnish, English

Person in charge: Tiina Mattila

Content

Genome structure and content, gene expression, comparative genomics, recombination and the evolutionary factors influencing these.

Learning outcomes

Student knows focal features of genomes, their evolution and research methods. The goal is also to familiarize the students to basics of the methods in genomics and their applicability to empirical studies especially in evolutionary questions.

[Official course record: 757620S](#)

NA00BC13 | Methods in plant molecular biology

4 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna-Maria Pirttilä

Content

The student will understand the processes and mechanisms related to plant life, such as nitrogen fixation and hormonal effects. The student learns basic laboratory skills and reporting the results in a scientific form.

Learning outcomes

After taking the course, the student will be aware of the basic issues between plant function and structure, understand the basic functions of plants, and be familiar with methods related to plant research.

[Official course record: NA00BC13](#)

754630S | Microbial ecology

5 ECTS | Ecology | Advanced Studies | English

Person in charge: Anna-Maria Pirttilä

Content

Microbes (bacteria, protists, fungi) of various environments have important roles in ecosystem function, including human health. Lectures are supported by practical sessions, a computer practical session to quantify microbial community structure (using QIIME2).

Learning outcomes

The student will understand diversity and role of microbes in ecosystem function.

[Official course record: 754630S](#)

NA00AK44 | Microbial ecology, brief

3 ECTS | Ecology | Advanced Studies | English

Person in charge: Anna-Maria Pirttilä

Content

Microbes (bacteria, protists, fungi) of various environments have important roles in ecosystem function, including human health.

Learning outcomes

The student will understand diversity and role of microbes in ecosystem function.

[Official course record: NA00AK44](#)

752692S | Mire ecology

5 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Risto Virtanen

Content

Plant species (bryophytes and vascular plants), mire types, vegetation of boreal areas. Regional patterns in mire vegetation, mire types and underlying ecological gradients. Mire hydrotopography and peat stratigraphy. Red list status of mire vegetation, restoration of mires. (analytical, critical and creative thinking skills, well-being and self-development skills, sustainability, responsibility and ethics skills, multidisciplinary and Interdisciplinary skills,).

Learning outcomes

By passing this course a student is able to identify plant species (bryophytes and vascular plants), mire types, vegetation of boreal areas, species indicator values, determine mire types, interpret ecology of mire systems and make inventories on mire landscapes.

757622S | Molecular interactions

5 ECTS | Bioscience | Advanced Studies | English

Person in charge: Janne Koskimäki

Content

The course consists of laboratory practicals to elucidate gene expression in various organisms. The course teaches practical work in a molecular biology laboratory using various methods so that the student understands the underlying principles and can apply them in practice. The techniques used are, for example, PCR-based techniques (RT-qPCR, dPCR), microscopy, and the use of fluorescent marker proteins. The course teaches how to produce novel research data in life sciences and report research results in a scientific format.

The course develops the following generic skills:

Analytical and critical thinking: Students critically analyze experimental data, evaluate methodological reliability, and draw well-founded scientific conclusions.

Creative problem-solving: Students apply creative thinking when designing and optimizing experimental workflows

Communication and interaction skills: Students present their results in an oral presentation and produce a scientific article formatted report.

Digital competence: Students use digital learning platforms (e.g., Moodle) and audiovisual materials effectively and apply digital tools responsibly.

Collaboration and interdisciplinarity: Students work efficiently in laboratory environments and integrate methodological knowledge across disciplinary boundaries.

Ethics and responsibility: Students follow good scientific practice, adhere to laboratory safety and ethical guidelines, and recognize sustainability aspects of experimental research.

Learning outcomes

The student knows how to study interactions between organisms using various molecular markers and techniques.

Official course record: 757622S

NA00BC14 | Molecular methods

5 ECTS | Biology | Basic Studies | Finnish

Person in charge: Lumi Viljakainen

Content

Safety and working regulations in a molecular genetics laboratory, extraction of genomic DNA, agarose gel electrophoresis, amplification of DNA by PCR, genotyping with microsatellites, DNA sequencing, analysis of DNA-sequence and microsatellite alleles. Writing a scientific report and conducting peer review.

Learning outcomes

After completing the course, the students are able to:

- follow essential laboratory safety guidelines and good laboratory practices
- extract DNA and assess its quality and quantity
- amplify DNA sequences using the PCR method
- genotype using microsatellite markers
- determine the DNA sequence using the Sanger method
- work effectively and respectfully in a group and to negotiate and share tasks
- to make analytical inferences and critically examine data under guidance
- evaluate the success of their own and their peers' work and write a scientific report on their experiments

[Official course record: NA00BC14](#)

NA00BC12 | Molecular plant biology

3 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna-Maria Pirttilä

Content

The most important phenomena of plant life, like photosynthesis, nitrogen metabolism and plant hormones are discussed.

Learning outcomes

The student can understand and explain the function and regulation of plant cells, tissues and entire plants.

[Official course record: NA00BC12](#)

750399A | Optional examinations in environmental protection

2-6 ECTS | Biology | Intermediate Studies | Finnish, English

Person in charge: Seppo Rytönen, Anna Ruotsalainen

Content

Depends on the book(s) selected. The literature will be agreed with one of the examiners.

Learning outcomes

The students receives deeper understanding of issues related to environmental conservation in a global context.

Generic skills: Sustainability, responsibility, ethical skills, as well as multidisciplinary and interdisciplinarity are essential content of the course.

[Official course record: 750399A](#)

750699S | Optional examinations in environmental protection

2-6 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Seppo Rytönen, Anna Ruotsalainen

Content

Depends on the book(s) selected. The literature will be agreed with one of the examiner

Learning outcomes

The students receives deeper understanding of issues related to environmental conservation in a global context.

Generic skills: Sustainability, responsibility, ethical skills, as well as multidisciplinary and interdisciplinarity are essential content of the course.

[Official course record: 7506995](#)

HH00AN12 | Optional Specialization in the Environmental Humanities

5 ECTS | Environmental Humanities and Social Sciences | Intermediate Studies | Finnish

Person in charge: Esa Ruuskanen

Content [Finnish source]

Opiskelija perehtyy humanistiseen ja yhteiskuntatieteelliseen ympäristötutkimukseen läheisesti liittyvän erikoisalan teoreettis-metodologisiin näkökulmiin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on syventänyt tietämystään humanistiseen ja yhteiskuntatieteelliseen ympäristötutkimukseen läheisesti liittyvän erikoisalan uusimmasta tutkimuksesta sisällöllisesti ja teoreettis-metodologisesti sekä kykenee hyödyntämään ja soveltamaan hankkimaansa tietoa opinnoissaan.

[Official course record: HH00AN12](#)

754929J | Organizing Kaamos symposium

2 ECTS | Biology | Post-graduate Studies | English

Person in charge: Heikki Helanterä

Content

Organization of a conference.

Generic skills: communication and digital skills of organizing and event, sustainability aspects of the event

Learning outcomes

Student knows how to organize scientific conferences.

[Official course record: 754929J](#)

750032Y | Orientation course for new students

2 ECTS | Biology | General Studies | Finnish

Person in charge: Henrika Honkanen

Content

Students orientate themselves to academic studies with the help of tutor group meetings, presentations, and a seminar. During the course, students make their first personal study plan (PSP).

Learning outcomes

Upon successful completion of the course, the student:

- * understands the principles and practices of university studies and their own responsibility for learning and progressing in their studies.
- * recognizes the key actors, services and support structures of the University of Oulu and the Faculty of Science, such as study administration, library services, digital learning environments and student organizations, as well as the student's opportunities to participate and have an influence within them.
- * recognizes the structure, key content areas and specific characteristics of the Degree Programme in Biology (e.g. laboratory work, field courses, scientific thinking and research skills) from the perspective of study planning and study skills.
- * is able to reflect on the goals, motivation and future study path of their own studies, including possible specialization options, minor subjects and postgraduate studies.
- * is able to create a personal study plan (HOPS) in accordance with the degree structure of the Degree Programme in Biology.
- * is able to interact with the staff and other students of the Degree Programme in Biology, work in groups, and experience a sense of belonging to the community of biology students.
- * is able to act as a member of the university community and to use university services and communication channels.

****Generic skills****

Within the Orientation Studies, the student develops communication, interaction and digital competences, as well as competences related to well-being and self-development.

Within the Orientation Studies, the student:

- * practices clear, appropriate and academic oral and written communication in the context of university studies, particularly in interaction with students and staff of the Degree Programme in Biology;
- * develops interaction and teamwork competences, including active listening, articulating their own views, and constructive participation in shared discussions and group tasks;
- * learns to use the key digital systems and communication tools required for studies at the University of Oulu (e.g. Peppi, Moodle, email, Microsoft Teams) for study planning, communication and everyday student life.
- * practices the responsible and ethical use of digital tools, including compliance with instructions, information security, principles of good academic practice, and consistent conduct in digital learning environments.
- * identifies key factors related to personal well-being and self-management, such as time management, study skills, recovery, motivation, and balancing studies with other aspects of life.
- * recognizes workload and strain factors related to academic and expert work and becomes familiar with self-compassion as a means to support well-being, coping and learning;
- * practices study skills that support independent learning, goal-oriented studying and smooth progress in the Degree Programme in Biology.
- * learns to describe their own competence and its development, identifies personal strengths and areas for development, and gains an understanding of the formation of a professional academic identity as a student of biology.

[Official course record: 750032Y](#)

750669J | Ph.D. exam

6 ECTS | Biology | Post-graduate Studies | English

Person in charge: Laura Kvist

Content

Literature to be agreed with the professor of the major field. There are different possibilities for conducting the exam: 1) having one whole examination or divide into several examinations or 2) making a reading diary. Ca. 100 pages of reading material = credit point.

Exam can be 6-10 credits.

Instructions for a reading diary: Write a reflective summary on the reading material and your thoughts while reading. The summary should contain a very brief summary of the key points of the material, ca. 1 page of text per 100 pages of reading. You may divide this e.g. based on chapters or sections of the book or other reading material. Focus on questions such as: Why is this important for the field? What are your main questions or criticisms arising from the text? Why is this important for your own thesis work? Did you learn something that changed the way how you think about your thesis topic, how you collect or analyse or interpret your data? Why is the knowledge acquired from reading important for your career after the PhD.

Learning outcomes

Student has good knowledge of literature, theories and methods of his/hers research area.

[Official course record: 750669J](#)

750671J | Ph.D. thesis in biology

0 ECTS | Biology | Post-graduate Studies | English

Person in charge: Aulikki Herneoja

Content

PhD thesis.

Learning outcomes

The student is able to plan and perform scientific research at her/his own study field. She/he is familiar with the literature and the methodology of the study field. The student is capable of critical scientific thinking and can evaluate her/his own results as well as those produced by other researchers, is able to analyse and conclude the results and can write scientific publications.

[Official course record: 750671J](#)

752656S | Plant and fungal taxonomy and ecology

2-4 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Anna Ruotsalainen

Content

A field, laboratory or blended course. Species identification in the field and using e.g. microscopical examination. Sampling and handling of the material. Preparation of herbarium specimens. Field instruction on species inventory and sampling of specimens.. Species' characters (morphological and chemical). Inventory methods on red listed species. Alternative themes (lichens, polypores and other fungi, bryophytes).

Learning outcomes

By passing this course a student is able to identify species of the given taxonomic group, understand the ecology of the species, and know their distribution and systematic position.

Generic skills: -

[Official course record: 752656S](#)

NA00AR35 | Plant biodiversity and global changes

4 ECTS | Ecology | Advanced Studies | English

Person in charge: Anu Eskelinen

Content

This course explores and discusses up-to-date knowledge of the effects of multiple global changes on plant biodiversity and a variety of mechanisms by which plant-plant interactions, plant-animal interactions, environmental conditions and spatial context, interactions among global change factors, and plant functional traits can affect plant community responses to global change factors. Using this knowledge, the course aims to build a comprehensive picture of how and why plant biodiversity changes under the contemporary anthropogenic change. The course focuses on using interactive approaches to get students engaged in scientific discussion and real-life scientific research.

Learning outcomes

Students can describe the basic mechanisms by which different global change factors affect plant communities. They can assess and evaluate the role and importance of different abiotic and biotic factors that can modify the outcome of global change effects on plant biodiversity. Students can point out and produce practical implications of global change effects on plant biodiversity in different contexts. Students can understand, interpret, and criticize topical scientific literature and will acquire skills to participate in scientific discussion and communication. Students learn to express their opinions in an international group with English as the scientific language.

[Official course record: NA00AR35](#)

756346A | Plant biology lectures

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna-Maria Pirttilä

Content

The most important phenomena of plant life, like photosynthesis, nitrogen metabolism and plant hormones are discussed.

Learning outcomes

The student can understand and explain the function and regulation of plant cells, tissues and entire plants.

[Official course record: 756346A](#)

756343A | Plant ecology field course

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Risto Virtanen

Content

Vegetation in the coast of Bothnian Bay in Hailuoto and/or Oulu (3 days). Basics of boreal forest and mire vegetation classification and types in Oulanka National Park (7 days). Main gradients affecting vegetation, succession, diversity of forest and mire habitats. Semi-natural habitats and their management and conservation. (analytical, critical and creative thinking skills, sustainability, responsibility and ethics skills, well-being and self-development skills).

Learning outcomes

Student is able to identify plant species and nature types in the field (mainly forest and mires), as well as become familiar with the nature of Bothnian Bay and Kuusamo districts (well-being and self-development skills).

NA00BC11 | Plant structures and tissues

3 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Anna-Maria Pirttilä

Content

The student can interpret the meaning of structure behind function at microscopic and macroscopic level.

Learning outcomes

The student can differentiate the basic structures of higher plants at microscopic and macroscopic level and can differentiate monocots and dicots based on cellular structure.

Official course record: NA00BC11

NA00AU68 | Population genomics analysis

5 ECTS | Computational Biology, Genetics and Molecular Biology | Advanced Studies | English

Person in charge: Juan Galarza Pavia

Content

Contents:

- Introduction to population genomics and its main research questions
- Basic bioinformatics steps for processing and preparing genomic datasets
- Population structure analyses and interpretation of genetic clustering
- Genome scans for selection and genotype–environment association (GEA) analyses
- Inference of demographic history from genomic data
- Genome-wide association studies (GWAS)
- Gene flow and introgression among populations
- Landscape genomics and links between genomic variation and environmental variables

Learning outcomes

After the course, students should be able to:

- Explain the main questions and concepts in population genomics, including selection, population structure, gene flow, and demographic history.
- Understand common genomic data types and the basic bioinformatics steps used in population genomic analyses.
- Prepare and manage genomic datasets using standard bioinformatics tools.
- Analyze population structure using genomic data and interpret the results in an evolutionary context.
- Perform genome-wide scans for selection and genotype–environment association analyses.
- Apply methods used to infer demographic history from genomic data.
- Conduct and interpret genome-wide association studies (GWAS).
- Identify and interpret signals of gene flow and introgression among populations.
- Relate genomic variation to environmental variables using landscape genomics approaches.

Official course record: NA00AU68

750615S | Practical training

10-15 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Seppo Rytönen

Content

Minimum training period is two months full day work 10 cr. Students can obtain 15 credits for three months versatile training depending on the length and intensity of it. Student can do the training period in Finland or during her/his exchange period or train otherwise abroad.

Learning outcomes

The aim of the course is for students to gain work experience in their own field of biology. Student applies the theoretical knowledge gained during the studies in practice.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- International and multicultural competence
- Sustainability, responsibility and ethical competence
- Multidisciplinary and interdisciplinary skills
- Communication, interaction and digital skills

Official course record: [7506155](#)

NA00BD00 | Practicals of ecological methods

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Seppo Rytönen

Content

Continuation to course Ecological methods I 5cr (755325A, 755625S). This course focuses on applying the scientific method in ecological research. The course consists mainly of computer exercises in the following subjects: sampling, sample size determination, linear modeling, experimental design and statistical analysis esp. analysis of variance, comparative methods (independent contrasts - analysis), multivariate methods (principal component analysis, cluster analysis, ordination) and meta-analysis. Also other current issues can be included.

Learning outcomes

The aim of the course is to learn in practice how to apply scientific method in ecological research. The student learns how to select appropriate methods for different ecological problems, and a toolkit for study design and data analysis.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility and ethical competence
- Communication, interaction and digital skills

Official course record: [NA00BD00](#)

751660S | Preparation of an insect collection

2-6 ECTS | Ecology | Advanced Studies | Finnish

Person in charge: Marko Mutanen

Content

Preparation of a collection on a group of insects. The specimens should be prepared correctly, identified to the level it is feasible in practice, and labelled. Consultation with the responsible teacher beforehand is a requisite.

Learning outcomes

In this course, students prepare (including labeling) and identify insects they have collected themselves. The course develops skills in systematic work and promotes careful, organized, and accurate working practices.

NA00BC60 | Presentation tactics for science communication

4 ECTS | Biology | Advanced Studies | English

Person in charge: Laura Kvist

Content

How to present

- What to do and what not to do?
- How to tackle stress before presentation?
- How to be more effective?
- Students will give a short presentation based on their own research or thesis, or research article they read

Presenting poster and giving an elevator pitch

- What is elevator pitch and how to do it
- Elevator pitch based on their own research or thesis, or research article they would read

PPT Presentation slides

- How to make ppt presentations: what to include and what not
- Students review presentations based on what they learnt from the previous session and will comment on what could be done better
- Students will give a short presentation based on their own research or thesis, or research article they would read

How to make a poster or a booklet

- Poster lecture
- Booklet design
- Programs review to use for making posters, booklets, figures
- Practice session using specific programs

Learning outcomes

This course will provide tips on how to make PowerPoint presentations and how to improve presenting. Students will practice making presentations and practice presenting during the course in a friendly environment. Students will receive feedback after presenting. There will be a chance to improve your current or upcoming presentations. And finally, students will learn tips on how to make a poster, a booklet, and how to give a short elevator-like pitch and poster talk. The course is organized in an interactive way, so that the students are also welcome and encouraged to share their tips, tricks, and ideas, so that we can all learn together something new.

Official course record: NA00BC60

NA00AR42 | Primer to wildlife forensics and environmental crime

5 ECTS | Biology | Advanced Studies | English

Person in charge: Stefan Prost

Content

The course will introduce students to wildlife forensics and different scientific methods applied to investigate environmental crimes. It will cover different aspects of wildlife forensics including illegal wildlife trade and the current state of wildlife forensics in Finland. It also includes a practical field day, where students learn the basics of wildlife crime science investigation.

Learning outcomes

A better understanding of environmental crimes and a basic understanding of methods used to investigate these.

750658S | Pro gradu thesis in biology

40 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Lumi Viljakainen

Content

Literary work which includes experimental research work. The student gets profoundly acquainted with a certain special field in biology.

Learning outcomes

After completing the course, the student will be able to:

- apply research methods used in a specific field of biology
- independently make analytical and critical inferences based on large datasets, and creatively generate and apply new knowledge
- present the results of their own research both in writing and orally

Official course record: 750658S

757616S | Quantitative genetics and plant and animal breeding

5 ECTS | Bioscience | Advanced Studies | Finnish

Person in charge: Lumi Viljakainen

Content

Course 805338A Quantitative genetics arranged by Mathematical Sciences will correspond this course.

Official course record: 757616S

750661S | Research group seminar

2-4 ECTS | Biology | Advanced Studies | English

Person in charge: Timo Muotka, Heikki Helanterä

Content

Workshop type seminars in different fields of biology held by research groups. Advanced or postgraduate studies. 2 cr. per different seminar series.

Learning outcomes

Students gain deeper understanding of specific biological subdisciplines.

Official course record: 750661S

750662J | Research Plan Seminar

1 ECTS | Biology | Post-graduate Studies | English

Person in charge: Anu Eskelinen, Laura Kvist

Content

Public presentation of student's own doctoral research plan in the Research Plan Seminar and participation to at least 9 other presentations, of which at least 2 acting as an opponent..

Learning outcomes

After the course, the student knows how to develop and present a research plan / doctoral training plan in written and oral forms, and has learned how to critically discuss the research of others.

Official course record: [750662J](#)

750313A | Research training

2-15 ECTS | Biology | Intermediate Studies | Finnish, English

Person in charge: Timo Muotka, Heikki Helanterä, Anna Ruotsalainen, Seppo Rytönen, Anna-Maria Pirttilä

Content

Work on special projects in different biology research groups at the research unit or elsewhere or independent project work including field and/or laboratory work or work at the biological stations. The work is not included in other study modules in biology.

Learning outcomes

The student applies the knowledge and skills attained in education to working life to gain hands-on experience.

Official course record: [750313A](#)

750613S | Research training

2-15 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Timo Muotka, Heikki Helanterä, Anna Ruotsalainen, Seppo Rytönen, Anna-Maria Pirttilä

Content

Work on special projects in different biology research groups at the research unit or elsewhere or independent project work including field and/or laboratory work or work at the biological stations. The work is not included in other study modules in biology.

Learning outcomes

The student applies the knowledge and skills attained in education to working life to gain hands-on experience.

Official course record: [750613S](#)

NA00BB58 | Scientific thinking for biologists

2 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Veli-Matti Pakanen

Content

The aim of the course is to introduce the students in scientific modes of argumentation and research methods in modern science.

Learning outcomes

After having the course students are familiar to scientific method and can separate scientific information from other contents of human culture. Students have learned to assess the uncertainty of information and can evaluate the quality of information with respect to its applied value.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Sustainability, responsibility and ethics skills; Communication, interaction, and digital literacy.

Official course record: [NA00BB58](#)

NA00BB38 | Skills for Working life

5 ECTS | Biology | General Studies | Finnish

Person in charge: Henrika Honkanen

Content

Working independently on Moodle and during a summer job. Additionally, previous work experience can be utilized.

Learning outcomes

In this course, students develop skills in wellbeing and self-improvement, with a particular focus on competencies required in working life. The course supports students' professional growth, the ability to recognise their own expertise, and the conscious development of workplace skills.

Upon completion of the course, the student will be able to:

- * identify key general workplace skills and assess and develop them as part of their own studies and career path;

- * recognise, articulate, and structure their own expertise, and use this knowledge in job seeking and professional development;

- * understand the importance of wellbeing at work and develop their own time management, organisational, and interaction skills;

- * act appropriately within a work community and recognise workplace practices;

- * master essential job-seeking skills, such as drafting a cover letter and CV, and use the most common workplace communication channels in accordance with professional requirements.

Generic skills are practised in an integrated manner in the Moodle learning environment through independent study materials and assignments. These tasks support students' self-assessment, the building of a professional identity, and the development of readiness for working life.

[Official course record: NA00BB38](#)

750660S | Special course in biology

2-5 ECTS | Biology | Advanced Studies | English

Person in charge: Lumi Viljakainen

Content

Courses on current topics in biology.

Learning outcomes

The student will be acquainted with current topics in biology.

[Official course record: 750660S](#)

750654S | Special lecture in biology

2-5 ECTS | Biology | Advanced Studies | Finnish, English

Person in charge: Lumi Viljakainen

Content

Lectures on current topics in biology.

Learning outcomes

The student will be acquainted with current topics in biology.

[Official course record: 750654S](#)

NA00AU98 | Student tutoring

2 ECTS | Biology | General Studies | Finnish

Person in charge: Henrika Honkanen, Minna Vanhatalo

Content

The tutor student guides a group of new students during the orientation course introducing them to the university, academic learning environment, the Research Unit, curriculum, and other students with the help of small group meetings and presentations.

Kummi's duties include more practical help for the exchange students like delivering keys (PSOAS housing) and grouping. Kummi also introduces new international students to the studying environment. Credits for the international tutoring will be given to the course code NA00AU98 Tutoring for international students.

Learning outcomes

After completing the course, the student will be able to:

- plan and conduct guidance sessions and presentations responsibly
- work effectively, constructively, and respectfully in a group
- present to small groups

Official course record: [NA00AU98](#)

KE00AS30 | Sustainable art education

5 ECTS | Sustainable Development | Basic Studies | Finnish

Person in charge: Jaakko Moilanen, Katja Sutela

Content

- * Relations between art, art education and the environment
- * Theoretical foundations and approaches to sustainable art education
- * Implementation, documentation and reporting of activities based on sustainable art education

Learning outcomes

After completing the course, the student will be able to:

- * Define the basic principles of sustainable art education
- * Describe the theoretical and operational bases of sustainable art education
- * Implement activities based on the principles of sustainable art education in an educational context
- * Document and report on the planning, implementation and evaluation of activities based on the principles of sustainable art education

Official course record: [KE00AS30](#)

756649S | Symbiosis

5 ECTS | Bioscience | Advanced Studies | English

Person in charge: Anna-Maria Pirttilä

Content

In practice, all life forms live in symbiosis. Recent advances have shown that the diversity of symbiotic interactions and significance for example in biotechnology and human health is noticeable. The lectures concentrate, to a great deal, on symbiosis in plants due to its diversity, but also other hosts incl. human are discussed specifically in seminar.

Learning outcomes

The student knows the concept of symbiosis, understands the extent of diversity of symbiotic interactions both at the community and molecular level.

Official course record: [756649S](#)

750374A | Systematics and morphology of organisms exercises

3 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Veli-Matti Pakanen

Content

The morphology and anatomy of macro- and microscopic specimens of different animal groups are studied by the students in systematic order. Demonstrations connect the morphological traits of studied specimens and organism groups to a wider evolutionary context and illustrate the importance of different structures for the organisms in their living environment.

Learning outcomes

The main aim of the course is to learn the evolutionary history of organisms and the basics of systematics: how life has evolved and which evolutionary processes have affected the development. Students will get an idea of how and why different or similar morphological traits and functions have evolved in different taxonomic groups. The course will focus on animals and also provide an insight into the function of animals at a morphological level.

Generic skills: Analytical, critical and creative thinking; Wellbeing and personal development skills; Sustainability, responsibility and ethics skills; Multidisciplinary skills; Communication, interaction, and digital literacy.

Official course record: [750374A](#)

755322A | Terrestrial animals field course

5 ECTS | Biology | Intermediate Studies | Finnish

Person in charge: Seppo Rytönen

Content

The fauna in different kinds of terrestrial habitats is studied using several ecological sampling and research methods. The course is held at the Oulanka Research Station, Kuusamo, and deals with identification and ecology of invertebrates, mammals (especially small mammals), gallinaceous birds and birds of prey. The exercises take place partly in the field and partly in the laboratory. Data gained during the course is analyzed. The results are reported (in PowerPoint) and presented in the final seminar in Kuusamo.

Learning outcomes

The aim of the course is to learn the basics of field identification and ecology of terrestrial animals in northern Finland. The student will understand that proper skills in species identification and knowledge of species' ecology are the basis of ecological research.

Generic Skills Learning Outcomes:

- Analytical, critical and creative thinking skills
- Well-being and self-development skills
- International and multicultural competence
- Sustainability, responsibility and ethical competence
- Multidisciplinary and interdisciplinary skills
- Communication, interaction and digital skills

Official course record: [755322A](#)

KE00AM66 | Thinking and Talking about Climate

2 ECTS | Sustainable Development | Intermediate Studies | Finnish, English

Person in charge: Sari Harmoinen

Content

Climate change is more than just knowledge and numbers. This inspiring online course by the University of Oulu approaches climate change through emotions. Game elements, such as climate avatars, work as a tool to explore one's own emotions and practice constructive climate interaction. Growing understanding of the experiences of oneself and others offer the student tools for better everyday conversations. You can complete the course at your own pace.

The central contents:

- * spectrum of climate emotions as well as the underlying factors affecting them
- * special attention is paid to climate hope, its sources, and ways to maintain it
- * constructive climate interaction through acknowledging personal experiences, reactions and communication practices

Research on climate emotions and climate interaction forms the theoretical base of this course. It is connected to the following Sustainable Development Goals of the UN: 3) "Good health and well-being" and 13) "Climate action".

Learning outcomes

- * Recognizes how the climate emotions of oneself and others affect the interaction.
- * Understands the concepts of climate emotions and factors that affect them.
- * Understands the climate emotions of oneself and others.
- * Knows how to maintain hope and performance, as well as to communicate and influence climate hope.

Official course record: [KE00AM66](#)

AY00AM50 | Thinking and Talking about Climate (OPEN UNI)

2 ECTS | Sustainable Development | Intermediate Studies | Finnish, English

Person in charge: Sari Harmoinen

Content

Climate change is more than just knowledge and numbers. This inspiring online course by the University of Oulu approaches climate change through emotions. Game elements, such as climate avatars, work as a tool to explore one's own emotions and practice constructive climate interaction. Growing understanding of the experiences of oneself and others offer the student tools for better everyday conversations. You can complete the course at your own pace.

The central contents:

- * spectrum of climate emotions as well as the underlying factors affecting them
- * special attention is paid to climate hope, its sources, and ways to maintain it
- * constructive climate interaction through acknowledging personal experiences, reactions and communication practices

Research on climate emotions and climate interaction forms the theoretical base of this course. It is connected to the following Sustainable Development Goals of the UN: 3) "Good health and well-being" and 13) "Climate action".

Learning outcomes

- * Recognizes how the climate emotions of oneself and others affect the interaction.
- * Understands the concepts of climate emotions and factors that affect them.
- * Understands the climate emotions of oneself and others.
- * Knows how to maintain hope and performance, as well as to communicate and influence climate hope.

Official course record: [AY00AM50](#)

750318A | Thursday seminar in biology

2 ECTS | Biology | Intermediate Studies | English

Person in charge: Heikki Helanterä

Content

Lectures in English on current topics in biology given by guest lecturers from Finland or abroad.

The timing of the seminars varies, and there is not necessarily a seminar every week. Please check the seminar program - it is available at <https://thursdayseminarbiology.wordpress.com/> and seminars will also be advertised on the biology-students mailing list.

Learning outcomes

Students get knowledge about the current international results and theories in biology and interdisciplinary studies, and gain skills in connecting the topics to the broader contexts of their field, and reflecting on their meaning. The students get training in general and field specific English.

Official course record: [750318A](#)

750618S | Thursday seminar in biology

2 ECTS | Biology | Advanced Studies | English

Person in charge: Heikki Helanterä

Content

Lectures in English on current topics in biology given by guest lecturers from Finland and abroad.

The timing of the seminars varies, and there is not necessarily a seminar every week. Please check the seminar program - it is available at <https://thursdayseminarbiology.wordpress.com/> and seminars will also be advertised on the biology-students mailing list.

Learning outcomes

Students get knowledge about the current international results and theories in biology and interdisciplinary studies, and gain skills in connecting the topics to the broader contexts of their field, and reflecting on their meaning. The students get training in general and field specific English.

Official course record: [750618S](#)

AY00BC24 | Unsung Climate Hero

3 ECTS | Sustainable Development | Basic Studies | Finnish, English

Person in charge: Sari Harmoinen

Content

Acting in an environmentally friendly way is important, but it is not always easy. This University of Oulu's online course approaches the theme from a practical perspective; the central task of the course is the student's very own climate project. This practical work is supported by the course's theory, which delves into measuring climate impact and impactful action. Hard action alone does not get you far if it diminishes your well-being. For this reason, we discover how emotions affect actions, the psychology of behavior change and the social dimension of action. We also reflect on what a happy and a sustainable life means in today's world. This online course can be completed at your own pace.

The central contents:

- * impactful climate action and measuring it
- * the psychology of behavior change
- * emotional implications caused by action and the social aspects of action
- * a sustainable and healthy life

The theoretical base of the course is based on research data on climate emotions and climate interactions. Its contents are related to the following UN Sustainable Development Goals: 3) "Good Health and Well-being" and 13) "Climate Action".

Learning outcomes

- * The student understands the concepts of footprint and handprint, which are used to measure climate impact
- * Understands what impactful action is
- * Recognizes the environmental impacts of their own actions, identifies suitable actions for themselves and recognizes the emotions caused by action
- * Understands the psychological factors that affect changes in behavior and the social dimension of action
- * Possesses readiness for actions in their everyday life that are environmentally friendly and that support well-being
- * Identifies ways to maintain mental health in the midst of an environmental crisis

Official course record: AY00BC24

KE00BC23 | Unsung Climate Hero

3 ECTS | Sustainable Development | Basic Studies | Finnish, English

Person in charge: Sari Harmoinen

Content

Acting in an environmentally friendly way is important, but it is not always easy. This University of Oulu's online course approaches the theme from a practical perspective; the central task of the course is the student's very own climate project. This practical work is supported by the course's theory, which delves into measuring climate impact and impactful action. Hard action alone does not get you far if it diminishes your well-being. For this reason, we discover how emotions affect actions, the psychology of behavior change and the social dimension of action. We also reflect on what a happy and a sustainable life means in today's world. This online course can be completed at your own pace.

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The theoretical base of the course is based on research data on climate emotions and climate interactions. Its contents are related to the following UN Sustainable Development Goals: 3) "Good Health and Well-being" and 13) "Climate Action".

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- * Understands the psychological factors that affect changes in behavior and the social dimension of action
- * Possesses readiness for actions in their everyday life that are environmentally friendly and that support well-being
- * Identifies ways to maintain mental health in the midst of an environmental crisis

Official course record: [KE00BC23](#)

NA00AK29 | Wildlife management and game animal ecology

5 ECTS | Ecology | Advanced Studies | English

Person in charge: Jouni Aspi

Content

The ecology of game species, including their life histories, population dynamics, and predator-prey relationships. Hunting ecology: focusing on humans as predators and the management of game species. The impacts of forestry on game species populations. Students are also introduced to practical wildlife management and the social dimensions of wildlife-human relationships

Learning outcomes

After completing the study module, the student will be able to recognize the specific ecological traits of game animals and relate them to the broader ecological principles. The student will also be able to appraise the foundations of sustainable game harvesting and critically evaluate various wildlife management methods from a scientific perspective

Official course record: [NA00AK29](#)

Business & economics

BO00AQ16 | A Basic Understanding of Blockchain in Business MOOC

2 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Tero Huhtala

Content

The course objective is to provide participants with foundational knowledge of blockchain technology and its potential applications in promoting sustainable business practices. The course takes a dive into what actually is a blockchain and how they operate in different situations. This course will teach you how security, exchange and data controlling is linked to blockchains and how trust between parties works in blockchain technologies. In the course student will also learn about cryptocurrencies like Bitcoin, Ethereum and Altcoins, and how they shape the monetary world as a decentralized ways of payment and exchange.

Learning outcomes

After the course the student has reached these learning goals.

1. Student understands the fundamental concepts of blockchain technology and its key features.
2. Student can identify the role of blockchain technology in fostering sustainable business practices.
3. Students gains an overview of cryptocurrencies, token types, and central bank digital currencies, along with their use cases and potential implications for businesses.

[Official course record: BO00AQ16](#)

AY00AQ17 | A Basic Understanding of Blockchain in Business MOOC (OPEN UNI)

2 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Tero Huhtala

Content

The course objective is to provide participants with foundational knowledge of blockchain technology and its potential applications in promoting sustainable business practices. The course takes a dive into what actually is a blockchain and how they operate in different situations. This course will teach you how security, exchange and data controlling is linked to blockchains and how trust between parties works in blockchain technologies. In the course student will also learn about cryptocurrencies like Bitcoin, Ethereum and Altcoins, and how they shape the monetary world as a decentralized ways of payment and exchange.

Learning outcomes

After the course the student has reached these learning goals.

1. Student understands the fundamental concepts of blockchain technology and its key features.
2. Student can identify the role of blockchain technology in fostering sustainable business practices.
3. Students gains an overview of cryptocurrencies, token types, and central bank digital currencies, along with their use cases and potential implications for businesses.

[Official course record: AY00AQ17](#)

721629A | Administrative Law

10 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

The study module focuses on the areas of law: general administrative law, municipal law, administrative procedural law (for the use of administrative law) and legal informatics. In legal informatics, the specific focus is on issues related to the publicity of official activities, data protection, electronic transactions and communications, and official registers.

Learning outcomes

The first goal of this course is to give the student an overview of administrative law and authority activities, and to give the student sufficient skills to solve administrative law problems on their own. Another key goal is for the student to internalize the central importance of the different areas of legal informatics and related legislation in the developing online society and the rule of law.

After completing the course, the student will:

- remember the key rules, concepts and principles of administrative law and be able to explain their content,
- be able to describe the activities of authorities, the exercise of authority and the position and rights of individuals in administration,
- be able to describe the procedure to be followed in handling administrative matters
- be able to describe the overall legal protection system of administration and in particular the operation of administrative courts
- identify administrative law problems in a practical case, find administrative law rules and principles applicable to an individual case from different areas of administration and be able to interpret and apply them.
- know the development and key areas of legal informatics
- understand the importance of privacy protection, personal data protection, the principle of publicity and freedom of expression as fundamental and human rights in an increasingly digital online world.

Official course record: [721629A](#)

721193S | Advanced Auditing and Assurance

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Jenni Jääskö

Content

The course covers, for example:

- Introduction to financial statement auditing, including the purpose, scope, and significance of audits in the corporate environment.
- Fundamental concepts of auditing, such as assurance, audit risk, materiality, internal controls, and professional judgment.
- Audit process, encompassing the main phases to conducting audits.
- Ethics and regulatory environment, focusing on professional standards, codes of conduct, and relevant legal frameworks.
- Audit quality and audit fees from a research perspective, including factors influencing audit quality and fees.

Learning outcomes

The course aims to provide students with an in-depth understanding of advanced topics in auditing and assurance, focusing on both theoretical foundations and current developments in the field. Upon successful completion, students will:

- Understand key theories and fundamental concepts of auditing and assurance services.
- Be able to describe and critically evaluate the audit process, audit environment, and regulatory frameworks.
- Analyze audit quality, audit pricing, and the expectation gap between auditors and stakeholders.
- Apply ethical principles and professional standards in auditing scenarios.
- Develop skills to prepare a scientific research plan in the field of auditing.
- Gain familiarity with emerging topics such as sustainability assurance.

In addition following generic skills essential for a Master's graduate will be developed during the course:

- Analytical, critical and creative thinking skills
- Ethics skills
- Communication, interaction, and digital skills

Official course record: [721193S](#)

721189S | Advanced Financial Statement Analysis

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Jenni Kallunki

Content

Lectures, home assignments, and case discussions and presentations.

Learning outcomes

After completing the course, students will have the knowledge and skills needed to analyze financial statements in a variety of decision-making situations. Specifically, they can analytically assess a firm's profitability and value creation and their key drivers, the credit risk of the firm, and the value of the firm. Students will also be able to work effectively and professionally in teams, critically analyze arguments and argue appropriately in their field of study, and finally, and communicate as experts in a manner suitable for the target audience in a foreign language, both in writing and orally.

Official course record: [721189S](#)

721197S | Advanced International Accounting

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Alexandra Middleton, Henry Jarva

Content

The course comprises the following topics: Fair value measurements, lease accounting, impairment of assets, measurement of financial instruments, financial reporting for owners' equity, intercorporate equity investments.

Learning outcomes

After passing the course, the student can interpret and apply more challenging issues of International Financial Reporting Standards (IFRS) such as lease accounting, impairment of assets, measurement of financial instruments, financial reporting for owners' equity, intercorporate equity investments. In addition, the student can take a critical view on the IFRS Conceptual Framework and standard setting process.

Official course record: [721197S](#)

BO00BC15 | Advanced Management Accounting

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Kristiina Henttu-Aho

Content

Responsibility accounting, transfer pricing, budgeting, cost allocation theory and practice, TDABC systems.

Learning outcomes

The purpose of the course is to deepen the student's theoretical knowledge and practical capabilities in management accounting. Upon completion of the course students can identify various theoretical perspectives on studying the design of internal accounting systems. After this course the student can understand the fundamental trade-off between decision-making and control. The students can construct cost accounting systems and critically evaluate the choices made in their design. The student will also be able to use spreadsheet tools in performing complex management accounting calculations in practice. This course develops the following generic skills: Self development skills.

[Official course record: BO00BC15](#)

721348S | Advanced Microeconomics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Jaakko Simonen

Content

Constrained optimization problems of economic agents(firms and customers), market analysis, general equilibrium analysis, duopoly competition models, game theory, decision making under uncertainty.

Learning outcomes

The student should learn rigorously the basic concepts and analytical tools of modern microeconomic theory. Upon completing the required coursework the student is able to formulate and solve constrained optimization problems of households and firms. The student masters and knows how to interpret the general equilibrium results, and is able to judge and interpret the role of uncertainty in decision making. The student is able to formulate and interpret the basic models of strategic behavior.

Generic skills: The student is able to apply:

- analytical and critical thinking to examine various phenomena in economics, - is able to apply problem-solving skills to develop new knowledge. - is able to argue appropriately and with justification about various phenomena in economics.

[Official course record: 721348S](#)

721477S | Advanced Perspectives in Brand Co-creation

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Salla Saraniemi

Content

Schools of brand management, co-creative brand management system, motives for co-creation, complexity of branding platforms, brand storytelling, ethics of brand co-creation, conscientious branding and organizations, co-creating sustainability, brand co-destruction, other contemporary brand research topics.

Learning outcomes

Upon completion this advanced course, the student is able to identify and explain contemporary schools of brand management and brand co-creation. The student is able to apply theoretical frameworks to analyse different brand co-creation perspectives and brand meaning-making in digital, multi-actor community and ecosystem environments. The student is able to apply theoretical knowledge of brand co-creation processes to real-life brand challenges. In addition, the student learns current brand-related research topics of the faculty and is able to formulate research possibilities within the brand phenomenon. This course suits particularly well for students with brand-related master's thesis topic and/or career plans related to brand strategy, sustainable branding, digital brand management, or research.

Generic skills:

- Analytical, critical and creative thinking: Students are able to critically evaluate and integrate contemporary perspectives of brand management. Students will develop nuanced understanding of brand co-creation as an evolving, multi-actor process shaped by consumers, organisations, communities, algorithms, platforms and other stakeholders.
- International and multicultural skills: Students are able to work in international cooperation and take the international operating environment into account in solving Brandathon challenge.
- Sustainability, responsibility and ethics skills: Students are able to apply and justify responsible and ethical actions in multi-actor brand ecosystems and their management.

Official course record: [7214775](#)

BO00BB84 | Advanced Perspectives in Sustainable Business Relationships

4 ECTS | Marketing | Advanced Studies | English

Person in charge: Ilkka Ojansivu

Content

The course explores advanced perspectives on building, managing, and transforming sustainable business relationships. Through a combination of theoretical frameworks, empirical examples, real-world case studies, and interactive group workshops and role-plays, students examine:

- What sustainable business relationships are and why they matter for long-term business success
- How sustainability challenges are negotiated within and across business relationships
- How business relationships shape sustainability outcomes across industries, supply chains, and cultural contexts

The course introduces three complementary perspectives on sustainable business relationships:

1. Sustainability of business relationships
2. Sustainability in business relationships
3. Business relationships for sustainability

These perspectives help students understand that sustainability is interpreted differently depending on professional background, organizational role, experience, and expertise. The course critically examines potential tensions arising from these differences and develops constructive approaches for addressing them in practice.

Learning outcomes

Upon successful completion of the course, students will be able to:

- Understand the role of business relationships in enabling exchanges between organizations and in acting as pathways for organizational, environmental, and societal change.
- Explain how business relationships foster mutual learning, trust, and the development of shared norms by bringing together buyer and seller organizations and their employees over extended periods of interaction.
- Analyze the dynamics within and around business relationships and evaluate how these dynamics can produce far-reaching consequences across supply chains and distribution channels, either supporting or hindering sustainable development.

Upon completion of the course, the following generic skills will also be developed:

- Analytical, critical and creative thinking skills: Is able to apply relevant theories analytically and critically to business relationships, and to solve complex business relationship challenges creatively with well-reasoned arguments.
- Well-being and self-development skills: Is able to build a professional identity as an expert in business relationships, develop self-management skills in group work with multiple deliverables and deadlines, act constructively in situations of uncertainty and discomfort during workshops and role-plays, and promote community and interaction that support group well-being.
- International and multicultural skills: Is able to operate effectively in an international learning environment, collaborate constructively with people from different backgrounds, develop academic and professional language skills, and critically reflect on and challenge stereotypical thinking patterns.
- Sustainability, responsibility and ethics skills: Is able to recognize interdependencies between the dimensions of sustainability (social, ecological, economic, cultural) in business relationships, address ethical issues with sound reasoning, and justify decisions by considering power relations, values, and contextual differences.
- Multidisciplinary and interdisciplinary skills: Is able to approach sustainable business relationships from multiple disciplinary and professional perspectives, while acknowledging the organizational embeddedness of business actors.
- Communication, interaction and digital skills: Is able to communicate as an expert in a manner appropriate for different target audiences, apply AI technologies appropriately, safely and responsibly, evaluate individual and group performance, provide constructive feedback, and contribute to team leadership.

Official course record: [BO00BB84](#)

BO00BB85 | Advanced Readings in Marketing

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Mari Juntunen

Content

Students will explore literature related to one of the selected topic within the sustainable marketing discipline, such as Social Marketing. The topics may change each academic year.

General skills

- Analytical, critical, and creative thinking skills: Students can think systemically and apply problem solving and creative thinking skills when they evaluate existing practices, identify problems, generate new ideas and innovative solutions, argue appropriately, draw conclusions, and express source criticism in their exam responses.
- Well-being, and self-development skills: Students know how to develop their self-management skills, promote their well-being, and maintain their own competence in a goal-oriented manner as independent learning requires ability to take responsibility for one's own actions and well-being through the learning of time management and balancing between studies and free time. Through self-reflection, this allows the recognition of personal strengths and weaknesses, developing tolerance of uncertainty and discomfort during the development of professional identity.
- Sustainability, responsibility, and ethics skills: Students are able to solve ethical questions related to their chosen topic with sound reasoning, reflecting these in their exam responses through responsible decision-making, promoting ethical, equity, and/or diversity activities, and respecting people, nature and culture.
- Communication, interaction and digital skills: Students are able to communicate in a clear and concise way suitable for the target audience.

Learning outcomes

Our students demonstrate knowledge of the theories, concepts, frameworks and/or empirical findings within the marketing discipline. They possess the skills necessary for individual learning and identifying relevant business research information.

Official course record: [BO00BB85](#)

BO00AR29 | AI in Business and Organizations

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Tuure Haarjärvi

Content

The course will use psychological and philosophical theories to understand what intelligence is. Artificial intelligence is discussed from the perspective of neural networks and machine learning. Business impact analysis is done via Porter's three generic strategies and business model canvas. Moral Foundations Theory and O-Ring Principle are used to understand and assess societal impact.

Topics are discussed mainly from the non-technical perspective (e.g. no AI programming or logic scripting) on technology.

Learning outcomes

Students gain an understanding of the impact of AI technology development. The focus will be on the current advancement of machine learning and the influence technology has on business and society. Students are also able to express their ideas analytically and effectively, both in written and oral form.

Official course record: [BO00AR29](#)

BO00BF25 | AI in Business Applications

6 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Topias Poikonen

Content

The course content covers working with AI tools in professional and analytical contexts with competence and critical awareness, both generally and in business contexts. The course builds a shared understanding on how AI systems function and where they fall short, and equips students with practical skills to identify, evaluate, and apply AI solutions to different business-related problems both practically and ethically. The course focuses on general AI competence without being constrained to specific technologies, to keep the applicable skills relevant even in the case of strong market shifts and evolving technologies.

Learning outcomes

Upon completion, students will be able to:

1. Identify the core principles behind modern AI systems and the differences between different forms of AI.
2. Apply AI to real-world business problems.
3. Identify the challenges and limitations of AI.
4. Use and assess AI solutions critically and ethically.
5. Evaluate AI market trends and future impacts and potential developments.

Official course record: [BO00BF25](#)

BO00AQ96 | Alternative Studies in Accounting 1, Advanced Level

1-5 ECTS | Accounting | Advanced Studies | Finnish, English

Person in charge: Marjo Väisänen

No description supplied in the collected record.

Official course record: [BO00AQ96](#)

BO00AR08 | Alternative Studies in Accounting 2, Advanced Level

1-5 ECTS | Accounting | Advanced Studies | Finnish, English

Person in charge: Marjo Väisänen

No description supplied in the collected record.

Official course record: [BO00AR08](#)

BO00AQ90 | Alternative Studies in Business Analytics 1, advanced level

1-5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English, Finnish

Person in charge: Timo Koivumäki

No description supplied in the collected record.

Official course record: [BO00AQ90](#)

BO00AR07 | Alternative Studies in Business Analytics 2, advanced level

1-5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English, Finnish

Person in charge: Timo Koivumäki

No description supplied in the collected record.

Official course record: [BO00AR07](#)

BO00AR14 | Alternative Studies in Economics 1, advanced level

1-5 ECTS | Economics | Advanced Studies | Finnish, English

Person in charge: Sanna Huikari

Content

Agreed separately.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

Official course record: [BO00AR14](#)

BO00AR15 | Alternative Studies in Economics 2, advanced level

1-5 ECTS | Economics | Advanced Studies | Finnish, English

Person in charge: Sanna Huikari

Content

Agreed separately.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

Official course record: [BO00AR15](#)

BO00AR01 | Alternative Studies in Finance 1, advanced level

1-5 ECTS | Finance | Advanced Studies | Finnish, English

Person in charge: Petri Sahlström

No description supplied in the collected record.

Official course record: [BO00AR01](#)

BO00AR09 | Alternative Studies in Finance 2, advanced level

1-5 ECTS | Finance | Advanced Studies | Finnish, English

Person in charge: Petri Sahlström

No description supplied in the collected record.

Official course record: [BO00AR09](#)

BO00AR32 | Alternative Studies in International Business Management 1, advanced level

1-5 ECTS | International Business | Advanced Studies | Finnish, English

Person in charge: Tuija Lämsä

Content

Agreed separately.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

BO00AR33 | Alternative Studies in International Business Management 2, advanced level

1-5 ECTS | International Business | Advanced Studies | Finnish, English

Person in charge: Tuija Lämsä

Content

Agreed separately.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

Official course record: BO00AR33

BO00AR24 | Alternative Studies in Marketing 1, advanced level

1-5 ECTS | Marketing | Advanced Studies | Finnish, English

Person in charge: Mari Juntunen

Content

Agreed separately.

Generic skills:

- Analytical, critical, and creative thinking skills: Students can think systemically and apply problem solving and creative thinking skills when they evaluate existing research, identify problems, generate new ideas and innovative solutions, argue appropriately, draw conclusions, and express source criticism in their assignments.
- Other generic skills depend on the assignment.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

Official course record: BO00AR24

BO00AR25 | Alternative Studies in Marketing 2, advanced level

1-5 ECTS | Marketing | Advanced Studies | Finnish, English

Person in charge: Mari Juntunen

Content

Agreed separately.

Agreed separately.

Generic skills:

- Analytical, critical, and creative thinking skills: Students can think systemically and apply problem solving and creative thinking skills when they evaluate existing research, identify problems, generate new ideas and innovative solutions, argue appropriately, draw conclusions, and express source criticism in their assignments.
- Other generic skills depend on the assignment.

Learning outcomes

An individual research assignment to demonstrate knowledge of the theories, concepts and frameworks of one's own discipline.

Official course record: [BO00AR25](#)

721351S | Applied Econometrics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Juha Junntila

Content

This course focuses on understanding and applying various econometric techniques used for cross-sectional, time-series and panel data analyses especially for financial economics research questions. The main emphasis is on time series and panel methods. The course also builds students' skills to conduct their own independent empirical research, and helps them to perform empirical analysis also in the MSc thesis project by significantly lowering the threshold to engage in appropriate econometric scrutiny.

Learning outcomes

Upon completion of the course, the student will be able to:

- collect relevant data for empirical research questions especially in economics and finance
- perform appropriate econometric analyses with modern applied econometric tools and programs
- report and thoroughly discuss the results from empirical analyses in a coherent manner.

Official course record: [721351S](#)

721383S | Asset Pricing

6 ECTS | Finance | Advanced Studies | English

Person in charge: Elias Oikarinen

Content

Utility theory and risk aversion, Capital Asset Pricing Model (CAPM) and its drawbacks, state pricing, Arbitrage Pricing Theory (APT), stochastic discount factor, consumption-based asset pricing model, regression-based tests of linear factor models, portfolio sorts, anomalies, the cross-section of stock returns, time-series predictability of stock returns.

Learning outcomes

Upon completion of the course, the student understands:

- the foundations of asset pricing theory
- the most important asset pricing models
- the basics of empirical tests of asset pricing models
- the stylized facts about stock returns.

Official course record: [721383S](#)

721132A | Auditing

6 ECTS | Accounting | Intermediate Studies | Finnish

Person in charge: Marjo Väisänen

Content

The course will look into the general auditing process, financial statement audit, corporate governance audit, and the principles of internal control. In addition, the course examines prospects and recent developments of auditing.

Learning outcomes

After completing the course the student is able to apply the basic terminology used in auditing, and recognizes the objectives of auditing. The student will have the skills to evaluate accounting information relevant for auditing process.

Official course record: [721132A](#)

724050A | Bachelor's Thesis in Economics and Business Administration

10 ECTS | Economics and Business Administration | Intermediate Studies | Finnish

Person in charge: Pia Hurmelinna-Laukkanen

Content

The bachelor's thesis is not just a thesis done for a degree, but often also the first scientific publication that the student produces and through which s/he can demonstrate his/her research capabilities and expertise that distinguishes the student from others with a similar degree.

During the course, the student learns about conducting research, reporting it both in writing and orally, and engaging in scientific discussion in the form of giving and receiving feedback. The student conducts a study on a topic of his/her choice typically based on scientific publications (sometimes more practice-oriented materials too). The student receives support in the process; the supervisor helps with the substance matter and contents, experts from the library help with information gathering, and the teachers of Centre for Languages and Communication Lingua will help with writing and presentation.

Learning outcomes

Upon completion of bachelor thesis seminar course, the student is able to

- independently write, comment, and evaluate scientific texts from a chosen research field
- critically select research materials
- analyze, interpret, and synthesize existing scientific information
- draw conclusions from the collected information
- present (orally) and report (in writing) the implementation and results of the research.
- discuss research, give and receive feedback

Official course record: [724050A](#)

BO00AL54 | Bachelor's Thesis in International Business Management

10 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Pia Hurmelinna-Laukkanen

Content

The bachelor's thesis is not just a thesis for a degree, but often also the first scientific publication that the student produces and through which s/he can demonstrate his/her expertise that distinguishes the student from others with a similar degree.

During the course, the student learns about conducting research, reporting it both in writing and orally, and engaging in scientific discussion in the form of giving and receiving feedback. The student conducts a study on a topic of his/her choice typically based on scientific publications (sometimes more practice-oriented materials too). The student receives support in the process; the supervisor helps with the substance matter and contents, experts from the library help with information gathering, and the teachers of Centre for Languages and Communication Lingua will help with writing and presentation.

Learning outcomes

Upon completion of bachelor thesis seminar course, the student is able to

- independently write, comment, and evaluate scientific texts from a chosen research field
- critically select research materials
- analyze, interpret, and synthesize existing scientific information
- draw conclusions from the collected information
- present (orally) and report (in writing) the implementation and results of the research.
- discuss research, give and receive feedback

Official course record: [BO00AL54](#)

724834P | Basics of Marketing and Sales

5 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Hannu Torvinen

Content

- Key marketing concepts, definitions and phenomena now and before
- Understanding these concepts in diverse contexts: The differences between consumer logic and business-to-business logic
- Customer-centred thinking and value creation
- Customer-oriented strategy in a changing business environment
- Key concepts and phenomena in consumer marketing
- Business-to-business marketing and organisational buying behaviour
- Marketing communication channels and content
- Sales processes in consumer and business-to-business contexts, as well as personal sales and interaction skills at different phases of sales processes

Learning outcomes

Upon completion of the course, students will be able to:

- describe the role of marketing in an organisation and identify the significance of customer orientation in both the development of the organisation and personal actions
- apply the key concepts of marketing (e.g. customer-perceived value, the value creation process, the brand, the marketing mix and segmentation) in decision-making and evaluate decisions
- describe the diverse emphases of business-to-business marketing and consumer marketing, and the key characteristics of both logics
- identify and utilise key marketing communication channels in the fickle business environment
- understand sales processes in their entirety, the different parts of them in both consumer and business-to-business sales.

In addition to core marketing skills, the course develops working life skills, such as

- problem-solving and project management skills
- critical thinking / information assessment skills
- the analysis and application of information
- the utilisation digital platforms
- written and oral expression.

Official course record: [724834P](#)

BO00AR00 | Behavioral Economics and Finance

6 ECTS | Finance | Advanced Studies | English

Person in charge: Evangelos Mourelatos

Content

Module 1: Behavioural Finance

1. Introduction: Why Behavioral Approach?
2. Thinking, Fast and Slow
 - i. Biases
 - i. Normality, Tendency to find False Causality and Intentions
 - ii. Neglect of Ambiguity and Ambiguity Aversion
 - iii. Confirmation Bias
 - iv. The Law of Small Numbers
 - v. Framing and Anchoring
 - vi. Availability Bias
 - vii. Affect Heuristics
 - viii. Mental Accounting
3. Heuristics and Representativeness
 - i. Violation of Bayes Law
 - ii. Prediction vs. Similarity
 - iii. The Neglected Regression Towards Mean
 - iv. Beyond Rationality: Investigating Social, Emotional, and Personality Influences
4. Prospect Theory
 - i. Violations of the Axioms of Expected Utility
 - ii. Original Prospect Theory
 - iii. Cumulative Prospect Theory
5. Narratives
 - i. Narratives in Human Behavior
 - ii. Narratives and Finance
6. Behavioral Finance
 - i. Market Sentiment
 - ii. Herding
 - iii. Volatility, Cross-Sectional Volatility and Trading Volume
 - iv. Bubbles and Crashes
 - v. Glamour Stocks
 - vi. Behavioral Corporate Finance
 - i. Market Timing and Catering
 - ii. Real Investments
 - iii. Mergers and Acquisitions
 - iv. Equity Issues and Share Repurchases
 - v. Managerial Biases
 - vi. Negotiating Insights: Bargaining Games and Corporate Finance

Module 2: Behavioural Economics

1. Introduction to Behavioral and Experimental Economics
 - i. Homo Economicus
 - ii. Behavioural Economics
 - iii. Experimental Economics
 - iv. Deception and Monetary Economics
2. Negotiating Insights: Bargaining Games
 - i. Introductory insights
 - ii. Dictator games
 - iii. Ultimatum games
 - iv. Psychological factors
 - v. Financial factors
3. Building Trust: Gift Exchange Games
 - i. Trust games

- ii. Disentangling motives in the trust game
- iii. Behavioural determinants of trust
- iv. Gift Exchange games

4. Fostering Cooperation: Understanding Public Good Games Behaviorally

- i. Do people cooperate?
- ii. Why do people cooperate?
- iii. Public Good games
- iv. Social identity and discrimination in public good experiments

5. Cross-Cultural Experiments

- i. Definitions
- ii. Fairness and bargaining behavior
- iii. Trust games in this context
- iv. Cooperative behavior
- v. Negative reciprocity

6. Beyond Rationality: Investigating Social, Emotions and economic decision-making

- i. Definitions
- ii. Emotions
- iii. Mood
- iv. Personality Traits

7. Gender Gap: Insights from Behavioural Economic Experiments

- i. Insights
- ii. Attitudes to risk
- iii. Attitudes to competition
- iv. Social preferences
- v. Why are men and women different?

8. Analyzing Behavioral Economics Papers: Unveiling Insights and Trends I

- i. Structure
- ii. Subject Pool
- iii. Instructions
- iv. Location
- v. Recruitment and software
- vi. Design

9. Analyzing Behavioral Economics Papers: Unveiling Insights and Trends II

- i. Practise
- ii. Analysis

Learning outcomes

The lecture course consists of two separate modes, the first (Module 1) focusing on behavioral finance topics and the second (Module 2) on behavioral economics topics and on experimental economics. Theoretical focus of the Module 1 is cognitive psychology: biases in decision making, heuristics and rules of thumbs, and narratives. The key theoretical construction is the Prospect Theory. Module 1 contains several applications in the areas of finance including behavioral aspects of investor behavior and corporate finance topics.

The aim of Module 2 is to give to students the necessary theoretical background which can make them able to interpret modern economic systems and the knowledge methodology of behavioral economics. By a re-examination of the theoretical assumptions in term of preferences rationality and maximization behavior of the economic agent embedded in the neoclassical economics, with the help of new instrument deriving from cognitive physiology and decision theory students will be given instruments and theoretical elements necessary to interpret the behavior of the economic agent in the new complex economic system with application to public policy, communication, and proper economic analysis. At the end of the Module 2 students should be able to design an experiment.

Official course record: [BO00AR00](#)

BO00BE63 | Blockchain for Global Business: An Intermediate Course MOOC

2 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Tero Huhtala

No description supplied in the collected record.

Official course record: [BO00BE63](#)

AY00BE64 | Blockchain for Global Business: An Intermediate Course MOOC (OPEN UNI)

2 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Tero Huhtala

No description supplied in the collected record.

Official course record: [AY00BE64](#)

724104P | Bookkeeping and Financial Reporting

5 ECTS | Accounting | Basic Studies | Finnish

Person in charge: Juha Huikari

Content

The different accounts of the current record of accounting, booking the value added tax, payment of wages and booking the equity and current liabilities will be discussed. Financial reporting -part of the course comprises accrual accounting, depreciations, provisions, accrual concept of income taxes and assessing the asset items and capital instalments.

Learning outcomes

After the course completion the student will be able to handle the main principles of double-entry bookkeeping. In addition, student is able to recognize the most common - in practice used - solutions, which are related in using the principles of bookkeeping and financial reporting. Student can also contextually define the essential items of the financial statements.

Official course record: [724104P](#)

AY724104P | Bookkeeping and Financial Reporting (OPEN UNI)

5 ECTS | Accounting | Basic Studies | Finnish

Person in charge: Juha Huikari

Content

The different accounts of the current record of accounting, booking the value added tax, payment of wages and booking the equity and current liabilities will be discussed. Financial reporting -part of the course comprises accrual accounting, depreciations, provisions, accrual concept of income taxes and assessing the asset items and capital instalments.

Learning outcomes

After the course completion the student will be able to handle the main principles of double-entry bookkeeping. In addition, student is able to recognize the most common - in practice used - solutions, which are related in using the principles of bookkeeping and financial reporting. Student can also contextually define the essential items of the financial statements.

[Official course record: AY724104P](#)

724113P | Brand Marketing

5 ECTS | Marketing | Basic Studies | Finnish

Person in charge: Saila Saraniemi

Content

The basic concepts related to brands, strategic and values-based brand management, current brand communications, its tools and platforms, design of consumer's brand experience in different touchpoints, different stakeholders of brands.

Learning outcomes

Upon completion this course, the student knows basics of brand marketing. The student is able to identify different target groups of brand marketing, the focus being on consumer markets. The student is able to argue brand management actions and is able to analyze brand communications. The student understands the strategic meaning of brands for organisations and knows the basics of brand communications process within changing media landscape.

Generic skills:

- Analytical, critical and creative thinking skills: Upon completion the course, the student is able to identify the key concepts and skills in brand marketing, and is able to describe their importance in scientific and professional activities applying brand marketing.

[Official course record: 724113P](#)

BO00BE67 | Brand Marketing MOOC

2 ECTS | Marketing | Basic Studies | Finnish

Person in charge: Saila Saraniemi

Content

The Basics of Brand Marketing

- * The Evolution of Brands in Practice and Research
- * Brand Equity and Brand Positioning

Designing the Brand Experience

- * Brand Identity
- * Brand Experience

Strategic Brand Management

- * Brand Value Proposition
- * Brand Architecture and Brand Extensions

Learning outcomes

After completing the course, the student understands the importance of branding and brand experience as part of modern business and knows how to develop a brand experience. The student can justify brand management actions and understands the strategic significance of brands for organizations.

Official course record: [BO00BE67](#)

AY00BE68 | Brand Marketing MOOC (OPEN UNI)

2 ECTS | Marketing | Basic Studies | Finnish

Person in charge: Salla Saraniemi

Content

The Basics of Brand Marketing

- * The Evolution of Brands in Practice and Research
- * Brand Equity and Brand Positioning

Designing the Brand Experience

- * Brand Identity
- * Brand Experience

Strategic Brand Management

- * Brand Value Proposition
- * Brand Architecture and Brand Extensions

Learning outcomes

After completing the course, the student understands the importance of branding and brand experience as part of modern business and knows how to develop a brand experience. The student can justify brand management actions and understands the strategic significance of brands for organizations.

Official course record: [AY00BE68](#)

724816P | Building Business Through Creativity and Collaboration

5 ECTS | Entrepreneurship | Basic Studies | English

Person in charge: Julius Gomes

Content

Entrepreneurs develop activities that aim to challenge the status quo, break rules and subvert systems. Furthermore conflicts, emotional strains and uncertainties are often part of entrepreneurship. The course utilizes design approach, methods, processes, and tools to create new business.

Learning outcomes

During the course the student will explore entrepreneurship from the perspective of creativity. The students are challenged to question mainstream values, assumptions taken for granted, and ways of doing things. The course gives the student tools that are needed in developing new business models and solutions that can shift paradigms.

Upon completion of the course, the student will:

- develop entrepreneurial leadership
- increase abilities to build new inspiring visions
- master agile methods of creation to deal with uncertainty and risks
- leverage failure to increase creativity and resilience

Official course record: 724816P

724812P | Building Change Through Entrepreneurship

5 ECTS | Entrepreneurship | Basic Studies | English

Person in charge: Raushan Aman

Content

This course focuses on entrepreneurship, where the students are introduced to key aspects of starting a business in a step-by-step manner, along with offering specific insights to practicalities at each stage. The course covers the following themes via lectures slides, audio insights, and student self-learning by reading relevant materials in a systematic manner.

Introduction to Entrepreneurship
Recognizing Opportunities and Generating Ideas
Feasibility Analysis
Developing an Effective Business Model
Building a New Venture Team
Sales and Personal Selling
Dealing with Competition
Assessing New Venture's Financial Strength and Getting funding
Writing a Business Plan and Entrepreneurs' pitching
Preparing for and Evaluating Challenges of Growth

Learning outcomes

After the course completion, the students should:

1. Have basic knowledge about start-ups and new business creation
2. Have the ability to find and utilize the information for new business creation
3. Have the knowledge of how to analyze own business-case
4. Have the knowledge of how to plan a new start-up
5. Have the ability to present own business-case

Learning outcomes:

- (1) understand the key terms, concepts and processes of entrepreneurship,
- (2) are able to analyze the feasibility and viability of a business opportunity,
- (3) know how to create a start-up,
- (4) understand the elements of marketing of a start-up,
- (5) know how to build a team and lead a start-up and
- (6) are able to reflect on the ethical and social impact of entrepreneurship.

Official course record: 724812P

BO00AR22 | Business Ethics

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Jose Garcia-Rosell Eskenazi

Content

The course is designed to introduce students to business ethics and moral philosophy as a crucial aspect of contemporary business. Throughout the course, students learn to apply normative and descriptive ethical theories to practical situations in management and marketing. By doing so, the course provides students with frameworks for understanding and evaluating moral dilemmas and guiding ethical decision-making. The course also offers insights into business ethics management tools (e.g. code of conduct, whistleblowing) and current ethical discussions (e.g. AI ethics, animal ethics, labor and human rights).

Learning outcomes

Upon completion of this course, the student is expected to be able to:

- understand the role of ethics and moral philosophy in influencing business practices and decision-making across diverse organizational functions.
- Explain the relationship between ethics, the law, and the ideas of sustainability and responsible business
- recognize and critically evaluate ethical issues within a global business context, considering multiple perspectives and potential solutions.
- Apply critical thinking through the application of ethical frameworks to real-world business cases in management and marketing.
- critically assess the significance of business ethics in contemporary society, focusing on its implications for the well-being of people, nature, animals, and human flourishing.

In terms of generic skills, after completing the course, the student:

- is able to engage with ethical debates and the course material helps students strengthen analytical and critical thinking skills, which they can use to address challenges, find compromises, and develop innovative knowledge.
- understand the role of ethical thinking, moral values, virtues, compassion, and empathy in promoting human well-being and fostering a more humane professional identity.
- has developed an understanding of how ethics contribute to different ways of thinking and to diverse approaches to framing sustainability, increasing the capacity to work in international operating environments where values may conflict.
- is able to recognize the connection between ethics and sustainability, equipping them with the moral understanding needed to engage in social debates and ethical decision-making.
- has developed communication skills and the ability to give and receive constructive feedback. The student is able to critically evaluate the impact of digital technologies and AI on their professional lives and on society more broadly.

Official course record: [BO00AR22](#)

721469S | Business Marketing in Networks

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Hanna Komulainen

Content

The course includes the following main themes: 1) Introduction to network thinking and key concepts, 2) Business network management and strategic nets, 3) Value co-creation in business relationships, 4) Key account management and relationship portfolios, 5) Sustainability and resilience in business networks, 6) B2B relationships and networks in international context, 7) Sources of conflicts and conflict resolution in business networks, 8) Social capital and its meaning in networks.

Learning outcomes

Upon completing the course, students will be proficient in defining, understanding, and assessing various theoretical approaches to business marketing within networks. They will be able to articulate the significance of different types of networks in the global business landscape and effectively coordinate these networks in alignment with the strategic goals of the organizations. Students can critically evaluate and apply diverse network discourse concepts to the global business environment. Students can analyse the underlying logic of different types of strategic nets, understand value co-creation between organizations, and recognize the importance of sustainability and resilience in business networks. Having completed the course, they are also familiar with key account management, relationship portfolios and sources of conflict and conflict resolution strategies. Overall, students will be able to view and evaluate B2B relationships from various perspectives and are capable to assess and argue the relevance and usefulness of different B2B marketing theories. In the independent study period, the students develop their self-management skills and their own competence in a goal-oriented manner. In the multicultural group works the students cooperate with people from different backgrounds, enrich their communication, interaction and language skills, and develop their own professional identity. Furthermore, students advance their creative thinking and problem-solving skills in addressing practical business problems.

In terms of generic skills, after completing the course, the student:

- is able to analytically examine and interpret complex B2B network phenomena, critically evaluate and compare different theoretical perspectives, and creatively address practical business problems.
- has developed time- and self-management skills and the ability to take responsibility for one's own actions and well-being.
- is able to work flexibly and efficiently in multicultural teams and has developed diverse language skills.
- is capable of responsible decision-making and adhering to good research practices.
- is able to communicate, cooperate and work in groups.

Official course record: [7214695](#)

721027S | Capstone Project I

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Timo Koivumäki

Content

The course is a project carried out to solve given analytics problems. Student teams are established to plan for and execute the project, as well as to evaluate and reflect the results. The project is divided to two consecutive course parts.

Learning outcomes

Upon completion of this intensive course the student is able to 1) understand how analytics can be applied in solving business and organizational problems and 2) is able to define ways to implement analytics in business and organizational development for internal and external needs.

The development of the common generic skills of the University of Oulu are at the core of the Capstone project course. After completing the course, the students are able to think analytically, critically, and creatively, and use strong problem solving and argumentation skills in solving organizational analytics problems. They can actively cultivate well being, self management, and time-management in a goal-oriented manner, and can navigate uncertainty with resilience. They can also guide others through feedback and leadership. They collaborate effectively and inclusively in international and multicultural environments. They can apply and evaluate disciplinary and cross disciplinary methods and state-of-the-art analytics technologies and tools, integrate expertise from multiple fields, and include sustainability and ethical considerations into analytics. As experts, they can communicate clearly to varied audiences.

Official course record: [721027S](#)

721028S | Capstone Project II

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Timo Koivumäki

Content

The course is a project carried out to solve given analytics problems. Student teams are established to plan for and execute the project, as well as to evaluate and reflect the results. The project is divided to two consecutive course parts.

Learning outcomes

Upon completion of this intensive course the student is able to 1) understand how analytics can be applied in solving business and organizational problems and 2) is able to define ways to implement analytics in business and organizational development for internal and external needs.

The development of the common generic skills of the University of Oulu are at the core of the Capstone project course. After completing the course, the students are able to think analytically, critically, and creatively, and use strong problem solving and argumentation skills in solving organizational analytics problems. They can actively cultivate well being, self management, and time-management in a goal-oriented manner, and can navigate uncertainty with resilience. They can also guide others through feedback and leadership. They collaborate effectively and inclusively in international and multicultural environments. They can apply and evaluate disciplinary and cross disciplinary methods and state-of-the-art analytics technologies and tools, integrate expertise from multiple fields, and include sustainability and ethical considerations into analytics. As experts, they can communicate clearly to varied audiences.

[Official course record: 721028S](#)

724102A | Company Project

5 ECTS | Economics and Business Administration | Intermediate Studies | Finnish

Person in charge: Outi Keränen

Content

In the course, student groups are tasked with a work-life oriented assignment based on a challenge faced by a commissioning organization. This assignment is conducted in a structured project-based format. The course covers the principles of project management and introduces project management methods and software required for planning, implementing, monitoring, and reporting of a project. The main themes of the course include setting project objectives, breaking down and scheduling project tasks, assessing project risks, defining roles within the project organization, and managing costs and quality.

For the individual assignment, the student participates as an official member of a project team in a development project organized by a selected organization (for example, a workplace, internship site, or another similar setting). The individual assignment can be completed, for example, by participating in a Demola project.

Learning outcomes

Upon completion of the course, the student will be able to plan and organize a work-life-oriented development project. The student will be able to explain the principles of project management, describe different approaches to project management, and utilize project management methods and software for planning, implementing, monitoring, and reporting a project. Additionally, the student will be able to present and report on the different stages of a project both orally and in writing, and work in a project team with distinct roles. The main result of the course is that students present a solution to a challenge posed by a firm. The development project conducted during the course enhances the students' analytical, critical, and creative thinking skills as well as communication, interaction, and digital skills.

[Official course record: 724102A](#)

BO00AL53 | Company Project

5 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Outi Keränen

Content

In the course, student groups are tasked with a work-life oriented assignment based on a challenge faced by a commissioning organization. This assignment is conducted in a structured project-based format. The course covers the principles of project management and introduces project management methods and software required for planning, implementing, monitoring, and reporting of a project. The main themes of the course include setting project objectives, breaking down and scheduling project tasks, assessing project risks, defining roles within the project organization, and managing costs and quality.

For the individual assignment, the student participates as an official member of a project team in a development project organized by a selected organization (for example, a workplace, internship site, or another similar setting). The individual assignment can be completed, for example, by participating in a Demola project.

Learning outcomes

Upon completion of the course, the student will be able to plan and organize a work-life-oriented development project. The student will be able to explain the principles of project management, describe different approaches to project management, and utilize project management methods and software for planning, implementing, monitoring, and reporting a project. Additionally, the student will be able to present and report on the different stages of a project both orally and in writing, and work in a project team with distinct roles. The main result of the course is that students present a solution to a challenge posed by a firm. The development project conducted during the course enhances the students' analytical, critical, and creative thinking skills as well as communication, interaction, and digital skills.

Official course record: [BO00AL53](#)

BO00AW57 | Competitive advantage through customer development

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Matti Muhos

Content

The starting point of customer development is to get paying customers to test the company's business idea, products and services as soon as possible. Products or services are developed from the beginning from the customer's point of view. Successful customer development gives the customer the experience of ownership, thereby binding them to become a customer of the company. During the course, you learn to (1) find a customer, (2) verify a customer, (3) build a customer relationship and (4) build a company around the customer, and (5) understand the role of agile development as part of customer development. The student gets an overview of the theory, process and practices of customer development as well as tools for applying customer development.

Learning outcomes

After performing the study module successfully student:

- * adopts the central role of the customer in business operations
- * understands and is able to describe the customer development process and its key elements
- * knows how to apply the key principles and tools of customer development in practice in different operating environments

Official course record: [BO00AW57](#)

AY00AU52 | Competitive advantage through customer development (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Matti Muhos

Content

The starting point of customer development is to get paying customers to test the company's business idea, products and services as soon as possible. Products or services are developed from the beginning from the customer's point of view. Successful customer development gives the customer the experience of ownership, thereby binding them to become a customer of the company. During the course, you learn to (1) find a customer, (2) verify a customer, (3) build a customer relationship and (4) build a company around the customer, and (5) understand the role of agile development as part of customer development. The student gets an overview of the theory, process and practices of customer development as well as tools for applying customer development.

Learning outcomes

After performing the study module successfully student:

- * adopts the central role of the customer in business operations
- * understands and is able to describe the customer development process and its key elements
- * knows how to apply the key principles and tools of customer development in practice in different operating environments

[Official course record: AY00AU52](#)

721628A | Consumption Taxes

5 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

1. Types of consumption taxes and the current legal regulations relating to them.
2. Taxation procedure and the legal protection system for taxation.
3. International connections of the Finnish consumption tax system.

Learning outcomes

After completing the course, the student:

- understand the role of value added tax and other consumption taxes in the Finnish tax system
- knows the key concepts, principles and general principles of consumption tax law
- manages the key content of VAT regulation and can describe the basics of other consumption taxes
- knows the European tax legal bases of value added tax and other consumption taxes
- can explain the procedure to be followed in the delivery of value added tax and the legal remedies in tax law
- identify VAT legal problems from a practical case, find the relevant provisions of the VAT Act and know how to apply them to the case.

[Official course record: 721628A](#)

BO00BC25 | Contemporary Issues in International Business Management

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Lauri Haapanen, Tuija Mainela

Content

The course comprises a series of lectures in which researchers from the Department of Management and International Business present their current research topics. These lectures examine how major global events and developments since the 2020s have influenced contemporary research in the field.

Learning outcomes

Upon completion of the course, students will be able to understand the impact of global events and developments—including the COVID-19 pandemic, Russia's invasion of Ukraine, crises in the Middle East, political shifts in Western governments, and advances in artificial intelligence—on the international business management research.

Upon successful completion of the course, students will be able to:

1. Demonstrate a critical and advanced understanding of major global events and developments since the 2020s and their implications for international business management research.
2. Critically evaluate how recent global events and developments have influenced theoretical, methodological, and empirical approaches in international business management.
3. Synthesize and analyze multiple research and global perspectives to develop well-structured, evidence-based arguments addressing contemporary international business challenges.

The course supports students' awareness of and engagement with the University of Oulu's generic skills, including analytical, critical and creative thinking; international and multicultural competence; sustainability, responsibility and ethics; multidisciplinary and interdisciplinary skills; as well as communication, interaction and digital skills.

Official course record: [BO00BC25](#)

BO00AJ77 | Contemporary issues in the Nordic management

5 ECTS | International Business Management | Basic Studies | English

Person in charge: Eduardo Acosta Llano

Content

The aim is to increase the student's understanding of management implementations in different business and other Nordic organizations. Aim is to analyze the business world management operations based on different theoretical frameworks

Learning outcomes

This course provides students an exposure to the skills necessary to manage an organization in today's rapidly changing market environment. The course will explore the general history and theory of the field of management and best Management Practices in business fields in Nordics

After reviewing the theories and foundations of the management field, students will investigate and discuss the changes and challenges in today's Nordic business. A variety of crucial management skills will be addressed in dialog with senior managers in different companies and organizations.

Generic Skills and Competences

After completing the course, students will have developed key generic skills aligned with the University of Oulu framework. In particular, the course strengthens analytical, critical, and creative thinking, enabling students to critically evaluate knowledge in their own field and apply it to the analysis of complex and unpredictable global challenges.

Students will enhance their ability to recognize cultural diversity, question stereotypes, and act openly in international and multicultural contexts. The course also develops sustainability competence, including understanding the social, ecological, economic, and cultural dimensions of sustainability, as well as the role of the UN Sustainable Development Goals (SDGs).

In addition, students will strengthen their communication, interaction, and digital skills, including clear oral and written communication to diverse audiences, constructive collaboration and feedback, and the appropriate, safe, and responsible use of digital and AI applications relevant to their studies.

Official course record: [BO00AJ77](#)

724610P | Contract and Company Law

5 ECTS | Corporate Law | Basic Studies | Finnish

Person in charge: Markku Pulkkinen

Content

The course provides an overview of the general doctrines of contract law and the different types of contracts. The "meeting of minds" in negotiations. The main content is the role of contracts in business and what special risks should be limited and avoided. The most common forms of business organizations and forms of business activity.

Learning outcomes

The course gives readiness to cope with different types of agreements. The student should be able to explain the origins of contracts and give an overview of the obligation commercial law and understand different types of contracts. To acquaint students with the law relating to the most common forms of business organizations especially companies and other partnerships.

Official course record: [724610P](#)

AY724610P | Contract and Company Law (OPEN UNI)

5 ECTS | Corporate Law | Basic Studies | Finnish

Person in charge: Markku Pulkkinen

Content

The "meeting of minds" in negotiations. The main content is the role contracts in business and what special risks should be limited and avoid. Common forms of business organizations.

Learning outcomes

The course gives readiness to cope with different types of agreements. The student should be able to explain the origins of contracts and give an overview of the obligation commercial law and understand different types of contracts. To acquaint students with the law relating to the most common forms of business organizations especially companies and other partnerships.

Official course record: [AY724610P](#)

721963S | Corporate Finance

6 ECTS | Finance | Advanced Studies | English

Person in charge: Markku Vieru

Content

Signaling theory, agency theory and agency costs, behavioral traits related to corporate finance, optimal capital structure, dividend policy, mergers and acquisitions.

Learning outcomes

Upon completion of the course, the student understands the key concepts of corporate finance. The student is able to analyze the capital structure and payout decisions, motivations behind mergers and acquisitions, and the effects of conflicts of interest between different corporate stakeholders on corporate financial decision making. Both normative and positive perspectives are used.

Official course record: [721963S](#)

721128S | Corporate Governance

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Juha-Pekka Kallunki

Content

Lectures, case discussions and presentations, and videos simulating governance-related decisions.

Learning outcomes

After passing the course, students are familiar with the agency theory and its various research and practical implications. They are also familiar with the elements of the governance system of the firm, are able to recognize the warning signs of the potential collapse of the governance system, can assess the features of different executive incentive system, and are able to recognize situations of likely accounting fraud. Students can act responsibly in difficult situations of being asked to act dishonestly. They are familiar with the practices of societally and environmentally sustainable business conduct and able to act professionally in teams, to apply analytical and critical thinking skills, and to analyze arguments and to argue appropriately both in written and oral form. Finally, students are able to promote constructive cooperation with people from different backgrounds, Finally, students able to communicate as an expert in a way suitable for the target audience in a foreign language.

Official course record: [721128S](#)

721134A | Cost Management Systems

6 ECTS | Accounting | Intermediate Studies | English, Finnish

Person in charge: Marjo Väisänen

Content

The course focuses on relevant costs for decision making and selecting suitable cost accounting systems in different circumstances (target costing, life-cycle costing, Kaizen costing, Lean). Understanding the role of accounting information in management control and the use of ERP systems in business processes.

Learning outcomes

After completing the course, the student is able to recognize the types of calculations used in various decision-making situations, and understand various business processes and operations, and connections between them. S/he can also evaluate how the management control of organizations rests upon its technological infrastructure, such as ERP systems.

Official course record: 721134A

721632A | Criminal Law

5 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content [Finnish source]

Talousrikollisuus

- Yleisellä tasolla talousrikoksilla tarkoitetaan yrityksen, julkishallinnon tai muun yhteisön toiminnan yhteydessä tai niitä hyväksi käyttäen tapahtuvaa, huomattavaan välittömään tai välilliseen taloudelliseen hyötyyn tähtäävää rangaistavaa tekoa tai laiminlyöntiä.
- Myös virka- ja luottamusasemarikokset sekä korruptio, osa petosrikollisuudesta, julkisiin avustuksiin kohdistuvat rikokset, arvopaperimarkkinarikokset ja rahanpesu, yritysturvallisuutta vaarantavat rikokset sekä julkisen rekisterin tai tiedon luotettavuutta vastaan tehdyt rikokset on luettu talousrikoksiksi.
- Talousrikokset eivät ole määriteltävissä täsmällisesti, mutta yleensä...
- ...ne ovat luonteeltaan rikoslakirikoksia
- ...niistä voi seurata vankeutta
- ...niitä koskee rikosoikeudellinen laillisuusperiaate
- ...niihin sisältyy usein vaikkakaan ei aina perusmuoto ja törkeä sekä lievä tekomuoto

Learning outcomes

The student understands what financial crimes are.

The student masters the specific features of financial crimes.

The student is aware of the grounds on which a person can be held criminally liable and what types of actions can result in liability in financial crimes.

The student identifies cases in which there is reason to suspect financial crimes.

Official course record: 721632A

693398P | Cultures and Organizations

5 ECTS | International Business Communication | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

Want to deepen your understanding of the impact of different cultures on organisations and work communities? This course introduces you to how cultural differences, values and norms affect the way organisations operate, manage and work together.

Key content: Definitions of culture and organizational culture. The influence of culture in a workplace. Analyzing a variety communication situations.

Learning outcomes

Students understand the influence of (organisational) culture on human behaviour and the interpretation of behaviour. Students will be able to identify and analyse cultural differences in different communication situations. Identify and analyse the characteristics of a multicultural workplace.

Official course record: [693398P](#)

BO00BC83 | Current Issues in Micro-entrepreneurship studies MOOC

1 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Laura Veikkola

Content

Topical issues in micro-entrepreneurship identified by the teacher.

Learning outcomes

After completing the course, students will know what is currently being researched in the field of micro-entrepreneurship and will gain an understanding of current research topics in growth management and understand the importance of entrepreneurial well-being and resources as part of business success. In addition, students will identify the main influencing factors in the micro-entrepreneurship environment and networks.

The objective of the course can also be any other current research topic in micro-entrepreneurship defined by the teacher.

Official course record: [BO00BC83](#)

AY00AN01 | Current Issues in Micro-entrepreneurship studies MOOC (OPEN UNI)

2 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Martti Saarela, Laura Veikkola

Content

In this course, you will quickly and easily gain an understanding of the latest findings of small business research themes and how they affect society and business life. The objective of the course can also be any other current research topic in micro-entrepreneurship defined by the teacher.

Learning outcomes

After completing the course, the student

- * knows what is currently being researched in the field of micro-entrepreneurship
- * understands the impact of megatrends on business and his/her own life
- * gains an understanding of current research topics in growth management and understand the importance of entrepreneurial well-being and resources as part of business success
- * recognizes the main influencing factors in the micro-entrepreneurship environment and networks

Official course record: [AY00AN01](#)

AY00BC85 | Current Issues in Micro-entrepreneurship studies MOOC (OPEN UNI)

1 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Laura Veikkola

Content

Topical issues in micro-entrepreneurship identified by the teacher.

Learning outcomes

After completing the course, students will know what is currently being researched in the field of micro-entrepreneurship and understand the impact of megatrends on business and their own lives. Students will gain an understanding of current research topics in growth management and understand the importance of entrepreneurial well-being and resources as part of business success. In addition, students will identify the main influencing factors in the micro-entrepreneurship environment and networks.

The objective of the course can also be any other current research topic in micro-entrepreneurship defined by the teacher.

Official course record: AY00BC85

721024S | Customer Behaviour Analysis

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Timo Koivumäki

Content

The course addresses customer analysis, including consumers and business customers. The analytics viewpoint to be taken is based on the patterns and processes of customer behavior, including its evaluation and prediction in dynamic, digital environments.

Learning outcomes

Upon completion of the course the student is able to 1) Analyze and evaluate current developments in customer behavior in digital environments, 2) Assess current models in predicting the customer purchase behavior, and 3) Analyze patterns and processes of customer behavior in the contemporary and international business context.

The common generic skills of the University of Oulu are emphasized during the course. After completing the course, the students are able to think analytically, critically, and creatively, and use strong problem solving and argumentation skills in solving organizational analytics problems. They can actively cultivate well being, self management, and time-management in a goal-oriented manner, and can navigate uncertainty with resilience. They can also guide others through feedback and leadership. They collaborate effectively and inclusively in international and multicultural environments. They can apply and evaluate disciplinary and cross disciplinary methods and state-of-the-art analytics technologies and tools, integrate expertise from multiple fields, and include sustainability and ethical considerations into analytics. As experts, they can communicate clearly to varied audiences.

Official course record: 721024S

BO00BB78 | Customer-Driven Service Innovation

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Eeva-Liisa Oikarinen

Content

The course introduces contemporary theories, concepts and tools for understanding and developing customer-driven and technology-enabled services. Core frameworks such as service-dominant logic, customer-dominant logic and service design are covered, alongside approaches that emphasize human-technology interaction and the evolution of AI-supported service processes. Students explore how intelligent systems and data-driven insights reshape service experiences, value creation and customer journeys within modern service economies. Contemporary themes in service marketing and management are discussed, including ethical and responsible AI in services, digital and hybrid service environments, transformative service- and consumer research, and the use of biomarketing to better understand conscious and unconscious customer responses. Both B2B, B2C and human-to-human perspectives are applied, emphasizing interdisciplinary, sustainable and future-oriented approaches to service marketing, service innovation and service development within business networks and service ecosystems.

Learning outcomes

Upon completion of this course, students will learn how contemporary and future technology-based customer-driven services can be understood and designed to increase wellbeing and sustainable customer behavior. They can compare and assess different service marketing theories applicable for understanding future technology-based services, AI-human service interactions and AI companionships. After this course, students get current understanding of how AI will shape experiences, innovations, and value creation in service context. They apply selected service theories and innovative service design methods to develop sustainable, customer-centric service solutions for local and global strategic marketing. Students also examine and evaluate critically how biomarketing and physiological data-driven approach can support the analysis and development of human-centered services. After passing the course, students can evaluate and argue for the relevance and usefulness of the service theories and service design principles while approaching sustainable service problems.

In terms of generic skills, after completing the course, the student:

Analytical, critical and creative thinking skills:

- Is able to apply creative thinking and problem solving in their service work to develop new knowledge and new procedures.
- Is able to analyse arguments and argue appropriately.

Well-being and self-development skills:

- Knows how to promote their well-being, develop their self management skills and build their professional identity, and maintain their own competence in a goal-oriented manner.
- Knows how to promote community and interaction to support well-being.

International and multicultural skills:

- Is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.

Sustainability, responsibility and ethics skills:

- Is able to solve ethical questions in customer-driven services with sound reasoning and justify their actions ethically.

Communication, interaction and digital skills:

- Is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks.

Is able to provide constructive feedback, guidance and development suggestions to others.

- Is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society.

Official course record: BO00BB78

721022S | Data and Decision Making

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Rashid Sadeghian Dehkordi

Content

The course gives an overview of data-based decision making in an organizational and network-driven context, addressing both key organizational functions, stakeholders, resources and transactions. External market-driven needs regarding business strategy, business model and earning logic are included, as well as how customer, supplier and competitor data can be utilized. An overview of the key business processes and support systems is given, from the viewpoint of business planning, execution and improvement. The needs of small and medium-size companies, public service organizations and community-based business settings are also brought up.

Learning outcomes

Upon completion of the course, students are introduced to the science of business analytics and are able to analyze data found in the digital space. The students are provided with business and managerial insights into the foundation needed to apply data analytics to real-world business challenges.

The development of the common generic skills of the University of Oulu is also integrated into the course. After completing the course, students are able to think analytically, critically, and creatively when analyzing data and addressing business problems. They can recognize and consider international and multicultural perspectives in data-driven business decision-making. They can apply knowledge and perspectives from different disciplines to understand and address business challenges. They can also use relevant digital tools to analyze and interpret data and communicate data-driven insights clearly and effectively to different audiences.

Official course record: [7210225](#)

BO00BA45 | Data and Decision Making in Smart Cities

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Marika Iivari

Content

The course gives an overview of data-driven decision making in an organizational and network-driven context, addressing key organizational functions, stakeholders, resources and transactions. An overview of the key smart city processes and support systems is given, from the viewpoint of data-driven planning, execution and improvement for knowledge management and decision making. The needs of smart city stakeholders, including city organization, small and medium-size companies, public service organizations and community-based settings are also brought up.

Learning outcomes

Learning outcomes

After successful completion of the module, students will be able to:

- * understand what the science of data-driven decision making and analytics means in the urban context
- * understand how data transforms into information and knowledge through interaction
- * explain the design process of data-driven services both at systemic and citizen-centric points of view
- * apply data-driven decision making in smart city context

Official course record: [BO00BA45](#)

721565S | Design Driven Innovation

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Sakari Sipola

Content

The course introduces the design thinking process and other innovation frameworks and theories, with an emphasis on their practical application. The course examines the principles of human-centered innovation and the managerial and cultural factors that enable change and innovation in both emerging and established organizations.

Learning outcomes

After completing the course, students are able to integrate design thinking and related theories into professional practice, explain their value in a dynamic business environment, apply design thinking tools in service and product development, and contribute effectively to innovation teams through collaborative and analytical work.

BO00AJ49 | Digital Platforms and Analytics

5 ECTS | Business Analytics (Economics and Business Administration) | Intermediate Studies | English

Person in charge: Ivy Shiue

Content

The course introduces data analytics tools by categories, BI and AI dashboards, and establishes authority in business analytics.

It focuses on analyzing and briefing customer engagement in digital environments, benchmarking competitors & industry, and evaluating & improving the performance of digital channels. Students learn to recognize, reuse, and reinterpret KPIs across different digital platforms.

The generic skills in this course: communication, interaction and digital skills & responsibility and ethical skills.

Learning outcomes

Value Proposition (Defining and creating value)

- Understand key concepts and categories of digital analytics tools.
- Analyze customer engagement and behavior in digital commerce environments.
- Design and implement user-friendly personalization to enhance customer experience.
- Detect and prevent fraud through analytics methods.

Value Capture (Extracting value efficiently)

- Design and optimize marketing strategies based on data insights.- Apply SEO, CRM, data visualization, etc. techniques to improve digital marketing performance.
- Recognize how analytics supports revenue generation, customer value creation, and competitive advantage.
- Interpret customer and platform data to support business decision-making and performance optimization.

Value Delivery (Delivering value effectively through processes and channels)

- Use major analytics platforms to collect and interpret data.
- Interpret analytics data responsibly, considering ethical, sustainability, and privacy issues.
- Communicate data-driven insights effectively to support business decision-making.

Value Positioning (Building competitive advantage and market position)

- Prepare for and complete professional analytics certifications to increase employability and professional credibility.

Official course record: BO00AJ49

BO00AU08 | Digital Platforms and Analytics

5 ECTS | Business Analytics (Economics and Business Administration) | Intermediate Studies | English

Person in charge: Ivy Shiue

Content

Students develop the ability to learn, compare, select, and apply digital platforms, analytics tools, and AI-assisted analytical approaches to support evidence-based business decision-making across different organisational contexts.

The course introduces data analytics tools by categories, including business intelligence (BI) and AI dashboards, and establishes a systematic foundation in business analytics. It focuses on analysing and briefing customer engagement in digital environments, benchmarking competitors and industries, and evaluating and improving the performance of digital channels. Students learn to recognise, reuse, and reinterpret key performance indicators (KPIs) across different digital platforms to generate actionable business insights.

The generic skills developed in this course include communication and interaction skills, digital competence, responsibility, and ethical decision-making.

Learning outcomes

After completing the course, students will be able to:

1. Value Proposition – Identify and classify digital platforms, analytics tools, and AI-assisted analytical solutions according to their business purposes, value propositions, and analytical functions.
2. Value Capture – Compare and evaluate analytical approaches based on business requirements, available data, key performance indicators (KPIs), and their ability to create and capture business value.
3. Value Delivery – Select and apply appropriate analytics platforms, AI-assisted analytical approaches, and performance metrics to support evidence-based business decision-making and deliver business value.
4. Value Positioning – Interpret analytical results, communicate business insights, and justify strategic recommendations for different organisational contexts and stakeholders.

Official course record: [BO00AU08](#)

724205A | Distribution and Retail Management

5 ECTS | Marketing | Intermediate Studies | Finnish

Person in charge: Timo Pohjosenperä

Content

The course examines structural, functional, and social factors and models within distribution channels. Participants will explore logistics functions, coordination, channel member roles and business models in retail (e.g., franchising, cooperatives, e-commerce, multi-channel distribution). Functional interdependencies in distribution are also examined with illustrative numerical examples.

Learning outcomes

Upon completion of this course the student recognizes the functions, flows and processes in distribution channels and can define objectives for distribution from the perspective of both logistics and retail management. The student can assess the business models of retail management, understands the economic and social importance of retail and logistics in society, and how logistics decisions can affect the environmental impact of distribution channels. The student can identify interdependencies of distribution activities and can analyse their business impacts.

Official course record: [724205A](#)

724853A | Distribution and retail management

5 ECTS | Marketing | Intermediate Studies | Finnish

Person in charge: Timo Pohjosenperä

Content

The course examines structural, functional, and social factors and models within distribution channels. Participants will explore logistics functions, coordination, channel member roles and business models in retail (e.g., franchising, cooperatives, e-commerce, multi-channel distribution). Functional interdependencies in distribution are also examined with illustrative numerical examples.

Learning outcomes

Upon completion of this course the student recognizes the functions, flows and processes in distribution channels and can define objectives for distribution from the perspective of both logistics and retail management. The student can assess the business models of retail management, understands the economic and social importance of retail and logistics in society, and how logistics decisions can affect the environmental impact of distribution channels. The student can identify interdependencies of distribution activities and can analyse their business impacts.

Official course record: [724853A](#)

722090J | Doctoral thesis

0 ECTS | Marketing, Management, International Business, Accounting, Finance, Economics | Post-graduate Studies | Finnish, English

Person in charge: Pauliina Rautio

No description supplied in the collected record.

Official course record: [722090J](#)

BO00AZ29 | Economic Theory: Methods and Applications

6 ECTS | Economics | Advanced Studies | English

Person in charge: Mikko Puhakka

Content

General equilibrium theory, methods of continuous time models in economics, overlapping generations models, technological advance in economic growth.

Learning outcomes

To better understand economic theory.

Official course record: [BO00AZ29](#)

721073S | Empirical Research

6 ECTS | Finance | Advanced Studies | English

Person in charge: Asif Ruman

Content

Introduction to empirical research and basics of econometrics; information retrieval from the library's databases; analysis of a scientific empirical article; current research topics; academic writing and writing guidelines; data and available databases; financial analysis using Excel, R and Python.

Learning outcomes

Upon completion of the course, students understand the nature and the key elements of empirical research in Accounting/Economics/Finance, are familiar with the data gathering process, and are able to demonstrate competency in complying with academic writing guidelines. They are able to write a literature review on a selected topic and conduct basic empirical analyses using excel and one other programming language.

[Official course record: 7210735](#)

721025S | Enterprise Process Planning

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Hannu Kari

Content

The course involves data-based enterprise process planning needs, methods and tools. Access to and refinement of data to information available for the management and improvement of an organization's processes and their performance, using appropriate methods and systems, is addressed.

Learning outcomes

Upon completion of the course the students are able to combine, integrate, modify and rearrange different types of the data, and turn them to meaningful information to support analytical decision making. Students will also understand the most important business perspectives to cybersecurity. Further, students will be able to utilize ERP (Enterprise Process Planning) tools to select and optimize different business scenarios.

[Official course record: 721025S](#)

BO00AW56 | Entrepreneurial competencies and resilience

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Santeri Halonen

Content

In the course, you will learn what the resilience of an entrepreneur and a company is and how to strengthen it. The course includes theory and practical exercises. In the exercises of the course, theories of resilience are applied to one's own life, a company or a company under development.

You will learn to recognize the forces of change in the company's operating environment and develop the entrepreneur's future skills by making use of the change. After completing the course, the student understands the connection of resilience to successful business.

Learning outcomes

After completing the course, the student:

- * recognizes and understands the meaning and possibilities of resilience in business
- * can strengthen resilience to their own needs
- * masters the tools and the ability to anticipate various forces of change in the business environment

[Official course record: BO00AW56](#)

AY00AU51 | Entrepreneurial competencies and resilience (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Santeri Halonen

Content

The course includes theory and practical exercises. In the exercises of the course, theories of resilience are applied to one's own life, a company or a company under development.

You will learn to recognize the forces of change in the company's operating environment and develop the entrepreneur's future skills by making use of the change. After completing the course, the student understands the connection of resilience to successful business.

Learning outcomes

After completing the course, the student:

- * recognizes and understands the meaning and possibilities of resilience
- * can strengthen resilience to their own needs
- * masters the tools and the ability to anticipate various forces of change in the business environment

Official course record: [AY00AU51](#)

721564S | Entrepreneurial Leadership Coaching

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Vesa Puhakka

Content

This course examines entrepreneurial leadership in different contexts. The course offers approaches to entrepreneurial leadership and explores it through the interplay of theory and practice. Course readings cover entrepreneurial leadership, critical reflection, and holistic leadership theories. Students reflect entrepreneurial leadership mindset and capabilities in themselves and others.

Learning outcomes

The course enables students to deepen their knowledge about entrepreneurial leadership with real-life examples from different organizations. After completing this course, students can analyze practical entrepreneurial leadership issues and connect these issues with academic theories. Students understand the managerial implications of everyday leadership acts within different companies. Students also learn to apply critical reflection as a method to develop their own leadership skills.

Official course record: [721564S](#)

724811P | Entrepreneurship for Sustainability

5 ECTS | Entrepreneurship | Basic Studies | English

Person in charge: Raushan Aman

Content

The course outlines interdisciplinary skills and knowledge that foster the creation of a sustainable entrepreneurial mindset. These skills include problem solving, creativity, networking, communications, risk-taking and adaptability. Entrepreneurship is approached through its different forms and roles in various contexts of society, ecosystems, and businesses. The focus is on entrepreneurial mindsets, responsible business and what entrepreneurship requires from individuals and teams, especially from the “me/us as entrepreneur” standpoint. During the course, students familiarize themselves with the role of business and entrepreneurship in building sustainable societies aligned with the Sustainable Development Goals and thus enhance their sustainability, responsibility, and ethical skills in running a business.

Learning outcomes

After the course the students should:

Understand the roles of entrepreneurship in creating socially responsible change in society, know how to map and analyze alternative sustainable entrepreneurial business ideas based on individual strengths, values and the UN SDGs, know creative problem solving assessment methods, know how to communicate about entrepreneurial ideas.

Official course record: [724811P](#)

BO00AI27 | Entrepreneurship and Emerging Technologies

5 ECTS | Entrepreneurship | Basic Studies | English

Person in charge: Irina Atkova

Content

The course is structured into three parts: (I) Introduction, (II) Business Case Analysis Method, and (III) Selected Business Case Study. In the introductory part, students develop foundational knowledge of blockchain as a business enabler across multiple application domains. They also learn to analyze business environments as emerging ecosystems and to apply business modeling tools to articulate and evaluate business opportunities.

In the second part, students acquire and practice a systematic business case analysis method. In the final part, they apply this method by conducting an in-depth analysis of a selected blockchain-enabled business case, following a structured case study process and using ecosystem-based business modeling tools. The case analysis report includes a reflective component that allows students to demonstrate learning, critical thinking, and integration of course concepts.

Learning outcomes

Upon completion of the course, students will be able to apply disciplinary knowledge and analytical skills to real-life, blockchain-related business contexts. They will be able to identify, analyze, and evaluate blockchain-based business opportunities or problems and develop evidence-based solutions. Furthermore, students will demonstrate an understanding of blockchain as an emerging technology and apply entrepreneurial thinking, opportunity analysis, and problem-solving skills in practical decision-making situations.

Official course record: [BO00AI27](#)

BO00AR12 | Environmental and Energy Economics and Green Investments

6 ECTS | Economics | Advanced Studies | English

Person in charge: Maria Kopsakangas-Savolainen

Content

The course covers a broad range of issues including i) the concepts of market failure, externalities, public goods, and property rights, ii) the economic principles cost benefit analysis and environmental valuation, iii) the economic principles of pollution control and policy instruments (e.g., carbon trading, Pigouvian taxes, command-and-control, institutional approaches) to attain environmental targets, iv) an economic analysis of energy systems, incentives, and regulation for sustainable energy system, v) the role of consumers in demand response solutions, and vi) the fundamentals of socially and environmentally responsible investing, emphasizing the incorporation of social and environmental factors in investment decisions.

Learning outcomes

Upon successful completion of this course, the student should understand fundamentals of environmental and energy economics including the core principles and concepts that form the basis of these fields. The student will understand and learn real-world environmental and energy policy problems (e.g., climate change, biodiversity loss) and how these can be solved locally and globally. The student will learn the role of economics in environmental and energy issues and in formation of corresponding policy. The student will be able to express an informed view on the role and limitations of economic and other tools in providing guidance on environmental and energy issues and investments.

Official course record: [BO00AR12](#)

721631A | Environmental Law

10 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

1. Context, concepts and principles of environmental law
2. Dimensions of environmental law
3. Characteristics of environmental legal interpretation
4. Key legislation on environmental and natural resource law
5. Environmental legal control and regulatory means
6. Main features of EU environmental law

Learning outcomes

The student:

knows the content and meaning of key concepts and principles (general doctrines) in the field of law

- knows the special features of legal interpretation and decision-making in environmental law
- manages the key content of environmental and natural resource legislation
- knows how to apply environmental legislation and the principles of environmental law in concrete situations and resolve legal cases concerning the environment

Official course record: [721631A](#)

721623A | European Law

5 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

1. European legal tradition
2. The constitutional development of the European legal system,
3. Jurisdiction issues and system
4. The political and administrative institutions of the EU and their operation,
5. EU court system,
6. Constitutional, internal market and other jurisprudence.

Learning outcomes

The student especially masters:

- the foundations of the European modern tradition (legal ideology, values, effects, relationship to the international system),
- political and legal developments, the principles, basic concepts and goals of European law,
- the most important legislative changes and case law,
- connections and effects of European legal material on the legal system more generally.

BO00AL51 | Exchange Report

0 ECTS | Economics and Business Administration | Intermediate Studies | English

Person in charge: Anniina Rantakari

Learning outcomes

All students who have completed exchange studies must write in English a report of 3-5 pages reflecting upon their exchange experiences. Detailed instructions on the content and submission of the exchange report can be found on the website Recognition of prior learning at Oulu Business School. The exchange reflection is done regardless of the number of credits completed during the exchange.

Official course record: BO00AL51

BO00AM23 | Exchange Report (IBM)

0 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Lauri Haapanen

Learning outcomes

All students who have completed exchange studies must write in English a report of 3-5 pages reflecting upon their exchange experiences. Detailed instructions on the content and submission of the exchange report can be found on the website Recognition of prior learning at Oulu Business School. The exchange reflection is done regardless of the number of credits completed during the exchange.

During the exchange period, students are exposed to the University of Oulu's generic skills, particularly international and multicultural competence, communication and interaction skills, self-management and well-being skills, and analytical and critical thinking. The exchange provides opportunities to become familiar with operating in new academic, cultural and social environments.

Official course record: BO00AM23

724821A | Exercising Entrepreneurship

5 ECTS | Entrepreneurship | Intermediate Studies | English

Person in charge: Elina Hyrkäs

Content

The students work alone and in small groups to learn both general approaches and specific means of entrepreneurship, such as business analysis, planning and business model evaluation processes, market and customer management, branding and basic financial and other resources management. They get also used to gather and analyze relevant data, present and justify ideas and plans, and respond to external and internal feedback.

Learning outcomes

Upon completion of the course, the students create knowledge and competencies in an entrepreneurship context. They can recognize, understand and plan how to grasp business opportunities and solve business problems, and evaluate possible solutions. The students can improve their entrepreneurial, business environment analysis and business planning skills, as well as problem solving, communicating and presentation capabilities. They learn to carry out individual assignments, share the work and results with the international group and deal with feedback.

Official course record: 724821A

724108P | Financial Markets

5 ECTS | Finance | Basic Studies | Finnish

Person in charge: Petri Sahlström

Content

1) the role of financial markets and institutions in the economy, 2) main types of financial assets, their properties, and basics of pricing, 3) stock markets, bond markets, derivative markets, mutual funds, private equity

Learning outcomes

The course is an introduction to the role and functions of financial markets and institutions. Upon successful completion of the course, the student will be able to describe the basic structure and operational principles of financial markets and to identify different types of financial instruments and their characteristics.

Official course record: [724108P](#)

AY724108P | Financial Markets (OPEN UNI)

5 ECTS | Finance | Basic Studies | Finnish

Person in charge: Petri Sahlström

Content

1) the role of financial markets and institutions in the economy, 2) main types of financial assets, their properties, and basics of pricing, 3) stock markets, bond markets, markets for bank obligations, treasury securities markets, derivative markets, mutual funds, private equity

Learning outcomes

The course is an introduction to the role and functions of financial markets and institutions. Upon successful completion of the course, the student will be able to describe the basic structure and operational principles of financial markets and to identify different types of financial instruments and their characteristics.

Official course record: [AY724108P](#)

721960S | Financial Risk Management

6 ECTS | Finance | Advanced Studies | English

Person in charge: Petri Sahlström

Content

Forward contracts, futures contracts, options, swaps, derivatives pricing models

Learning outcomes

Upon completion of the course, the student knows how to use derivative securities in financial risk management. The student understands the pricing of derivatives and is able to use the main analytical and numerical techniques for that purpose. Students are also able to express their ideas analytically and effectively in written form.

Official course record: [721960S](#)

724203A | Financial Statement Analysis

5 ECTS | Accounting | Intermediate Studies | Finnish

Person in charge: Juha Huikari

Content

The content of the firm's income statement, balance sheet and cash flow statements, main principles of the financial statement analysis, adjustments of the income statement and balance sheets items, calculation and interpretation of financial ratios, cash flow-based statements, main signals and stages of the firm's bankruptcy, tools for analyzing the connections of the ratios.

Learning outcomes

After this course student knows the content of financial statements and understands the main accounting principles in constructing financial statements. In the course student learns the difference between accrual-based –and cash-based accounting. Student understands different stages of financial statement analysis and recognizes main adjustments of the income statement and balance sheet items. The student can calculate and interpret different financial ratios describing profitability, leverage and liquidity of the firm. After this course the student can calculate and interpret the most commonly used market-based ratios. The student knows the main principles for establishment of cash flow statement, knows the content of the cash flow statements and is able to analyze cash flow based ratios. The student understands how different financial ratios are associated and how this information can be applied in the management decisions. Based on the financial statement information, the student recognizes the main leading signals of the firm's financial distress. During the course we practice basic principles for doing the long- and short-term financial planning. The student is able independently to construct large written financial statement analysis and presentation of the target company.

Official course record: 724203A

721131A | Financial Statement and Tax Planning

6 ECTS | Accounting | Intermediate Studies | Finnish

Person in charge: Juha Huikari

Content

The course deals with the bookkeeping and tax planning in different financial statement situations in Finnish legal environment. During the course the integration of bookkeeping and taxation will be dealt with, the essential planning items of financial statements will be introduced and financial statement planning as a process will be examined. The course includes practical work of bookkeeping (FAS).

Learning outcomes

After the course completion the student will be able to recognize the main points of the Finnish corporate taxation and apply them as a part of financial statement planning. In addition, the student will be able to prepare a small-scale financial statement.

Official course record: 721131A

724111P | Finnish Economy and Economic Policy

5 ECTS | Economics | Basic Studies | Finnish

Person in charge: Jaakko Simonen

Content

The course provides an overview of the Finnish economy and economic history, its current state and future development. The course deals with the activities of the Finnish economy and development, such as globalization, economic growth, financial sustainability of public sector and general economic policy. Lectures will include the following themes

1. The Finnish economy from the late 1800s until today
2. Productivity and economic growth
3. Economic globalisation and Finland
4. Public economics and challenges of welfare state
5. Labour markets
6. Regional development and regional policy in Finland

Learning outcomes

After the course the student is capable of outlining the economic history of Finland, to describe the position of Finland in the global economy and to evaluate the challenges of the Finnish economy now and the future. In addition, the student can describe the main features of the different areas in the Finnish economy.

Generic Skills: Students will be able to identify complex and multidimensional phenomena within the national economy and critically evaluate the associated research evidence and statistical data in a constructive manner.

Official course record: [724111P](#)

AY724111P | Finnish Economy and Economic Policy (OPEN UNI)

5 ECTS | Economics | Basic Studies | Finnish

Person in charge: Mikko Vaaramo

Content

The course provides an overview of the Finnish economy and economic history, its current state and future development. The course deals with the activities of the Finnish economy and development, such as globalization, regional economy and general economic policy.

Lectures will include the following themes:

1. The long term development of Finnish economy
2. Productivity and economic growth
3. Globalisation and Finland
4. Public economics and challenges of welfare state
5. Labour markets and labour mobility
6. Fiscal policy and monetary policy

Learning outcomes

After the course the student is capable of outlining the economic history of Finland, to describe the position of Finland in the global economy and to evaluate the challenges of the Finnish economy now and the future. In addition, the student can describe the main features of the different areas in the Finnish economy.

Official course record: [AY724111P](#)

BO00AZ88 | From University to Entrepreneur MOOC

2 ECTS | Micro-entrepreneurship | Intermediate Studies | Finnish

Person in charge: Virpi Pietikäinen

Content

The course provides students with an understanding of the key principles of entrepreneurship and equips them with the skills to adopt an entrepreneurial attitude in working life. Students learn to identify the key success factors of a company and to understand the importance of finance, sales and marketing in business. The course also introduces them to identifying customer relationships and networking opportunities. Students learn to understand the importance of self-management and well-being as part of sustainable business operations. Responsible business and its importance in entrepreneurship is one of the themes of the course. The course is suitable for anyone who wants to understand the requirements of entrepreneurship and the opportunities it brings in working life.

Learning outcomes

After completing the course, the student will: *understand the requirements of entrepreneurship and the importance of an entrepreneurial attitude in working life *identify the most important areas of a company's success *understand the importance of financial, sales and marketing expertise in business *know the importance of identifying customer relationships, networks and self-management as part of business *identify the importance of areas of responsibility in entrepreneurship

Official course record: [BO00AZ88](#)

BO00BC56 | From University to Entrepreneur MOOC

2 ECTS | Micro-entrepreneurship | Intermediate Studies | Finnish

Person in charge: Laura Veikkola, Virpi Pietikäinen

Content

The course provides students with an understanding of the key principles of entrepreneurship and equips them with the ability to adopt an entrepreneurial mindset in working life. Students learn to identify the main success factors of a business.

Contents: 1) Highly educated professionals as entrepreneurs 2) Key principles of entrepreneurship 3) Core success factors of a company 4) Networking opportunities and practices 5) Basic financial mechanisms in business operations 6) The role of sales and marketing in business 7) Responsible business and its importance in entrepreneurship

Learning outcomes

After completing the course, the student:

- * understands the requirements of entrepreneurship and the importance of an entrepreneurial attitude in working life
- * identifies the key areas for a company's success
- * understands the importance of financial, sales, and marketing skills in business
- * knows the importance of identifying customers, networks, and self-management as part of business operations
- * Identifies the significance of the dimensions of responsibility in entrepreneurship

Official course record: [BO00BC56](#)

AY00BC84 | From University to Entrepreneur MOOC (OPEN UNI)

2 ECTS | Micro-entrepreneurship | Intermediate Studies | Finnish

Person in charge: Nimi päivittyy myöhemmin

Content

The course provides students with an understanding of the key principles of entrepreneurship and equips them with the ability to adopt an entrepreneurial mindset in working life. Students learn to identify the main success factors of a business.

Contents:

- *Highly educated professionals as entrepreneurs
- *Key principles of entrepreneurship
- *Core success factors of a company
- *Networking opportunities and practices
- *Basic financial mechanisms in business operations
- *The role of sales and marketing in business
- *Responsible business and its importance in entrepreneurship

Learning outcomes

After completing the course, the student 1) understands the requirements of entrepreneurship and the importance of an entrepreneurial attitude in working life, 2) identifies the key areas for a company's success, 3) understands the importance of financial, sales, and marketing skills in business, 4) knows the importance of identifying customers, networks, and self-management as part of business operations and 5) recognises the importance of different aspects of sustainability in entrepreneurship.

Official course record: [AY00BC84](#)

721138S | Fundamentals of Accounting

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Marjo Väisänen

Content

Fundamentals of management accounting: understanding cost accounting, cost concepts, different product costing methods, planning and budgetary control, and performance measurement. Fundamentals of financial accounting: double-entry bookkeeping, accrual accounting, matching principle, revenue recognition, and measurement and recognition of assets and liabilities. Preparation of financial statements: income statement, balance sheet, and cash flow statement.

Learning outcomes

After completing the course, the student is able to understand, analyze and prepare accounting information used in internal and external reporting.

Official course record: [721138S](#)

721352S | Fundamentals of Economics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Jaakko Simonen

Content

The basic concepts of consumer and firm theory, market equilibrium, market structures, economic growth, business cycles, monetary and fiscal policy

Learning outcomes

Upon completing the course, the student will be able to explain the main features of consumer and firm behavior. The student recognizes different market environments and their effect on optimal decision making. The student is able to use simple macroeconomic models to understand economic issues such as growth and business cycles. The student is also able to analyze the effects of different economic policies with simple economic models.

Generic skills: The student is able to apply:

- analytical and critical thinking to examine various phenomena in economics,
- is able to apply problem-solving skills to develop new knowledge.
- is able to argue appropriately and with justification about various phenomena in economics.

Official course record: [721352S](#)

721957S | Fundamentals of Finance

6 ECTS | Finance | Advanced Studies | English

Person in charge: Petri Sahlström

Content

Present values, Assets pricing, Interest rates, Fixed-income securities, Net present value and other investment criteria, Risk and return, CAPM, APT, Cost of capital.

Learning outcomes

Upon completion of the course, the student understands the basic concepts of finance and is capable of applying them in financial problem solving. Students are also able to express their ideas analytically and effectively in written form.

Official course record: [721957S](#)

724210A | Global Economics

5 ECTS | Economics | Intermediate Studies | English

Person in charge: Sanna Huikari

Content

Topics of the course include the basic concepts of international trade, core models of international trade, and new explanations for international trade. In addition, the course introduces issues of trade policy and international macroeconomics, particularly foreign exchange markets.

Learning outcomes

After passing the course the student is capable to explain the impact of international trade on the economy. In addition, the student can compare different instruments of trade policy and their welfare effects. The student also understands basic functioning of foreign exchange markets.

The student is able to critically analyze arguments related to international trade and identify the underlying economic assumptions and ethical implications behind trade policy decisions. The student can evaluate the explanatory power and limitations of core economic models.

he student can apply theoretical frameworks to analyze the welfare effects of unpredictable global shocks (e.g., trade wars).

Official course record: [724210A](#)

721070S | Globally Responsible Business

6 ECTS | International Business Management, Marketing, Accounting, Finance, Economics, Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Anne Keränen

Content

The course deals with the diversity of contemporary business issues related to sustainability and responsibility when operating in the global marketplace. Based on current responsible business concepts such as UN sustainable development goals students are introduced to theoretical and practical perspectives from the disciplines of accounting, economics, finance, management/international business, marketing and business analytics. Thus, students learn multidisciplinary approach to responsibility in business. In addition they learn to detect, analyze, and create different approaches of how to globally and locally achieve social and environmental goals in addition to economic objectives of a business.

Learning outcomes

Upon completion of the course, students are able to demonstrate detailed knowledge of responsible behaviors in global and local business from the viewpoint of their major discipline. The students are able to work in multidisciplinary groups and create a collective approach for uniting economic with socially and environmentally responsible bottom lines within a global business context. Students are also able to express their ideas in written and oral form and communicate them online.

[Official course record: 7210705](#)

724817P | Grasping and Developing Business Opportunities

5 ECTS | Entrepreneurship | Basic Studies | English

Person in charge: Mahmoud Mohamed, Sari Perätalo

Content

The course focuses on the basic concepts of entrepreneurship, developing business ideas, and exploring new ways of doing business in a fast-changing environment. The main concepts of the course are self-expertise, adaptability, and the integration of smart city technologies, platform economy principles, digitalization, AI, and team building. These elements are essential for future working life, enabling students to leverage cutting-edge technologies, innovative business models, and effective teamwork.

Learning outcomes

Students are familiar with basic business concepts and entrepreneurial behavior. On successful completion of the course, students understand the different forms of entrepreneurship, basic business processes, and discovering and creating different business opportunities. The course focuses especially on new business opportunities that emerge from technology, self-expertise, digital platforms, smart cities, the platform economy, digitalization, and artificial intelligence (AI). Additionally, students will develop skills in team building and collaboration, which are crucial for entrepreneurial success.

[Official course record: 724817P](#)

721136S | Group Accounting and Business Combinations

6 ECTS | Accounting | Advanced Studies | Finnish

Person in charge: Marjo Väisänen

Content

The course deepens the student's abilities of planning the financial statement. The basic elements of preparing the consolidated financial statements will be examined. In addition, the issues of business combinations and taxation will be discussed.

Learning outcomes

After the completion of the course the student will have the ability to interpret the basics and the systematic of group accounting and business combinations. The student will have the skills to prepare and interpret the consolidated financial statements.

BO00AW59 | Growth Management in Enterprises

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Martti Saarela

Content

The course offers a management perspective on the development and growth of a business as part of the basic micro-entrepreneurship curriculum. Moreover, it provides a broad perspective on the different aspects of entrepreneurship and business elements.

Students will gain an overview of the theory and tools of company growth and growth management. By the end of the course, they will recognize the role of management and be familiar with growth management areas such as financial and human resource management.

Learning outcomes

After performing the study module successfully, the student:

- *can describe the characteristics of business growth and growth management
- * know the growth stages of companies and the areas related to growth management
- * understand the basics of managing people in the context of business growth and change
- * can identify the most important economic aspects of growth management

Official course record: BO00AW59

AY00AW80 | Growth Management in Enterprises (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Martti Saarela

Content

Students will gain an overview of the theory and tools of company growth and growth management. By the end of the course, they will recognize the role of management and be familiar with growth management areas such as financial and human resource management.

Learning outcomes

After performing the study module successfully, the student:

- * can describe the characteristics of business growth and growth management
- * know the growth stages of companies and the areas related to growth management
- * understand the basics of managing people in the context of business growth and change
- * can identify the most important economic aspects of growth management

Official course record: AY00AW80

BO00AP65 | Health Economics

5-6 ECTS | Economics | Advanced Studies | English

Person in charge: Sanna Huikari

Content

Features of health economics, health over time around the world, health capital, health and socio-economic status, health behavior, behavioral health economics, direct and indirect costs of disease, valuing health, economic evaluation, economics of healthcare, equity.

Learning outcomes

The course is an introduction level course to the field of health economics. After completing the course, the student is familiar with the economic principles behind the demand and supply of health care, interpret empirical findings in health economics and the challenges faced by health care policy. The students will be able to understand the main economic theory and empirical research in key areas of health economics. The student can apply analytical thinking to understand how socioeconomic status and behavioral factors interact with health outcomes.

The student is able to analyze arguments in health policy debates by utilizing empirical evidence and economic theory.

Official course record: [BO00AP65](#)

HG00BB09 | Information Design

5 ECTS | International Business Communication | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

The goal of information design is to transform complex content into a form that is understandable and accessible to the target audience. In today's self-service society, information design is becoming increasingly important, as managing everyday matters requires the use of multiple digital service systems. The course introduces information design through practical exercises.

Learning outcomes

After completing the course, students:

- understand the importance of information design in contemporary society
- are familiar with the principles and methods of information design
- are able to evaluate the linguistic accessibility of different types of content
- can produce linguistically accessible, user-centered content based on source materials.

Official course record: [HG00BB09](#)

BO00BD71 | Innovative Entrepreneurship MOOC

2 ECTS | Entrepreneurship | English

Person in charge: Fan Wang

Content [Finnish source]

Verkkopohjainen videokoulutus

Luku 1: Johdatus yrittäjyyteen

Luku 2: Keskeiset osaamiset

Luku 3: Miten startup toimii?

Luku 4: Epäonnistumiset

Luku 5: Ideointi

Luku 6: Arvolupaus

Luku 7: Tiimin rakentaminen

Luku 8: Johtajuus vs. johtaminen

Luku 9: Johdatus liiketoimintamalleihin

Luku 10: Ensimmäinen Business Model Canvas

Luku 11: Liiketoimintasuunnitelman laatiminen

Luku 12: Idean viestiminen

Luku 13: T&K-toiminnan kaupallistaminen

Learning outcomes [Finnish source]

Ymmärtää, mitä yrittäjyys tarkoittaa

Kehittää keskeiset yrittäjäosaamiset

Selittää, miten startup-yritykset toimivat, mukaan lukien rahoitus, skaalaaminen ja kestävyys

Ymmärtää yrittäjäepäonnistumisten syyt ja keinot selviytyä niistä

Ymmärtää, mitä liikeideat ja liiketoimintamahdollisuudet tarkoittavat

Rakentaa ja johtaa tehokkaita tiimejä

Suunnitella ja toteuttaa liiketoimintamalleja

Laatia liiketoimintasuunnitelma

Official course record: [BO00BD71](#)

AY00BD72 | Innovative Entrepreneurship MOOC (OPEN UNI)

2 ECTS | Entrepreneurship | English

Person in charge: Fan Wang

Content [Finnish source]

Verkkopohjainen videokoulutus

Luku 1: Johdatus yrittäjyyteen

Luku 2: Keskeiset osaamiset

Luku 3: Miten startup toimii?

Luku 4: Epäonnistumiset

Luku 5: Ideointi

Luku 6: Arvolupaus

Luku 7: Tiimin rakentaminen

Luku 8: Johtajuus vs. johtaminen

Luku 9: Johdatus liiketoimintamalleihin

Luku 10: Ensimmäinen Business Model Canvas

Luku 11: Liiketoimintasuunnitelman laatiminen

Luku 12: Idean viestiminen

Luku 13: T&K-toiminnan kaupallistaminen

Learning outcomes [Finnish source]

In Finnish

Ymmärtää, mitä yrittäjyys tarkoittaa

Kehittää keskeiset yrittäjäosaamiset

Selittää, miten startup-yritykset toimivat, mukaan lukien rahoitus, skaalaaminen ja kestävyys

Ymmärtää yrittäjäepäonnistumisten syyt ja keinot selviytyä niistä

Ymmärtää, mitä liikeideat ja liiketoimintamahdollisuudet tarkoittavat

Rakentaa ja johtaa tehokkaita tiimejä

Suunnitella ja toteuttaa liiketoimintamalleja

Laatia liiketoimintasuunnitelma

Official course record: [AY00BD72](#)

721630A | Intellectual Property Rights

5 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

Much of the value of corporations and entire economies currently rely on intangible assets and their protection by intellectual property rights (IPR). The course covers the core types of European IPR and their basic features, including copyright, designs, trademarks and patents. Students will learn the core features of European IP law in light of recent scholarship. They will understand the role of legal norms as part of the business environment and acknowledge the meaning of IPR for business as well as the importance of legal expertise. They will also acquire skills to evaluate and test comparative conclusions for reliability and accuracy.

Learning outcomes

After completing the course students will be able to:

- Know the core forms of European IP protection and their basic features;
- Understand the meaning of IPR for business;
- Demonstrate understanding of the need and consequences of new policies and legislation in the field of European IP law as part of the business environment;
- Improve research skills in utilizing legal sources, institutions and databases.

Official course record: 721630A

721021A | Intermediate Course to Business Analytics

5 ECTS | Business Analytics (Economics and Business Administration) | Intermediate Studies | English

Person in charge: Julius Gomes

Content

The course addresses the foundations and selected applications of business analytics, including both the data-centered and the application-oriented perspectives. It provides an overview of analysis methods and tools, including but not limited to data harvesting, storage, manipulation and visualization. Analytics-based decision-making needs and opportunities in systemic, organizational and wider societal contexts are covered, and data security, management and ethics related requirements considered.

Learning outcomes

Upon completion of the course the student understands the scientific basis of business analytics and knows about analytics methods and tools. He or she has created a foundation to apply and develop data analytics for real-world needs, as a future professional. The student can identify appropriate analytic methods and tools for specific needs, understands valid and reliable ways to collect, analyze and visualize data, and knows how to utilize data in organizational decision making, development and operations.

Official course record: 721021A

BO00AL48 | International Brand Marketing

5 ECTS | Marketing | Basic Studies | English

Person in charge: Saila Saraniemi

Content

The basic concepts related to brands, introduction to branding in international markets, designing and implementing brand communications, designing consumer's brand experience in international context, evaluating strategic brand management in global business environment.

Learning outcomes

Upon completion this course, the student knows basics of international brand marketing. The student is able to identify different target groups of brand marketing, the focus being on international markets. The student is able to argue brand management actions and is able to analyze brand communications. The student comprehends the strategic meaning and importance of brands in international markets and understands the basics of brand communications within changing media landscape.

Generic skills:

- Analytical, critical and creative thinking skills: Upon completion the course, the student is able to identify the key concepts and skills in international brand marketing, and is able to describe their importance in scientific and professional activities applying international brand marketing.
- International and multicultural skills: Upon completion the course, the student is able to work in multicultural teams through completing case assignment in groups.

Official course record: [BO00AL48](#)

721538S | International Business Theory

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Tuija Mainela, Lauri Haapanen

Content

This course introduces internationalization and MNE theories acknowledging their key components and their development over time. The course examines the assumptions of the theories, defines their core concepts and discusses their uses and related research results. This should create a basis for understanding the variety of theoretical approaches and how those allow us to uncover and understand different issues relevant in theorizing about internationalization behaviors and international operations of firms and in making decisions in both IB research and in IB practice.

Learning outcomes

The objective of the course is to familiarize students with main theories used to understand internationalization and multinational enterprises. Upon completion of the course, students should

1. be able to discuss internationalization and international operations of firms from several theoretical perspectives and describe theories with respect to their key assumptions and core concepts
2. be able to compare the principal ideas and assess the value of theoretical approaches in different situations
3. be able to use theories in analysis of international business development of firms
4. have developed their analytical and academic argumentation skills

Official course record: [721538S](#)

721350S | International Macroeconomics and Finance

6 ECTS | Economics | Advanced Studies | English

Person in charge: Marko Korhonen

Content

Advanced theoretical and empirical analysis of contemporary international macroeconomic policy issues in both industrialized and developing economies. The topics covered include current account balance, dynamics of small open economy, real exchange rate and the terms of trade, uncertainty and international financial markets. In addition, the issues of monetary union will be covered.

Learning outcomes

Student is familiar with topics in international macroeconomics as well as to theories trying to account for the basic stylized facts in the field.

Official course record: [721350S](#)

724201A | Internationalization

5 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Akram Hatami Boroun

Content

Following topics are covered in the course: (1) What, Why, How and Where of Internationalization: An Overview of Globalization, (2) Regional Integration, Trading Blocs and Internationalization: Focus on the European Union, (3) Internationalization of Industries and the Service Sector, (4) Internationalization: Rules of the Game and the Role of Culture, (5) Internationalization Decision-Making Process, (6) Exporting and Licensing, (7) Franchising and Management Contracts, (8) Contract Manufacturing, Project Operation Mode and Strategic Alliances, (9) Greenfield Investments and Acquisitions, (10) Operation Mode Combination and Changes, and (11) Technological, Geopolitical, Environmental and Social Challenges in Internationalization.

Learning outcomes

Upon completion of the course, students will understand what the international business context is and know the key drivers of internationalization and globalization. Students are able to recognize and describe different international operation modes, and further compare and evaluate foreign operation modes in specific decision-making situations for multinational enterprises, SMEs, startups and born-global firms. Finally, students understand different challenges faced by firms during internationalization, including technological, geopolitical, environmental and social challenges.

Official course record: [724201A](#)

BO00BA85 | Internationalization

5 ECTS | International Business | Intermediate Studies | English

Person in charge: Akram Hatami Boroun

Content

Following topics are covered in the course

1. What, Why, How and Where of Internationalization: An Overview of Globalization,
2. Regional Integration, Trading Blocs and Internationalization: Focus on the European Union,
3. Internationalization of Industries and Service Sector,
4. Internationalization: Rules of the Game and Role of Culture
5. Internationalization decision making process
6. Exporting and Licensing,
7. Franchising, and Management Contracts,
8. Contract Manufacturing, Project operation mode and Strategic Alliances,
9. Greenfield Investments and Acquisitions,
10. Foundations of Ethics in International Business,
11. Ethical Challenges in Global Business Practice.

Learning outcomes

Upon completion of the course, students will understand what the international business context is, and know the key drivers of internationalization and globalization. The students are able to recognize and describe different international operation modes. The students are further able to compare and evaluate the foreign operation modes in specific decision-making situations for both multinational enterprises and small & medium sized enterprises. Finally, the students understand different challenges faced by the firms during internationalization including environmental and social challenges.

Official course record: [BO00BA85](#)

721065S | Internship

6 ECTS | International Business Management, Marketing, Accounting, Finance, Economics, Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Anna Laitio

Content

The aim of the master's degree internship is to deepen the student's knowledge and expertise related to the field of their studies. To be eligible for advanced level internship, the work tasks and responsibilities during the internship period should be equivalent to expert level tasks or comparative. Internship is based on the job description provided by the internship organization. The student should work either in a managerial position or as an independent specialist who has a responsible position with a possibility to use organizational resources.

Learning outcomes

Internship offers students opportunity to develop their professional competence in practice by learning how to solve problems and to learn organizational tasks and responsibilities related to their degree studies. Furthermore, the internship supports students in developing their communication skills within the organization and its networks by establishing relationships with their work colleagues and company management.

Official course record: [721065S](#)

724100P | Internship

5 ECTS | Economics and Business Administration | General Studies | Finnish

Person in charge: Elina Hyrkäs

Content

Internship

Learning outcomes

The student gains work experience that is related to his/her studies and which supports career plans.

During the internship, student's understanding of organisations' activities increases related to various duties and the organisation as a whole.

Student is also able to establish beneficial contacts.

Official course record: [724100P](#)

BO00AL49 | Internship

5 ECTS | International Business Management | Basic Studies | English

Person in charge: Anna Laitio

Content

Students find an internship position independently. Before the internship period starts, students form an internship plan based on the work description provided by the internship organization. Plan must be approved by the Internship course teacher Anna Laitio (anna.laitio@oulu.fi).

Learning outcomes

Internship offers students opportunity to gain work experience related to their degree studies and broaden their understanding of different organizations' activities in practice. Students are also able to develop their networking skills and establish beneficial work-life connections to support their future career plans.

Official course record: [BO00AL49](#)

BO00AJ47 | Introduction to Business Analytics

5 ECTS | Business Analytics (Economics and Business Administration) | Basic Studies | English

Person in charge: Fan Wang

Content

The fundamentals of business analysis include four modules: technology, data, people, and process.

Technology: introduction to information and technology development and digital transformation.

Data: definition, classification, analysis methods, value and applications of data.

People: roles of business analysts and differences from data engineers, skills and expertise of business analysts, roles in data analysis.

Process: data strategy and capability building, data governance and management, data regulation and ethics.

Learning outcomes

Upon completing the course, students will acquire a comprehensive understanding of the field of business analytics. The student will learn about the concepts, value, and sources of data in business, as well as data governance, management, and the relevant regulations and ethical considerations.

The students will understand the key drivers of business analytics and the processes involved in creating value through data and analytics within a business context. The students will also recognize the influential factors that impact the successful implementation of data-driven business practices.

The students will learn how to utilize data for business development, execution, optimization, and decision-making. The students will understand the process of transforming into a data-driven business and will be capable of applying a data-driven approach in their business practices, decision-making, and even in their daily lives.

Official course record: [BO00AJ47](#)

BO00BD84 | Introduction to Business Relationships

2 ECTS | Marketing | Advanced Studies | English

Person in charge: Ilkka Ojansivu

Content

This course introduces the fundamental principles, challenges, and practices involved in building, maintaining, and ending business relationships. Topics include:

- Introduction to B2B marketing
- Subjects, processes, dimensions, and responsibilities of business relationships
- Customer relationships
- Supplier relationships
- Relationships with other partners
- Continuum from transactional exchange to long-term partnerships
- Value creation, coordination, trust, power, and adaptations in business relationships
- Role-specific perspectives in managing B2B relationships

Learning outcomes

Upon successful completion of the course, students will be able to:

- Define business relationships and their key dimensions.
- Understand the role of business relationships as the primary arena for exchange between organizational buyers and sellers.
- Apply relevant frameworks and strategies to build, maintain, and terminate business relationships with diverse stakeholders.
- Evaluate real-world cases of successful and unsuccessful business relationships.

Upon completion of the course, the following generic skills will also be developed:

- Analytical, critical and creative thinking skills: Is able to apply relevant theories analytically and critically to business relationships and to understand the various challenges and tensions inherent in such relationships.
- Well-being and self-development skills: Is able to develop and apply self-management skills, such as scheduling and prioritizing studies, planning daily learning activities, managing time effectively, and adopting active learning strategies.
- Multidisciplinary and interdisciplinary skills: Is able to approach business relationships from multiple disciplinary and professional perspectives and to comprehend the potential tensions arising from these differing perspectives.
- Communication, interaction and digital skills: Is able to navigate online learning environments and apply digital and AI-related skills effectively in the learning process.

Official course record: [BO00BD84](#)

724833P | Introduction to Entrepreneurship

5 ECTS | Economics and Business Administration | Basic Studies | English

Person in charge: Kaisa Vaviolahti

Content

- Deciding to become an entrepreneur
- An introduction to entrepreneurship
- Creating viable business ideas
- Creating business opportunities
- Preliminary research
- Industry analysis
- Business plan
- From an idea to an entrepreneurial firm
- Building a team
- Analysing start-up strengths and weaknesses from the funding perspective
- Ethical and legal issues when starting a company
- Creating a business plan and constructing a story
- Attracting funding
- Managing an entrepreneurial firm and generating growth
- Marketing
- Understanding VC (Venture Capital) operations
- IPRs (Intellectual Property Rights)
- The challenges of growth and managing growth
- Growth strategies
- Forms of operation

Learning outcomes

During the course, students will learn to understand the significance of an entrepreneurial team and will form an understanding of entrepreneurship as a creative activity that occurs in the form of business. After completing the course, students will be able to:

- define business-related principles, possibilities and challenges
- plan business initiation based on customer needs, value creation, testing and agility
- interpret business-related substance areas where competence is needed.

Official course record: 724833P

694000P | Introduction to Graphic Design

5 ECTS | International Business Communication | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

Want to learn how to create visually striking materials? This course will give you a comprehensive grounding in the basic principles of graphic design, colour theory, typography and visual composition. You will learn how to create graphics for both digital and printed materials. We will only use free tools to design your visual identity.

Key content: History of graphic design, the use of colours and typography in visual identities. Evaluating brand communication across cultures.

Learning outcomes

The student knows the history of graphic design and possible job profiles. The student will recognise good taste and style in graphic design in terms of colour and typography. The student will be able to design a company logo in a way that the colours and typography reflect the company as well as possible. The student will be able to evaluate the visual appearance of companies and/or organisations using graphic design principles and be able to analyse the differences and similarities between different cultures.

Official course record: 694000P

BO00AW54 | Introduction to micro-entrepreneurship in Finland

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Santeri Halonen

Content

The course provides a comprehensive understanding of the field of micro-entrepreneurship research and the study unit of micro-entrepreneurship. The course provides an understanding of the definitions of micro-enterprises, the special features of management and their importance in society.

The content of the course includes identifying the importance of values, goals, resilience and competencies. In addition, the course introduces students to the business plan of micro-enterprises.

Learning outcomes

After the course, the student:

- * Has got acquainted with the research field and study module of micro-entrepreneurship
- * Understands the definition, characteristics and importance of micro-enterprises in society
- * Recognizes the importance of company values, goals and entrepreneurial skills to the systematic management of a company
- * Understands the significance of the concept of resilience as part of enterprise management

Official course record: BO00AW54

BO00AW55 | Introduction to micro-entrepreneurship in Finland

5 ECTS | Micro-entrepreneurship | Basic Studies | English

Person in charge: Santeri Halonen

Content

The course provides an introduction a comprehensive understanding of the field of micro-entrepreneurship for participants who are interested in micro-entrepreneurship in Finland and/or who are interested in starting a career as a micro-entrepreneur. The course provides basic understanding of the definitions importance of micro-enterprises the special features of micro-entrepreneurship management. The content of the course includes the importance of values, goals and competencies in relation to business success. This course also provides practical tools for financial and business planning that support future and current entrepreneurs in both planning and running a micro-enterprise in Finland. Additionally, participants are provided with links to relevant documentation, authorities and entrepreneurship networks in Finland.

Learning outcomes

After completing the course, the student

- * Has become familiar with the Finnish entrepreneurial environment and understands the importance of micro-enterprises in it.
- * Understands the central elements of managing and planning economically sustainable business.
- * Understands the cost structure of a company
- * Recognizes the importance of company values, goals and entrepreneurial competences in sustainable business management

[Official course record: BO00AW55](#)

AY00AH94 | Introduction to micro-entrepreneurship in Finland (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | English

Person in charge: Santeri Halonen

Content

The course provides basic understanding of the definitions importance of micro-enterprises the special features of micro-entrepreneurship management. The content of the course includes the importance of values, goals and competencies in relation to business success. This course also provides practical tools for financial and business planning that support future and current entrepreneurs in both planning and running a micro-enterprise in Finland. Additionally, participants are provided with links to relevant documentation, authorities and entrepreneurship networks in Finland.

Learning outcomes

After completing the course, the student

- * Has become familiar with the Finnish entrepreneurial environment and understands the importance of micro-enterprises in it.
- * Understands the central elements of managing and planning economically sustainable business.
- * Understands the cost structure of a company.
- * Recognizes the importance of company values, goals and entrepreneurial competences in sustainable business management.

[Official course record: AY00AH94](#)

AY724840P | Introduction to micro-entrepreneurship in Finland (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Santeri Halonen

Content

The course offers an overview to micro-entrepreneurship in Finland. The content of the course includes identifying the importance of values, goals, resilience and competencies. In addition, the course introduces students to the business plan of micro-enterprises.

Learning outcomes

After the course, the student:

- * Has got acquainted with the research field and study module of micro-entrepreneurship
- * Understands the definition, characteristics and importance of micro-enterprises in society
- * Recognizes the importance of company values, goals and entrepreneurial skills to the systematic management of a company
- * Understands the significance of the concept of resilience as part of enterprise management

Official course record: [AY724840P](#)

AY00AM99 | Introduction to Starting a Company in Finland (OPEN UNI)

2 ECTS | Micro-entrepreneurship | Basic Studies | English

Person in charge: Nafisa Yeasmin

Content

Course provides the student with basic information on starting a business in Finland. After the course, student understands how to start a business, where to get help and funding, and what are the responsibilities and obligations of an entrepreneur.

Key contents:

- * Introduction of the (public) business support organizations, enterprise associations etc.
- * Funding sources or access to finance
- * Responsibilities and rights
- * Different company types

Learning outcomes

After the course, student:

- * has the basic knowledge of starting a company in Finland (ie. main funding sources, main supportive organizations, rights and responsibilities, different company types)
- * knows what the main supportive organizations and main funding sources are
- * knows the rights and responsibilities of an entrepreneur
- * knows the different company types

Official course record: [AY00AM99](#)

721537S | Introduction to Strategizing Practices

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Sari Laari-Salmela

Content

The course will explore the dominant social scientific perspectives used in strategy research and the how they can be utilized in examining the connections between strategy and organizational management as well as strategy, leadership, and operations.

Learning outcomes

After the course, the students are able to analyze strategy as an organizational practice and develop and lead strategizing practices that support the objectives of a business organization. Students understand the process-based approach to strategy and are able to compare the process-based view and the planning-based view of strategy-making and analyze what strategic actors do in practice. Consequently, the course helps the students to better understand how practices can both enable and constrain strategy-making in organizations.

[Official course record: 7215375](#)

724110P | Introductory Economics

5 ECTS | Economics | Basic Studies | Finnish

Person in charge: Marko Korhonen

Content

The course introduces students to the tools and ideas economics uses to describe and explain economic phenomena. The topics include:

- basic ideas and principles of economics
- opportunity cost and comparative advantage
- market equilibrium: demand and supply
- how well does market economy work?
- firms and competition in market economy
- aggregate economic activity and its measurement
- business cycles
- economic growth

Learning outcomes

After completing the course students (i) understand the basic concepts of economics and the rudiments of economic theory, (ii) can explain the determination of resource allocation and prices in a market economy, (iii) know how the aggregate economy operates in the short and long run, and (iv) how economic policy affects the economy.

[Official course record: 724110P](#)

AY724110P | Introductory Economics (OPEN UNI)

5 ECTS | Economics | Basic Studies | Finnish

Person in charge: Matti Koivuranta

Content

The course introduces students to the tools and ideas that economics uses to describe and explain economic phenomena, e.g.:

- basic ideas and principles of economics
- opportunity cost and comparative advantage
- market equilibrium: demand and supply
- how well does market economy work
- firms and competition in market economy
- aggregate economic activity and its measurement
- business cycles
- economic growth

Learning outcomes

After completing the course the students:

- 1) understand the basic concepts of economics and the rudiments of economic theory.
- 2) can explain the determination of resource allocation and prices in a market economy
- 3) know how the aggregate economy operates in the short and long run
- 4) know how economic policy affects the economy.

Official course record: [AY724110P](#)

724112P | Investment and Financing Decisions

5 ECTS | Finance | Basic Studies | Finnish

Person in charge: Juha-Matti Tauriainen

Content

The course is an introduction to the theory and practice of corporate finance. The objective is to familiarize the student with the basic concepts and principles in the field of corporate finance, and to provide the student with an understanding of the key decision-making processes and tools of financial management.

Learning outcomes

Upon successful completion of the course, the student will be able to: define the major areas of corporate finance and the primary goal of financial management; apply time value of money principles in a variety of contexts; demonstrate an understanding of different types of interest rates; evaluate investment projects using various investment appraisal techniques; explain the fundamental differences between debt and equity; master the basics of bond and stock valuation; calculate the cost of capital for a firm; explain the reasoning behind the Modigliani-Miller theories of capital structure and dividend policy; quantify the effects of financial leverage on firm value; explain how dividends are paid and how firms repurchase shares; and identify factors that influence capital structure and dividend policy in practice.

Official course record: [724112P](#)

724612P | Labour Law

5 ECTS | Corporate Law | Basic Studies | Finnish

Person in charge: Markku Pulkkinen

Content

The aim of the course is to give a picture of the legal regulation of working life. The student receives information about the legal rules related to the employment contract and the Employment Contracts Act. In addition, the course provides information on the provisions and methods for resolving individual and collective conflicts in working life and on international labor law, in particular European Community labor law.

Learning outcomes

The student is able to apply the most important principles of Finnish labor law and on the basis of this the student also identifies the connection between the employment contract and the collective bargaining system. The student knows the most important principles that protect the employee's privacy and understands their significance, for example, in a job interview and in other ways in working life. The student is able to apply the Working Time Act and the Annual Leave Act in general. The student understands the requirements of working life related to occupational safety and health legislation and knows the most important content of occupational safety legislation.

Official course record: [724612P](#)

721625A | Law of Property

5 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Markku Pulkkinen

Content

Conceptual points and key principles of security law.
Types of property guarantee.
Interrelationship and special features of collateral guarantees.

Learning outcomes

The course familiarizes the student with questions and argumentation typical of security rights and gives an overview of the regulation of property relations regarding movable and immovable objects and the protection system in the exchange of property rights and enforcement related to property relations.

Official course record: [721625A](#)

BO00AR28 | Leadership

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Vesa Puhakka

Content

This course delves into the realm of leadership within the backdrop of perpetual change. It presents diverse leadership approaches and delves into their application, melding theory with the intricacies of real-world scenarios in an ever-evolving landscape. The fundamental concept introduced is that effective leadership, regardless of the context, necessitates the cultivation of adept skills to manage multifaceted relationships, navigate transactions, and adeptly resolve conflicts involving an array of stakeholders. These stakeholders encompass colleagues, customers, suppliers, competitors, local communities, and international counterparts.

Learning outcomes

This course empowers students to transcend conventional notions of leadership, inviting them to delve into the realm of leadership's future implications and applications for individuals, groups, and entire organizations. Upon completion of the course, students will have cultivated a profound understanding of the essential attributes, skills, and principles that underpin effective leadership in today's intricate organizational landscapes, characterized by complexity and dynamism. Students will grasp the intricate interplay between leadership, organization, individuals, and the dynamics of change, as well as the inherent tension organizations face in balancing resource efficiency with the imperative to innovate and embrace change.

Upon concluding the course, students will have achieved the following:

- Profound comprehension and retention of key tenets and components of diverse leadership models.
- Proficiency in applying leadership models to real-world scenarios.
- The ability to connect leadership theory with other academic disciplines and contemporary global business contexts.
- Insight into the personal and societal ramifications of possessing knowledge about leadership.
- An enhanced sense of commitment to and interest in the field of leadership.
- Competence in ongoing self-directed learning in the realm of leadership.

Official course record: [BO00AR28](#)

724105P | Management Accounting

5 ECTS | Accounting | Basic Studies | Finnish

Person in charge: Erkki Lassila

Content

The core content of the course consists of the theory, concepts, methods, and applications of management and cost accounting. The themes covered include: 1) Management accounting, cost concepts, and cost accounting 2) The two-stage allocation process 3) The concept of capacity 4) Cost accounting methods: job-order costing, process costing, joint product costing, and activity-based costing 5) Inventory valuation 6) Variable costing 7) Relevant costs for decision-making 8) Pricing decisions and profitability.

Learning outcomes

After completing the course, the student will recognize the fundamental concepts of management and cost accounting and be able to apply key methods of cost accounting, such as cost-volume-profit analysis, traditional two-stage product costing (job-order and process costing), as well as activity-based costing. Upon completion, the student will also identify the key methods related to inventory valuation and cost-based pricing and be able to justify which costs should be included in various financial calculations. Successfully passing the course therefore requires analytical and critical thinking.

Official course record: 724105P

AY724105P | Management Accounting (OPEN UNI)

5 ECTS | Accounting | Basic Studies | Finnish

Person in charge: Marjo Väisänen

Content

Theoretical framework for understanding cost accounting, cost concepts, cost allocation, different product costing methods, cost-volume-profit analysis, using cost accounting information in decision making.

Learning outcomes

After passing the course, the student knows the basic cost concepts and the elements of cost accounting systems. Students are also able to apply the basic cost information in the company's decision making and explain which costs should be included in these calculations under different circumstances.

Official course record: AY724105P

721192S | Management Accounting Research

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Janne Järvinen

Content

Research traditions, paradigms and related methods. Management accounting journals

Learning outcomes

Upon completion of this course the student will distinguish between the major paradigms and research traditions in management accounting, as well as their philosophical foundations. S/he will recognize different types of research processes and scientific journals in management accounting, and, ultimately, will be able to use this information in his/ her own Master's thesis work. This course will develop critical thinking as well as oral and written presentation skills.

Official course record: 721192S

BO00AL29 | Management and Organizations

5 ECTS | International Business Management | Basic Studies | English

Person in charge: Kaisu Jansson

Content

During the course, the students learn about the historical development of management and organization studies through different schools of thought and examine how the basic principles and focus points of these approaches effect organizations' functioning in different contexts. Both classic, central questions as well as more contemporary issues related to organization and management research and practice are identified and reflected upon.

Learning outcomes

Upon completion of the course, the student will understand the historical development, current state and possible future prospects of management and organizations as a field of research and as a practice. The student will comprehend the basic concepts related to organizations and managerial work, can recognize the principles behind different management styles, and understand various ongoing functions within organizations and the challenges they set for management. The student gains a diverse set of perspectives for analyzing and understanding different organizational and managerial situations. Hence, the student's ability to plan and choose productive courses of action in their own professional life increases.

Official course record: [BO00AL29](#)

AY724102P | Management and Organizations (OPEN UNI)

5 ECTS | Management | Basic Studies | Finnish

Person in charge: Vesa Puhakka

Content

The course covers the topics and questions of organizations and management, human organizing and processes as well as change management. The premises of the course are the traditional management schools of thought (scientific management, human relations school of thought, Hawthorne-studies, etc.) that the course goes through thoroughly. The course builds the newest questions of organizational theoretical approaches (change, processuality, etc.) on this understanding. In the course the students are introduced with the development of organizations and management, by presenting different organization types and management styles as well as the ways how those issues affect organization functioning.

Learning outcomes

Upon completion of the course, the student will be able to distinguish the concepts related to organization, organizing as well as managerial and entrepreneurial work. This understanding helps the student's ability to identify organizational processes in everyday work-life interventions and to list the possible change factors within a chosen organization. The student is also able to identify different kinds of organizations and can define the different principles of management styles. The student is able to understand various ongoing functions within organizations and their requirements for the organizations' management. The student understands the role of organizational development and learns to register the most essential challenges of management in the current organizations.

Official course record: [AY724102P](#)

724204A | Management Control

5 ECTS | Accounting | Intermediate Studies | English

Person in charge: Erkki Lassila

Content

The core content of the course consists of themes related to Management control system design and development, including ethical concerns of and cultural influences on management control systems. The themes covered include: Budgets and standards, variance analysis, profit center accounting, transfer pricing, and performance measurement.

Learning outcomes

Upon completion of the course, students can define the basic structure of a management control system. They are able to describe and evaluate the design and development needs of management control systems. Secondly, students can identify and discuss viewpoints to consider when controlling multinational operations. Moreover, students can apply basic accounting control tools, such as budgets and variance analysis, to simple control problems. Passing the course successfully, therefore requires certain amount of analytical, critical and creative thinking.

Official course record: 724204A

BO00BC16 | Management Control for Sustainability

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Kristiina Henttu-Aho

Content

The purpose of the course is to provide understanding about current theoretical and practical developments in the sustainability field, especially in relation to sustainability management accounting and control. Course covers topics such as double materiality, sustainability strategies, sustainability balanced scorecard, emission trading systems, internal price of carbon and role of corporate controlling in sustainability.

Learning outcomes

Upon completion of the course students will be capable of critically evaluating managerial controlling problems of corporations from the perspectives of environmental, social and economic responsibility. Students can thus compare the functionality of different management accounting and control tools and assess the multifaceted influences these tools may have on the organization, organizational field and on people's behaviour. Additionally, students are able to analyze management accounting and control research from the aspect of sustainability and are capable of creatively communicating key challenges of sustainability from various stakeholder perspectives. This course develops the following generic skills: 1) Sustainability, responsibility and ethics skills, 2) Communication skills and 3) creative thinking.

Official course record: BO00BC16

724202A | Managing Multinationals

5 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Jan Hermes

Content

Lectures will include the following themes: (1) MNEs as actors in the global economy; (2) different perspectives on MNEs; (3) changing forms of MNEs (e.g., joint ventures, alliances, mergers, and acquisitions); (4) headquarters-subsidiary relationships; (5) cross-cultural management in MNEs; and (6) MNEs in society.

Learning outcomes

Upon completion of the course, the student will be able to understand different perspectives on multinational enterprises (MNEs). The student will be able to explain how MNEs compete and their impact on society. The student will be able to analyze the role of cross-cultural management in MNEs, as well as the differences between global and local contexts. The student will also be able to identify ethical issues and aspects of corporate responsibility in MNEs.

The course supports students' awareness of and engagement with the University of Oulu's generic skills, including analytical, critical and creative thinking; international and multicultural competence; sustainability, responsibility and ethics; multidisciplinary and interdisciplinary skills; as well as communication, interaction and digital skills.

Official course record: 724202A

BO00AT70 | Managing sustainability through responsible leadership

5 ECTS | Micro-entrepreneurship | Basic Studies | English

Person in charge: Santeri Halonen

Content

The course focuses on key concepts in sustainability and the United Nations Sustainable Development Goals (SDGs). The content includes the following topics:

- * skills and strategies for managing climate risks, integrating ESG perspectives (environmental, social, and corporate governance), and creating long-term value for shareholders and society based on the UN SDGs.
- * responsible leadership as part of economically, ecologically, and socially sustainable business management.
- * principles of transparent and trustworthy sustainability communication as part of building competitive company brands.
- * KPIs (key performance indicators) to measure an organization's impact and dependence on natural, human, and social capital.

Learning outcomes

On this course students learn the key concepts in sustainability and UN sustainable development goals. This includes:

- * Developing sustainability knowledge management skills and strategies for managing climate risk, facilitating ESG (environmental, social, corporate governance) integration, and creating long-term value for shareholders and society based on the UN sustainable development goals.
- * Recognizing the importance of responsible leadership as part of economically, ecologically, and socially sustainable business management is also at the core of this course.
- * Learning key principles of transparent and trustworthy sustainability communication as part of building competitive company brands are explained as well.
- * Gaining skills and competence needed to define and apply effective KPIs (key performance indicators) to measure the impact and dependence of an organization on natural, human, and social capital.

After completing this course students understand the opportunities and challenges in responsible leadership and knows how to plan and evaluate sustainable communication practices. One also learns how to critically assess common sustainability KPIs and metrics.

Official course record: [BO00AT70](#)

AY00AT67 | Managing sustainability through responsible leadership (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | English

Person in charge: Santeri Halonen

Content

The course focuses on key concepts in sustainability and the United Nations Sustainable Development Goals (SDGs). The content includes the following topics:

- * skills and strategies for managing climate risks, integrating ESG perspectives (environmental, social, and corporate governance), and creating long-term value for shareholders and society based on the UN SDGs.
- * responsible leadership as part of economically, ecologically, and socially sustainable business management.
- * principles of transparent and trustworthy sustainability communication as part of building competitive company brands.
- * KPIs (key performance indicators) to measure an organization's impact and dependence on natural, human, and social capital.

Learning outcomes

On this course students learn the key concepts in sustainability and UN sustainable development goals. This includes:

- * Developing sustainability knowledge management skills and strategies for managing climate risk, facilitating ESG (environmental, social, corporate governance) integration, and creating long-term value for shareholders and society based on the UN sustainable development goals.
- * Recognizing the importance of responsible leadership as part of economically, ecologically, and socially sustainable business management is also at the core of this course.
- * Learning key principles of transparent and trustworthy sustainability communication as part of building competitive company brands are explained as well.
- * Gaining skills and competence needed to define and apply effective KPIs (key performance indicators) to measure the impact and dependence of an organization on natural, human, and social capital.

After completing this course students understand the opportunities and challenges in responsible leadership and knows how to plan and evaluate sustainable communication practices. One also learns how to critically assess common sustainability KPI's and metrics.

Official course record: [AY00AT67](#)

721023S | Market and Competitor Analysis

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Julius Gomes

Content

The course addresses the analysis of an organization's external environment, focusing on its market and competitors. These are viewed both from the strategic level and against operational measures, in comparison to the organizations own goals and performance.

Learning outcomes

Upon completion of the course the student is able to (1) understand the core concepts related to market and competitor analysis, (2) assess the characteristics company's external business environment, (3) plan competitor analysis on a strategic level, and (4) analyze competitors' performance against company's own business objectives.

The common generic skills of the University of Oulu are emphasized during the course. After completing the course, the students are able to think analytically, critically, and creatively, and use strong problem solving and argumentation skills in solving organizational analytics problems. They can actively cultivate well being, self management, and time-management in a goal-oriented manner, and can navigate uncertainty with resilience. They can also guide others through feedback and leadership. They collaborate effectively and inclusively in international and multicultural environments. They can apply and evaluate disciplinary and cross disciplinary methods and state-of-the-art analytics technologies and tools, integrate expertise from multiple fields, and include sustainability and ethical considerations into analytics. As experts, they can communicate clearly to varied audiences.

Official course record: [721023S](#)

693395P | Marketing Communication

5 ECTS | International Business Communication | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

Learn about marketing communication tools and learn how to create messages that reach the right target groups. What is communication and how do communication and marketing work in different cultures? This course focuses on marketing communication strategies, channels and practical implementation.

Key content: The basic concepts, tools and processes of marketing communication.

Learning outcomes

The student knows the main concepts and tools of marketing communication. Students will be able to evaluate the success of communication in different channels. Identify the impact of cultures in marketing communication.

Official course record: [693395P](#)

BO00BB82 | Marketing Theory and Society

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Pauliina Ulkuniemi

Content

During the course, marketing will be examined as a scientific discipline, with particular attention to the development of marketing thought, the different schools of thought, and the implications of the field's increasing fragmentation. In addition, the course provides a critical evaluation of how contemporary marketing issues affect individuals, society, and the planet.

Special emphasis is placed on ethical questions related to hyperconsumerism and digital marketing, including topics such as artificial intelligence and data-related concerns. Further themes include macromarketing, social marketing, vulnerable markets, puffery, and corporate social responsibility.

Learning outcomes

Upon completing the course, students will be able to describe marketing as a field of science and compare different schools of marketing thought.

Students will be able to critically assess the role of marketing theory and practice in sustainable development. They will also develop an understanding of how marketing can contribute more positively to society in the future.

In addition, students will be able to communicate their ideas analytically and effectively in both written and oral form.

In terms of generic skills:

Analytical, critical, and creative thinking: Students understand the disciplinary roots and transformative nature of the marketing discipline.

Well-being and self-development: Students reflect on and shape the kind of marketing expert they aim to become.

Multidisciplinary competence: Students recognize marketing as a synthetic, cross-disciplinary field.

Official course record: [BO00BB82](#)

721330S | Master's Thesis in Economics

30 ECTS | Economics | Advanced Studies | Finnish, English

Person in charge: Jaakko Simonen

Content

Most of the work is independent writing of the thesis report, but during the master's thesis work students participate in seminar sessions in which they present and report the status and advancement of their work. In the seminars, they receive guidance and feedback from their supervisor on how to proceed in and complete their research report.

Learning outcomes

Upon completion of the thesis students can choose and apply appropriate research methods to produce new knowledge and to apply that knowledge to typical business decision-making problems. Students are able to conduct scientific research and make reasonable recommendations for solving business and economic problems. Furthermore, students demonstrate deep and coherent understanding of an academic field of study within their own major. They are able to demonstrate knowledge of the theories, concepts, frameworks and empirical findings of their discipline and understand the connections between various theories in the chosen discipline.

Students will demonstrate deep understanding of their own profession, and are able to use, process and analyze economic and/or business information. Students understand various business processes and operations, and causal connections between them. Finally, students are able to express their ideas effectively and analytically, both in oral and written form.

Generic skills

1. Analytical, critical and creative thinking skills: Students develop analytical and critical thinking skills through independent scientific research and problem solving. This generic skill is assessed through the overall thesis grade.
2. Well-being and self-development skills: Students develop self-directed learning skills and professional competence through independent thesis work. This generic skill is assessed through students' selection of a research topic, its implementation and resulting managerial implications, as part of the maturity test.
3. Communication, interaction and digital skills: Students learn to communicate research findings clearly and analytically in written and oral form. This generic skill is assessed through students' manuscript presentations and discussions at different stages during thesis seminars.
4. Sustainability, responsibility and ethics skills: Students are able to make responsible and ethically justified research decisions, and adhere to good scientific practice and research integrity, including confidentiality, informed consent, responsible data management and the ethical use of AI. This generic skill is assessed through overall thesis grade.

Official course record: 721330S

721530S | Master's Thesis in International Business Management

30 ECTS | International Business Management | Advanced Studies | English, Finnish

Person in charge: Tuija Lämsä

Content

Most of the work is independent writing of the thesis report, but during the master's thesis work students participate in seminar sessions in which they present and report the status and advancement of their work. In the seminars, they receive guidance and feedback from their supervisor on how to proceed in and complete their research report.

Learning outcomes

Upon completion of the thesis, students can choose and apply appropriate research methods to produce new knowledge, and apply that knowledge to typical business decision-making problems. Students are able to conduct scientific research and make reasonable recommendations for solving business and economic problems. Furthermore, students demonstrate a deep and coherent understanding of an academic field of study within their own major. They are able to demonstrate knowledge of the theories, concepts, frameworks, and empirical findings of their discipline and understand the connections between various theories in the chosen discipline.

Students will demonstrate a deep understanding of their own profession and are able to use, process, and analyze economic and/or business information. Students understand various business processes and operations, and the causal connections between them. Finally, students are able to express their ideas effectively and analytically, both in oral and written form.

Generic skills development:

Analytical, critical and creative thinking skills: Students develop analytical and critical thinking skills through independent scientific research and problem solving. This generic skill is assessed through the overall thesis grade.

Well-being and self-development skills: Students develop self-directed learning skills and professional competence through independent thesis work. This generic skill is assessed through students' selection of a research topic, its implementation and resulting managerial implications, as part of the maturity test.

Communication, interaction and digital skills: Students learn to communicate research findings clearly and analytically in written and oral form. This generic skill is assessed through students' manuscript presentations and discussions at different stages during thesis seminars.

Sustainability, responsibility and ethics skills: Students are able to make responsible and ethically justified research decisions, and adhere to good scientific practice and research integrity, including confidentiality, informed consent, responsible data management and the ethical use of AI. This generic skill is assessed through overall thesis grade.

Official course record: [7215305](#)

721130S | Master's Thesis, Accounting

30 ECTS | Accounting | Advanced Studies | English, Finnish

Person in charge: Juha-Pekka Kallunki

Content

Most of the work is independent writing of the thesis report, but during the master's thesis work students participate in seminar sessions in which they present and report the status and advancement of their work. In the seminars, they receive guidance and feedback from their supervisor on how to proceed in and complete their research report.

Learning outcomes

Upon completion of the thesis students can choose and apply appropriate research methods to produce new knowledge and to apply that knowledge to typical business decision-making problems. Students are able to conduct scientific research and make reasonable recommendations for solving business and economic problems. Furthermore, students demonstrate deep and coherent understanding of an academic field of study within their own major. They are able to demonstrate knowledge of the theories, concepts, frameworks and empirical findings of their discipline and understand the connections between various theories in the chosen discipline.

Students will demonstrate deep understanding of their own profession, and are able to use, process and analyze economic and/or business information. Students understand various business processes and operations, and causal connections between them. Finally, students are able to express their ideas effectively and analytically, both in oral and written form.

Official course record: [7211305](#)

721020S | Master's Thesis, Business Analytics

30 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English, Finnish

Person in charge: Irina Atkova

Content

The course includes the Master's thesis seminar, the planning of the Master's thesis and its writing, with the related presentations and reports.

Learning outcomes

Upon completion of the thesis students can choose and apply appropriate research methods to produce new knowledge and to apply that to typical business analytics problems. Students are able to conduct scientific research and make reasonable recommendations for solving problems. Furthermore, they demonstrate deep and coherent understanding of business analytics. They are able to demonstrate knowledge of the theories, concepts, frameworks and empirical findings of business analytics and understand the connections between various theories in it. Students will demonstrate an understanding of the business analytics as a profession, and are able to gather, process and analyze information for deployment. Students understand various relevant processes and operations and causal connections between them. They are able to express their ideas effectively both in oral and written form.

Common generic skills

Analytical, critical and creative thinking skills: Students develop analytical and critical thinking skills through independent scientific research and problem solving. This generic skill is assessed through the overall thesis grade.

Well-being and self-development skills: Students develop self-directed learning skills and professional competence through independent thesis work. This generic skill is assessed through students' selection of a research topic, its implementation and resulting managerial implications, as part of the maturity test.

Communication, interaction and digital skills: Students learn to communicate research findings clearly and analytically in written and oral form. This generic skill is assessed through students' manuscript presentations and discussions at different stages during thesis seminars.

Sustainability, responsibility and ethics skills: Students are able to make responsible and ethically justified research decisions, and adhere to good scientific practice and research integrity, including confidentiality, informed consent, responsible data management and the ethical use of AI. This generic skill is assessed through overall thesis grade.

[Official course record: 721020S](#)

721950S | Master's Thesis, Finance

30 ECTS | Finance | Advanced Studies | English

Person in charge: Petri Sahlström

Content

Most of the work is independent writing of the thesis report, but during the master's thesis work students participate in seminar sessions in which they present and report the status and advancement of their work. In the seminars, they receive guidance and feedback from their supervisor on how to proceed in and complete their research report.

Learning outcomes

Upon completion of the thesis students can choose and apply appropriate research methods to produce new knowledge and to apply that knowledge to typical business decision-making problems. Students are able to conduct scientific research and make reasonable recommendations for solving business and economic problems. Furthermore, students demonstrate deep and coherent understanding of an academic field of study within their own major. They are able to demonstrate knowledge of the theories, concepts, frameworks and empirical findings of their discipline and understand the connections between various theories in the chosen discipline.

Students will demonstrate deep understanding of their own profession, and are able to use, process and analyze economic and/or business information. Students understand various business processes and operations, and causal connections between them. Finally, students are able to express their ideas effectively and analytically, both in oral and written form.

Analytical, critical and creative thinking skills: Students develop analytical and critical thinking skills through independent scientific research and problem solving. This generic skill is assessed through the overall thesis grade.

Well-being and self-development skills: Students develop self-directed learning skills and professional competence through independent thesis work. This generic skill is assessed through students' selection of a research topic, its implementation and resulting managerial implications, as part of the maturity test.

Communication, interaction and digital skills: Students learn to communicate research findings clearly and analytically in written and oral form. This generic skill is assessed through students' manuscript presentations and discussions at different stages during thesis seminars.

Sustainability, responsibility and ethics skills: Students are able to make responsible and ethically justified research decisions, and adhere to good scientific practice and research integrity, including confidentiality, informed consent, responsible data management and the ethical use of AI. This generic skill is assessed through overall thesis grade.

Official course record: 7219505

721430S | Master's Thesis, Marketing

30 ECTS | Marketing | Advanced Studies | English, Finnish

Person in charge: Eeva-Liisa Oikarinen

Content

Most of the work is independent writing of the thesis report, but during the master's thesis work students participate in seminar sessions in which they present and report the status and advancement of their work. In the seminars, they receive guidance and feedback from their supervisor on how to proceed in and complete their research report.

Learning outcomes

Ingress:

The Master's thesis represents the culmination of students' academic research in marketing, where theoretical knowledge and methodological rigor are applied to real-world business and economic problems through independent scientific research.

Learning goals:

Upon completion of the thesis students can choose and apply appropriate research methods to produce new knowledge and to apply that knowledge to typical business decision-making problems. Students are able to conduct scientific research and make reasonable recommendations for solving business and economic problems. Furthermore, students demonstrate deep and coherent understanding of an academic field of study within their own major. They are able to demonstrate knowledge of the theories, concepts, frameworks and empirical findings of their discipline and understand the connections between various theories in the chosen discipline. Students will demonstrate deep understanding of their own profession, and are able to use, process and analyze economic and/or business information. Students understand various business processes and operations, and causal connections between them. Finally, students are able to express their ideas effectively and analytically, both in oral and written form.

Generic skills:

- 1) Analytical, critical and creative thinking skills: Students develop analytical and critical thinking skills through independent scientific research and problem solving. This generic skill is assessed through the overall thesis grade.
- 2) Well-being and self-development skills: Students develop self-directed learning skills and professional competence through independent thesis work. This generic skill is assessed through students' selection of a research topic, its implementation and resulting managerial implications, as part of the maturity test.
- 3) Communication, interaction and digital skills: Students learn to communicate research findings clearly and analytically in written and oral form. This generic skill is assessed through students' manuscript presentations and discussions at different stages during thesis seminars.
- 4) Sustainability, responsibility and ethics skills: Students are able to make responsible and ethically justified research decisions, and adhere to good scientific practice and research integrity, including confidentiality, informed consent, responsible data management and the ethical use of AI. This generic skill is assessed through overall thesis grade.

Official course record: [7214305](#)

721338S | Mathematical Economics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Matti Koivuranta

Content

The course introduces frequently used mathematical methods in the economic literature. Applicable parts from linear algebra, differential and integral calculus, mathematical optimization, and dynamic analysis are covered.

Learning outcomes

Upon completion of the course, the student is able to apply central mathematical methods required in advanced economics courses. The student is able to use analytical and critical reasoning to interpret and connect concepts across different subdisciplines of economics, formulate and solve economic problems rigorously, evaluate the applicability and limitations of mathematical methods, and present well-structured arguments, demonstrating the integrative and problem-solving thinking relevant to the discipline.

Official course record: [7213385](#)

721010A | Maturity Test, Bachelor's Degree, Business

0 ECTS | Economics and Business Administration | Intermediate Studies | Finnish

Person in charge: Pia Hurmelinna-Laukkanen

Content

A maturity test is a study unit required by the Government Decree on University Degree, through which the student demonstrates their knowledge of their field of study and their command of appropriate language. The thesis included in the student's degree (bachelor's thesis, master's thesis, diploma thesis) cannot be approved until the student has taken the maturity test.

[Official course record: 721010A](#)

BO00AL55 | Maturity Test, Bachelor's Degree, International Business Management

0 ECTS | International Business Management | Intermediate Studies | English, Finnish

Person in charge: Pia Hurmelinna-Laukkanen

Content

A maturity test related to the thesis topic is written towards the end of the thesis process. After the test is taken it is evaluated by the supervisor. In the International Business Management programme, the maturity test shall be taken in English. Students whose language of previous schooling was Finnish will take the exam in Finnish.

Learning outcomes

A maturity test is a study unit required by the Government Decree on University Degree, through which the student demonstrates their knowledge of their field and language proficiency. The bachelor's thesis included in the student's degree (bachelor's thesis, master's thesis, diploma thesis) cannot be approved until the student has taken the maturity test

[Official course record: BO00AL55](#)

721010S | Maturity Test, Master's Degree, Business

0 ECTS | International Business Management, Marketing, Accounting, Finance, Economics, Business Analytics (Economics and Business Administration) | Advanced Studies | Finnish

Person in charge: Opintojakson ja markkinoinnin oppiaineen vastuuhenkilö, Liiketoiminta-analytiikan vastuuhenkilö, Taloustieteen vastuuhenkilö, Laskentatoimen vastuuhenkilö, Rahoituksen vastuuhenkilö, KV-liiketoiminnan johtamisen vastuuhenkilö

No description supplied in the collected record.

[Official course record: 721010S](#)

724209A | Monetary Economics

5 ECTS | Economics | Intermediate Studies | Finnish

Person in charge: Sanna Huikari

Content

Financial systems; the concepts of money and financial markets, determination of interest rates, monetary and financial institutions, supervision of banking, central banks; tools, objectives and mechanisms of monetary policy, the connection between monetary policy and aggregate demand and supply.

Learning outcomes

After the course the students are able to explain the concept of money, the role of money in the economy and the principles according to which the demand and supply of money and the interest rates are determined. The students can describe the functioning of financial markets, financial institutions and the central bank. They are also able to understand the objectives, tools and mechanisms of monetary policy, and evaluate the effects of monetary policy on money markets and the real economy.

The student understands the role of ethical conduct and regulation in the financial system and can analyze the incentives that lead to market failures or moral hazard.

The student can apply their knowledge to solve problems, such as assessing the effectiveness of central bank tools during unconventional market conditions.

[Official course record: 724209A](#)

723038S | Multinational Enterprise Theory

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Lauri Haapanen

Content

Students completing the course will have an understanding of the theories explaining the behavior of large and geographically dispersed multinational enterprises (MNEs) which are in mature stages of internationalization. In doing this, students will familiarize with the dominant MNE theories, the transaction cost theory, Dunning's OLI paradigm, resource-based view of the firm, and dynamic capability perspective, among others.

Learning outcomes

After completing this course,

1. Students will be able to summarize, discuss, and compare different multinational enterprise (MNE) theories.
2. Students can judge the applicability and select the most suitable MNE theories for explaining different MNE activities in different business contexts.
3. Students can evaluate and analyze the major changes in MNE's cross-border strategies using theoretical frameworks, taking into account firm-specific and industry-specific boundaries.
4. By creating written analyses on MNE cross-border strategies, students will be demonstrating their skills of applying suitable MNE theories and producing analytical, critical, and academic reports.
5. Students will also be able to express their ideas effectively in oral form.

[Official course record: 723038S](#)

BO00AJ79 | Nordic perspectives on global megatrends

5 ECTS | International Business Management | Intermediate Studies | English

Person in charge: Eduardo Acosta Llano

Content

Positioning the Nordics within the global context. Nordic countries. which are, what they have in common, how is their culture, and most characteristic aspects.

Grand challenges, megatrends, global issues. Defining and delimiting current common challenges in the international context.

Closing the gap. Theory vs practice. Study relevant academic papers vs. what is actually happening in reality. The UN SDG is a globally known synthesis of global megatrends. How, when, and why they were formulated, and how the agenda 2030 is going to 4 years to go.

Nordic innovations, technologies: How the Nordics have turned crisis into opportunities.

The future for the Nordics: What are the most important challenges for the region in the next decades?

CSR in the Nordic countries: Corporate view on social issues.

Learning outcomes

Upon completion of the course, the student is able to

- Describe the fundamentals of the global megatrends and their impact on business and societies.
- Identify current and future megatrends as well as what causes them.
- Recognize what the most prominent megatrends in the Nordic countries are.
- Explain the specific features of the Nordic perspectives on those global megatrends.
- Define the role of the Nordic culture in tackling global megatrends.
- Detect what innovations, businesses, and technologies were developed by the Nordics to tackle global megatrends.
- Distinguish the Nordic perspective on global megatrends from other regions.

Generic Skills and Competences

After completing the course, students will have developed key generic skills aligned with the University of Oulu framework. In particular, the course strengthens analytical, critical, and creative thinking, enabling students to critically evaluate knowledge in their own field and apply it to the analysis of complex and unpredictable global challenges.

Students will enhance their ability to recognize cultural diversity, question stereotypes, and work effectively in international, multicultural, and multidisciplinary contexts, appreciating expertise across different fields. The course also develops sustainability competence, including understanding the social, ecological, economic, and cultural dimensions of sustainability, as well as the role of the UN Sustainable Development Goals (SDGs).

In addition, students will strengthen their communication, interaction, and digital skills, including clear oral and written communication to diverse audiences, constructive collaboration and feedback, and the appropriate, safe, and responsible use of digital and AI applications relevant to their studies.

Official course record: [BO00AJ79](#)

BO00AR30 | Organization Theory

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Juha Tuunainen

Content

This course serves as an introduction to a vast and multifaceted domain of inquiry. Due to its nature, its design resembles a conceptual map rather than a theoretical encyclopedia. While the course provides a brief overview of major developments in both organizations and organization theory, its primary focus is on the different theoretical concepts used to define organizations. These concepts include organizations as machines, cultures, systems, networks, practices, languages, and brains. Additionally, the course explores the differences and similarities between these concepts, examines the relationship between organizations and their environments, and discusses the implications of various organizational concepts for power and authority.

Learning outcomes

During this course, students will become familiar with major perspectives for conceptualizing organizations. They will develop the capacity to understand various theories of organization, appreciate and evaluate their central claims and characteristics, and compare alternative theoretical approaches. The course is structured around several distinct concepts of organization, providing students with a broad overview of organizational research. It will also address cross-cutting themes across different perspectives on organizations.

Official course record: [BO00AR30](#)

721562S | Organizational Change and Development

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Anniina Rantakari

Content

The purpose of the course is to understand the foundations of organizational change processes and change management. The course focuses on different drivers and elements of organizational change as well as on the challenges organizational members face during change.

Learning outcomes

Upon completion of the course, the student is able to recognize and critically evaluate different forms of organizational change processes in different contexts, as well as to analyze dynamics of change management. Drawing on these, the course provides foundations to act as a change agent in different organizational contexts.

[Official course record: 7215625](#)

BO00BA01 | Organizations, Society, and Inequality

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Anna-Liisa Kaasila-Pakanen

Content

In this course, students will apply interdisciplinary perspectives to analyze different ways of organizing in response to social and environmental challenges. The course offers a chance to explore how we can care for both the environment and one another through:

- Theory and practice of diversity, equality and inclusion
- Organizing in the anthropocene
- Alternative organizational ethics

Additionally, the course emphasizes development of strong communication skills, enabling students to articulate their knowledge and ideas through both written and oral formats.

Learning outcomes

The key learning target of the course is to learn to critically analyze and contribute to sustainable, ethical, and inclusive practices within contemporary organizations. By examining the broader political, cultural, economic, and ecological contexts in which organizations operate, students will gain an understanding of how management and organizational practices intersect with societal challenges, systemic inequalities, and both individual and planetary wellbeing.

Through a combination of theory and practice, students will learn to:

- Know organizing and business management as part of a wider societal framework.
- Analyze the relationship between organizing, management and systemic inequalities.
- Discuss and explore possible responses to social and environmental challenges organizations face in a changing global landscape.

[Official course record: BO00BA01](#)

721011Y | Orientation Course for New Students

1 ECTS | International Business Management, Marketing, Accounting, Finance, Business Analytics (Economics and Business Administration), Economics | General Studies | English, Finnish

Person in charge: Opintojakson ja markkinoinnin oppiaineen vastuhenkilö, Liiketoiminta-analytiikan vastuhenkilö, Taloustieteen vastuhenkilö, Laskentatoimen vastuhenkilö, Rahoituksen vastuhenkilö, KV-liiketoiminnan johtamisen vastuhenkilö

Content

1. STARTTI Guide for New Students self-study materials in Moodle
 - a) University of Oulu Ethical Principles (30 – 60 min)
 - b) University of Oulu Safety Orientation (20 – 30 min)
 - c) How to Stay Updated
 - d) Learn Skills Needed for Your Studies
 - e) Also Explore These Sections
2. Orientation Week, Case Blender, and Personal Study Plan (PSP/HOPS)
3. Information Skills Training (2 h) arranged by the library (<https://libguides oulu.fi/OBS/721011Y>).

Learning outcomes

Upon the completion of the course, the student is familiar with the structure of their programme, is able to plan their studies, and has become acquainted with their fellow students.

The course introduces the University of Oulu's common generic skills, including analytical, critical and creative thinking; well-being and self-development; communication, interaction and digital skills; international and multicultural competence; sustainability, responsibility and ethics; as well as multidisciplinary and interdisciplinary skills. Students become familiar with the meaning and relevance of these skills in their studies and future working life.

After completing STARTTI materials, students will understand which matters are important to our university community and the principles to which we are all jointly committed. Students will learn how their own actions can promote safety at the University of Oulu and become familiar with the university's operating models in different situations.

After studying the other contents of the STARTTI guide, students will be familiar with the main communication channels for students. They will learn study skills needed at university, how artificial intelligence can be used in studies, and what generic skills are developed during higher education. In addition, students will become familiar with the services available to students at the University of Oulu.

Official course record: [721011Y](#)

BO00AV16 | Orientation Course for New Students

1 ECTS | International Business Management | General Studies | English

Person in charge: Lauri Haapanen

Content

1. STARTTI Guide for New Students self-study materials in Moodle

- a) University of Oulu Ethical Principles (30 – 60 min)
- b) University of Oulu Safety Orientation (20 – 30 min)
- c) How to Stay Updated
- d) Learn Skills Needed for Your Studies
- e) Also Explore These Sections

2. Common info sessions in the beginning of the studies.

3. Tutoring groups. To get to know other students, own tutor, and the own tutor teacher. Meetings coordinated by the tutors and tutor teachers. Attendance on the information session during the orientation week and afterwards (e.g., personal study plan, language info, and info session arranged by the university).

4. Personal study plan (PSP). Making the personal study plan with the help of tutors, to be accepted by the tutoring teacher.

5. Familiarization with the [Study skills and competences materials](<https://www.oulu.fi/en/for-students/supporting-your-studies-and-contact-information-students/study-skills-and-competences>).

6. Information Skills Training (2 h) arranged by the library. [More information](<https://www.oulu.fi/en/university/library/library-services/help-information-searching/library-training-for-new-students>) about library training for the new students.

Learning outcomes

Upon the completion of the course the student is familiar with the structure of one's program, is able to plan their studies and has got to know their fellow students.

The course introduces the University of Oulu's common generic skills, including analytical, critical and creative thinking; well-being and self-development; communication, interaction and digital skills; international and multicultural competence; sustainability, responsibility and ethics; as well as multidisciplinary and interdisciplinary skills. Students become familiar with the meaning and relevance of these skills in their studies and future working life.

After completing STARTTI materials, students will understand which matters are important to our university community and the principles to which we are all jointly committed. Students will learn how their own actions can promote safety at the University of Oulu and become familiar with the university's operating models in different situations.

After studying the other contents of the STARTTI guide, students will be familiar with the main communication channels for students. They will learn study skills needed at university, how artificial intelligence can be used in studies, and what generic skills are developed during higher education. In addition, students will become familiar with the services available to students at the University of Oulu.

Official course record: [BO00AV16](#)

721541S | Perspectives on Innovation Management

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Abdollah Mohammadparast Tabas, Mohsin Rehman

Content

The course contents consist of different ways to approach innovation, value creation, value appropriation, intellectual property rights, inter-organizational collaboration, open innovation, orchestrating in innovation networks, and innovation ecosystems.

Learning outcomes

This course introduces students to the key concepts and theories of innovation management. It begins by providing an overview of the main perspectives on innovation, establishing a solid foundation in the core principles and analytical frameworks. Building on this foundation, students are exposed to state-of-the-art research in selected innovation streams, gaining insight into cutting-edge developments and emerging trends shaping innovation management. Finally, the course engages students with recent influential contributions, encouraging critical reflection on their implications for both theory and practice. Students learn to manage innovation and the innovation process effectively.

Official course record: [721541S](#)

721952S | Portfolio Management

6 ECTS | Finance | Advanced Studies | English

Person in charge: Asif Ruman

Content

Neoclassical finance and economics concepts in portfolio management; asset managers and their role in the economy; major asset classes and their key characteristics; expected utility; mean-variance portfolio optimization, shortcomings and developments; factor theory; return predictability; risk management; portfolio performance evaluation; equity investment strategies; asset allocation and macro strategies.

Learning outcomes

Upon completion of the course, students understand the key concepts in portfolio management and are able to implement and evaluate equity trading strategies on the basis of academic evidence.

Official course record: [721952S](#)

724208A | Portfolio Theory

5 ECTS | Finance | Intermediate Studies | English

Person in charge: Evangelos Mourelatos, Tugba Whitehead

Content

This course is an introduction to the fundamentals of modern investment theory. Students will create portfolios from limited numbers of assets, and examine the portfolios' return and risk characteristics. The course will cover the CAPM and factor models of asset pricing. The Efficient Market Hypothesis, along with both supporting and contradictory evidence, will be presented. The course will also introduce theory and evidence of Behavioral Finance.

Learning outcomes

Upon completion of the course, students will be able to: construct optimal portfolios from a limited number of assets; quantitatively show the beneficial effects of diversification on portfolio expected return and variance; describe the relationship between risk aversion and an investor's optimal complete portfolio; distinguish between active and passive portfolio construction, and form optimal active portfolios; derive, compare, and contrast the CAPM and factor pricing models; define the Efficient Market Hypothesis and discuss its implications for investment policy; outline arguments of Behavioral Finance and discuss examples from the literature.

Official course record: [724208A](#)

721066S | Principles of Econometrics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Sanna Huikari

Content

Statistical basics of econometrics and the use of basic econometric models in the analysis of different economic phenomena. The main focus is on dealing with the basic regression models adapted to cross-section data and familiarizing with the use of statistical software. In addition, basic concepts and tools of regressions with a binary dependent variable and regressions with time series data are covered.

Learning outcomes

After completing the course, the student is familiar with the standard methods used in empirical analyses and with regression analysis relevant for analyzing economic data. In addition, the student can interpret and evaluate the outcomes of empirical analysis. Furthermore, he/she has basic knowledge of using statistical software in econometric analyses.

The student is able to critically assess the validity of econometric models, identifying potential biases and considering how these models interface with economic theory.

The student can apply basic econometric tools to solve problems in real-world economic environments.

The student is able to analyze empirical arguments presented in economic literature.

Official course record: 721066S

724106P | Principles of Marketing

5 ECTS | Marketing | Basic Studies | Finnish

Person in charge: Satu Nätti

Content

During the course, following themes will be discussed: 1) Basic concepts and phenomena: e.g., value creation in customer relationships and marketing in different contexts, 2) Strategic tools of marketing and latest trends 3) Basics of consumer behavior, 4) Marketing and sustainable development, 5) B-to-B marketing and sales, 6) Digital marketing, 7) Distribution channels and networks.

Learning outcomes

Upon completion of this course, students are able to define the strategic role of marketing in the organization, likewise define basic concepts of marketing related to strategic perspectives, consumer behavior, sustainable marketing, B-to-B marketing, marketing communications and marketing channels/networks. After completing this course, the student is able to differentiate variety of marketing logics in variety of contexts (for example, differences between consumer marketing and B-to-B marketing). The student is able to use concepts of marketing to aid decision making and evaluate the suitability of these decisions from customer viewpoint and in different contexts. In addition, the student learns the principles of teamwork and the related interaction, and becomes familiar with the basics of responsible business.

Official course record: 724106P

BO00AL47 | Principles of Marketing

5 ECTS | Marketing | Basic Studies | English

Person in charge: Satu Nätti

Content

During the course, following themes will be discussed: 1) Basic concepts and phenomena: e.g., value creation in customer relationships and marketing in different contexts, 2) Strategic tools of marketing and latest trends 3) Basics of consumer behavior, 4) Marketing and sustainable development, 5) B-to-B marketing and sales, 6) Digital marketing, 7) Distribution channels and networks.

Learning outcomes

Upon completion of this course, students are able to define the role of marketing and strategic customer orientation in an organization, as well as define basic marketing concepts related to strategic perspectives, consumer behavior, sustainable marketing, B2B marketing, marketing communications, and marketing channels/networks. After completing this course, students are able to differentiate between various marketing logics in different contexts (for example, differences between consumer marketing and B2B marketing). Students are able to use marketing concepts to support decision-making and evaluate the suitability of these decisions from a customer viewpoint. In addition to the analytical and critical skills needed to apply the learned theories to real-life contexts, students learn the principles of teamwork and related interaction, and become familiar with the basics of responsible business.

Official course record: [BO00AL47](#)

AY724106P | Principles of Marketing (OPEN UNI)

5 ECTS | Marketing | Basic Studies | Finnish

Person in charge: Eija-Liisa Heikka

Content

During the course, following themes will be discussed: 1) basic concepts and phenomena: e.g., value creation in customer relationships and marketing in different contexts, 2) strategic tools of marketing and latest trends, 3) basics of consumer behavior, 4) marketing and sustainable development, 5) B-to-B marketing and sales, 6) marketing communications and digital marketing, and 7) distribution channels and networks.

Learning outcomes

Upon completion of this course, students are able to define the role of marketing in the organization, likewise define basic concepts of marketing related to strategic perspectives, consumer behavior, sustainable marketing, B-to-B marketing, marketing communications and marketing channels/networks. After completing this course, the student is able to differentiate variety of marketing logics in variety of contexts (for example, differences between consumer marketing and B-to-B marketing). The student is able to use concepts of marketing to aid decision making and evaluate the suitability of these decisions.

Official course record: [AY724106P](#)

BO00AR21 | Principles of Sustainable Marketing

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Tuula Lehtimäki

Content

The course introduces the concept of sustainability and links it to critical discussions within the broader framework of the marketing discipline. Adopting a global perspective and incorporating systems thinking, as well as relevant theories and models of sustainability transitions, the course examines the core environmental, social, and economic dimensions of sustainability and their implications for firms' marketing strategies and activities. Relevant theories and models of sustainable marketing are explored, and sustainable marketing strategies and activities are analyzed in the context of real-world company cases.

Learning outcomes

This course provides a foundational understanding of what sustainable marketing is. Upon successful completion of the course, students will be able to define sustainable marketing; explain the relation between the marketing discipline and the concept of sustainability; reflect on the implications of sustainability transitions for marketing phenomena and vice versa; and distinguish between different aspects of sustainable marketing in a global business context.

In terms of generic skills, after completing the course, the student is able to: 1) recognize the dependencies between the social, ecological, and economic sustainability in marketing (sustainability, responsibility and ethics skills), 2) apply analytical and critical thinking skills in evaluating sustainable marketing strategies and activities and their value to firms (analytical, critical and creative thinking skills), 3) communicate as an expert in a way suitable for the target audience, to express and justify their ideas orally and in writing (communication, interaction and digital skills), 4) promote constructive cooperation with people from different backgrounds and work professionally in multicultural teams (international and multicultural skills).

Official course record: [BO00AR21](#)

721064S | Qualitative Methods in Business Research

6 ECTS | International Business Management, Marketing | Advanced Studies | English

Person in charge: Juha Tuunainen

Content

The following themes will be covered: (1) research and writing as a process, (2) research ethics, (3) research planning and design, (4) literature review, (5) data collection, (6) data analysis, and (7) drawing conclusions.

Learning outcomes

Students will learn to plan and conduct scientific research. They will gain knowledge of how to apply methodological ideas and concepts and qualitative research methods to generate new knowledge, and they will also learn to report their research findings.

Official course record: [721064S](#)

721072S | Quantitative Economics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Matti Koivuranta

Content

The course contains hands-on work on simple economic applications where use of computer is a necessity.

Learning outcomes

Upon completion of the course, the student is able to apply computational and quantitative methods to economic problems, using programming tools such as Python and relevant digital and AI-based applications. The student is able to design and carry out applied analyses of economic phenomena, drawing on multidisciplinary approaches, and to select appropriate methods while recognising their strengths and limitations. The student can critically evaluate results, formulate and justify conclusions, and collaborate effectively in interdisciplinary contexts. The analytical, creative, and problem-solving skills developed on the course are broadly transferable and applicable beyond the field of economics.

Official course record: [721072S](#)

721473S | Quantitative Methods in Marketing Research

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Mari Juntunen

Content

Lectures and related material include the following themes: 1) Background for market research and data based decision making, 2) Measuring concepts and collecting quantitative data, 2) Tools for analyzing and quantitative data in Master level (e.g. Excel, SPSS), and 4) Evaluating quantitative research, and 5) Reporting quantitative research.

Learning outcomes

Upon completion of the course, students can analyze marketing and business environments and collect and utilize quantitative data to help management and decision making. In addition, students are able to create reports to communicate with management, customers, researchers, and other stakeholders regarding the analyzed data. They are also able to evaluate the usability, validity, reliability and generalizability of the data and reports. After completing this course, students can use the basic market analysis tools in data gathering and analysis.

Generic skills:

1. Analytical, critical, and creative thinking skills: students are able to apply analytical and critical thinking skills in planning, conducting, and reporting quantitative research. They can think systemically and apply problem solving and creative thinking skills when developing new knowledge and new procedures through data analyses in their assignments.
2. Sustainability, responsibility, and ethics skills: Students are able to adhere to good research practices. They can solve ethical questions related to research and justify their actions ethically.
3. Multidisciplinary and interdisciplinary skills: Students are able to apply the research methods of their own discipline, which are often applied from other disciplines
4. Communication, interaction and digital skills: Students are able to communicate about research a way suitable for the target audience, also in a foreign language. They are able to utilise digital research tools and solutions appropriately and responsibly, and critically evaluate their impacts on research.

Official course record: 7214735

721476S | Readings in Marketing

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Mari Juntunen

Content

This self-paced course is available to Marketing students at Oulu Business School throughout the 2025–2026 academic year. Students can enroll in and complete the course at any time that suits them best.

Learning outcomes

Our students demonstrate knowledge of the theories, concepts, frameworks and/or empirical findings within the marketing discipline. They possess the skills necessary for individual learning and identifying relevant business research information.

Official course record: 721476S

BO00AV03 | Real Estate Economics and Investments

6 ECTS | Economics | Advanced Studies | English

Person in charge: Elias Oikarinen

Content

Housing (residential real estate), commercial real estate, four-quadrant model of real estate, monocentric city model, stock-flow model, hedonic price model, discounted cash flow model for real estate, cap rate, real estate investments, real estate in a multi-asset investment portfolio, real estate and sustainability.

Learning outcomes

Upon completion of the course, the student understands:

- the foundations of real estate economics and investments
- the most important models of housing and real estate economics
- the key valuation methods for real estate
- the characteristics of real estate investments
- the key sustainability issues related to real estate investments
- the relationship between direct real estate investments and publicly traded real estate securities

Official course record: [BO00AV03](#)

AY00AL59 | Recognize your potential (OPEN UNI)

2 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Virpi Pietikäinen

Content

The course provides ideas and reflective tools for managing one's own competence. The student will compile their own competence portfolio.

Key contents:

- * Identifying competence
- * Resources and strengths
- * Ability to change
- * Personal competence portfolio

Learning outcomes

On completion of the course, the student will be able to:

- * identify and articulate their key competences and strengths and set goals that interest them
- * recognize which areas of competence he/she needs to develop in order to achieve their goals
- * use a strategic mindset to plan for the future, taking into account changes in their environment and anticipating their impact on their own activities

Official course record: [AY00AL59](#)

BO00BA67 | Recognize your potential MOOC

2 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Virpi Pietikäinen

Content

Due to the rapid transformation of the operating environment, the importance of up-to-date, future-oriented working life skills and entrepreneurial thinking is increasingly emphasized. In this course, students learn to identify their own competencies, strengths, and development needs, and to build their personal future pathway. The course provides ideas and reflective tools for managing one's own competence. The student will compile their own competence portfolio.

Key contents:

- * Identifying competence
- * Resources and strengths
- * Ability to change
- * Own competence portfolio

Learning outcomes

On completion of the course, the student will be able to:

- * identify and articulate their key competences and strengths and set goals that interest them
- * recognize which areas of competence he/she needs to develop in order to achieve their goals
- * use a strategic mindset to plan for the future, taking into account changes in their environment and anticipating their impact on their own activities

Official course record: [BO00BA67](#)

BO00AJ50 | Research Methods in Business

5 ECTS | Marketing, International Business Management | Intermediate Studies | English

Person in charge: Robert van der Have

Content

Lectures, course readings, workshops, seminars and related material cover the following themes: 1) Principles of scientific knowledge generation 2) Basics of philosophical assumptions of scientific knowledge 3) How to define a research problem and research question(s) 4) Research Design, research setting and dynamics between research problem, method and data 5) Deduction, induction and abduction in research/research process 6) Varied scientific approaches and core methodologies in qualitative research and quantitative research.

Learning outcomes

Upon completion of the course, students have deepened their understanding of

- How to produce scientific knowledge
- Basics of philosophical assumptions of scientific knowledge
- Formulating a research problem and research question(s)
- Defining a research design; Dynamics between research problem, method and data needed
- Deduction, induction and abduction in research
- Varied scientific approaches and core methodologies in qualitative research and quantitative research
- Student is able to reflect on these issues on one's own bachelor thesis

Official course record: [BO00AJ50](#)

722001J | Research plan seminar

1 ECTS | Economics and Business Administration | Post-graduate Studies | Finnish, English

Person in charge: Sari Laari-Salmela

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- *is able present his/her research plan to a wider audience
- *is able to answer questions and critical comments concerning the research plan
- *is able to prepare a scientific presentation

Official course record: [722001J](#)

BO00AV02 | Responsible Macroeconomic Policy and Analysis

6 ECTS | Economics | Advanced Studies | English

Person in charge: Juha Junntila

Content

Introduction to Macroeconomics: Overview of macroeconomic principles and the importance of institutions in shaping economic outcomes. The 3-Equation Model: Detailed study of the 3-equation model (IS-PC-MR) and its application to macroeconomic analysis. Financial Systems and Economic Stability: Examination of the role of financial systems in economic stability and the impact of financial crises. Monetary Policy: Analysis of monetary policy, including at the zero lower bound, and its effects on inflation and economic growth. Fiscal Policy: Analysis of sustainable fiscal policy, focusing also on periods of crises. Economic Growth and Innovation: Exploration of the drivers of economic growth and the role of innovation in long-term economic development. Inequality and Macroeconomic Performance: Investigation of the relationship between inequality and macroeconomic performance, including the impact of income distribution on economic stability. Exchange Rates and International Economics: Study of exchange rate dynamics and their implications for international trade and economic policy. Commodity Price Shocks: Understanding the macroeconomic effects of commodity price shocks and their impact on global economies. Policy Responses to Economic Instability: Evaluation of policy responses to economic instability, including fiscal and monetary policy measures. Analysis of Complex Economic Systems for Sustainable Macro Policies: Introduction to chaos theory and complex systems as a tool for contemporary macroeconomic policy issues. Case Studies and Applications: Application of macroeconomic theories to real-world case studies and contemporary policy issues.

Learning outcomes

This course provides an in-depth exploration of macroeconomic theory and policy, focusing on the interplay between institutions, economic instability, and inequality. Students will engage with contemporary research and policy issues in macroeconomics based on key topics such as the 3-equation (HANK) model, the role of the financial system, and the integrated treatment of inequality. Through a combination of lectures, policy tutorials and exercises/quizzes focusing on practical applications, students will develop a robust understanding of the macroeconomic challenges facing global economies today and the tools to address them. One of the special features of the course is to introduce the students thoroughly to the discussions about contemporary macroeconomic policy solutions to meet the urgent need to adapt to and affect the ongoing climate crisis. These will be discussed from e.g. the points of view of macro-financial solutions and inequality effects. In addition, the students will be given a short introduction to the current stage of complex system analysis with respect to macroeconomic policy issues.

Official course record: [BO00AV02](#)

BO00AW58 | Results with Responsibility

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Eeva Leinonen

Content

The course provides a clear overview of the key dimensions of corporate responsibility—economic, social, and environmental—and their connection to a company's values and strategic choices. Throughout the course, students will explore why investing in responsibility is beneficial for businesses and how it strengthens competitiveness.

The course also examines future sustainability and competence needs within companies, as well as the principles of responsible communication as part of a credible and appealing corporate brand.

Learning outcomes

After completing the course, the student

- *knows the key areas of corporate social responsibility and their most important evaluation indicators, and can assess the current state of responsibility and development needs in the company
- *can identify factors that will affect the company's operations in the future
- *understands and is able to evaluate the entrepreneurial skills needed to develop responsible business practices
- *can consider corporate responsibility in the company's communication and brand building

Official course record: [BO00AW58](#)

AY724860P | Results with Responsibility (OPEN UNI)

5 ECTS | Micro-entrepreneurship | Basic Studies | Finnish

Person in charge: Eeva Leinonen

Content

The course provides a clear overview of the key dimensions of corporate responsibility—economic, social, and environmental—and their connection to a company's values and strategic choices. Throughout the course, students will explore why investing in responsibility is beneficial for businesses and how it strengthens competitiveness.

The course also examines future sustainability and competence needs within companies, as well as the principles of responsible communication as part of a credible and appealing corporate brand.

Learning outcomes

After completing the course, the student

- *knows the key areas of corporate social responsibility and their most important evaluation indicators, and can assess the current state of responsibility and development needs in the company
- *can identify factors that will affect the company's operations in the future
- *understands and is able to evaluate the entrepreneurial skills needed to develop responsible business practices
- *can consider corporate responsibility in the company's communication and brand building

Official course record: [AY724860P](#)

DP00AI26 | Scenario planning as a futures research method

3 ECTS | Future Studies, Business Analytics (Economics and Business Administration) | Post-graduate Studies | English

Person in charge: Petri Ahokangas

Content

The course includes: (I) Introduction to time and futures; (II) Black swans and realities; (III) Scenario approaches and methodologies; (IV) Scenario workshop and presentations; (V) Scenario planning as a qualitative research method; (VI) Concluding remarks and key learnings.

Learning outcomes

This is a generic doctoral training course. It aims to acquaint PhD students with futures research, contextualizing, and theory building in management and management-related research. We start from the premise that it is critical for a doctoral researcher to understand emergence and contextual realities via applying futures-oriented approaches early in their doctoral studies. By the end of the course, the doctoral researchers will have gained skills and knowledge on (a) the role of contextualizing emergence and interpreting and acting on foresight-based knowledge, and (b) analyzing and providing scientific data and results based on futures-oriented methods.

Upon completion of the course, the doctoral researchers will

- * be familiar with the basics of futures-oriented research and foresight
- * know the basic scenario approaches used in research, strategy, and policy settings
- * know the basic scenario methodologies and know how to apply, interpret and legitimate scenario methodologies in research
- * be able to generate, apply, evaluate, and assess different types of scenarios in various contexts and related to strategies and policies
- * be able to plan, facilitate, interpret and develop futures-oriented research methodologies

Official course record: [DP00AI26](#)

693396P | Service Design

5 ECTS | International Business Communication | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

Learn how to design services in a customer-oriented and innovative way. How to improve user experiences through research, experimentation and creative design? You will learn practical methods to design services that better meet customer needs and stand out in the market.

Key content: Service usability, service design methods and tools, service process design steps and touch points.

Learning outcomes

The student is able to recognize customer and user groups in different services. The student can acknowledge the user experience, evaluate the user-oriented methods, and design a service in a user-driven approach.

Official course record: [693396P](#)

721026S | Statistical Methods for Business Analytics

5 ECTS | Business Analytics (Economics and Business Administration) | Advanced Studies | English

Person in charge: Jukka Isohätälä

Content

The course addresses the quantitative business analysis methods and tools (e.g. Excel, SPSS, PSPP, Mplus) for planning and decision making, including reporting of the analysis results and means to ensure their usability, validity and reliability. The viewpoints of different stakeholders are covered and different data sources considered.

Learning outcomes

Upon completion of the course, students can analyze business environments, and collect and utilize especially quantitative data to help management and develop decision making. In addition, they are able to create reports to communicate with management, customers and other stakeholders regarding the analyzed data. They are also able to evaluate the usability, validity, reliability and generalizability of the data and reports. In other words, after completing this course, students can use the basic quantitative business analyses tools in data gathering and analysis to support decision making in business.

Official course record: 7210265

BO00AL30 | Strategic Management

5 ECTS | International Business Management | Basic Studies | English

Person in charge: Kaisa Vaviolahti, Sari Laari-Salmela

Content

During the course, we

- (1) go through the basic concepts, historical developments, and schools of thought in strategic management.
- (2) discuss the contemporary issues in strategic management.

Learning outcomes

Upon completion of the course, the student understands the historical developments of strategic management through different schools of thought. Also, the student recognizes the role of different schools of thought in organizational strategy-making. The student knows the central concepts of strategic management and is able to analyze the relations between organizational strategy and operations. Consequently, the student is able to construct and justify a coherent view of strategy and strategic management by drawing upon the course material.

Official course record: BO00AL30

BO00AZ60 | Strategic Management

5 ECTS | Management | Basic Studies | Finnish

Person in charge: Kaisa Vaviolahti

Content

During the course, we

- (1) go through the basic concepts, historical developments and schools of strategic management.
- (2) discuss the contemporary issues in strategic management.

Learning outcomes

Upon completion of the course the student understands the historical developments of strategic management through different schools of thought. Also, the student recognizes the role of different schools of thought in organizational strategy-making. The student knows the central concepts of strategic management and is able to analyze the relations between organizational strategy and operations. Consequently, the student is able to construct and justify a coherent view on strategy and strategic management by drawing upon the course material.

Official course record: BO00AZ60

724206A | Strategic Marketing Management

5 ECTS | Marketing | Intermediate Studies | English

Person in charge: Natalia Ferreira de Freitas

Content

Strategic marketing management is a comprehensive approach that encompasses the process of situation assessment, development of marketing strategies, strategy formulation, and the execution of an implementation plan. In today's business environment, this approach is increasingly intertwined with sustainable marketing practices, reflecting a growing emphasis on environmental stewardship, social responsibility, and economic viability. Key concepts including market analysis, customer value proposition, marketing communications, responsibility and sustainability in marketing, and business model innovation are thoroughly addressed and adapted to align with principles of sustainable marketing.

Learning outcomes

Ingress:

This course equips students with the concepts, tools, and analytical mindset needed to make strategic marketing decisions in complex and dynamic market environments. Through problem-based learning and real-life company cases, students learn to evaluate market situations across industries, develop responsible product-market strategies, and communicate strategic solutions effectively in global and local contexts.

Learning goals:

Identify and apply the concepts and tools linked to sustainable strategic marketing management, in pursuit of solving real-life company case problems. The course improves students' ability to evaluate different market situations amongst industries and propose solutions to sustainable strategic product/market decisions. Furthermore, students are able to explain strategy at different levels; corporation, SBU and functional. Students are able to apply concepts and tools of sustainable strategic marketing in global and local context that is, they understand the interdependency of macro- and microenvironments. In addition, students will demonstrate analytical thinking skills by applying different marketing strategies in practice and solving real-life business problems in a case exercise guided by the problem-based learning method. Students will develop oral and written communication skills suitable for business contexts by working in small groups throughout the course. They will analyze how responsibility and sustainability are implemented in a real-life case, participate in a physical examination, and present their case exercise both in written and oral forms.

Generic skills:

1. Analytical, critical, and creative thinking skills: Apply analytical, critical, and creative thinking in the context of strategic marketing management; recognize and reflect on these skills in their own activities; understand their importance in scientific, professional, and ethical marketing work; and critically evaluate marketing knowledge to solve complex and unpredictable strategic marketing problems.
2. Well-being and self-development skills: Describe their own expertise and develop a professional identity in strategic marketing management; promote group learning and collaborative development; and recognize the need for lifelong learning in evolving marketing and business environments.
3. International and multicultural skills: Recognize cultural diversity and the problematic nature of stereotypes related to language, nationality, and ethnicity; reflect on stereotypical ways of thinking; and is able to work effectively in multicultural teams and act openly in international and multinational strategic marketing contexts with people from diverse cultural backgrounds.
4. Sustainability, responsibility, and ethics skills: Identify the social, ecological, economic, and cultural dimensions of sustainability and evaluates their own actions in relation to them in strategic marketing activities; recognize the UN Sustainable Development Goals (SDGs); and work ethically, equally, and equitably with diverse stakeholders in accordance with professional ethics and good scientific practice, while respecting different environments and values.
5. Multidisciplinary and interdisciplinary skills: Identify, compare, and critically reflect on the similarities and differences between strategic marketing management and related disciplines when addressing complex business and market challenges.
6. Communication, interaction and digital skills: Communicate clearly and effectively, both orally and in writing, to expert and non-expert audiences in strategic marketing contexts, including in a foreign language; work constructively in groups by actively listening, providing feedback, and resolving conflicts; and continuously develop communication, interaction, digital, and multi-literacy skills.

Official course record: 724206A

BO00BB83 | Strategic Sales Management

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Hannu Torvinen

Content

Lectures, course materials and visitor sessions focus on the following themes: the role of selling in the company strategy, value-based selling, personal selling process, selling to public sector, ethical and sustainable selling, value-based pricing, as well as recent developments in the theory and practice of sales management.

Learning outcomes

The primary objective of the course is for students to develop a coherent understanding of the central theories and practices of strategic sales management. Upon successful completion, students will be able to construct modern sales strategies, explain key dynamics of personal selling across diverse private and public sector contexts, and recognize the growing role of sustainability principles and emerging technologies in sales management. In addition, students can design, execute and evaluate small-scale research on selling and/or sales management. Students are also able to express their ideas analytically and effectively in both written and oral form.

In terms of generic skills, after completing the course, the student:

- is able to make analytical and critical conclusions and identify the need for creative solutions based on relevant materials and data.
- is able to develop their professional skills to meet society's changing needs.
- will develop their sectoral language skills and is able to present their research results to the international study group.
- is able to take into account the global environmental and digital challenges to make strategic and sustainable decisions.
- is able to apply knowledge and methods from different disciplines and contexts to develop innovative solutions to complex problems.
- is able to work effectively in a group and to negotiate and assign tasks.

Official course record: [BO00BB83](#)

BO00BB80 | Strategic Sustainable Branding

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Fatima Khitous

Content

This course examines the brand phenomenon from contemporary strategic perspectives, with a strong emphasis on sustainability, including circularity, and societal impact. The course equips students with conceptual and strategic tools to develop, strengthen, or revitalize brands in dynamic market environments by focusing on three interrelated areas: 1) building coherent and distinctive brand identities through strategic consistency, differentiation, and leadership integration; 2) creating brand synergy by aligning branding with entrepreneurship, governance, and stakeholder relationships across employees, supply chain partners, and customers; 3) and enabling brand evolution through seamless brand experiences, stakeholder values' integration, and the alignment of brand strategy with global sustainability goals.

Learning outcomes

Ingress:

This course examines brand management from a multi-stakeholder perspective, focusing on the role of sustainability in shaping branding in local and global contexts. Students learn how sustainable brand strategies are designed, implemented, and evaluated, and how they influence brand image, reputation, and long-term value. Drawing on branding and sustainability frameworks, the course approaches branding as a strategic process in which sustainability is integrated into brand development and decision-making. Through various learning approaches, students learn to leverage sustainability to address societal and environmental challenges while building credible and competitive brands.

This course fosters three key generic skills essential for strategic sustainable brand management. First, students strengthen analytical, critical, and creative thinking by analysing branding challenges at the intersection of marketing and sustainability and by generating and communicating well-reasoned solutions. Second, the course also enhances international and multicultural skills through collaborative work on sustainable branding while considering global challenges and diverse stakeholder contexts. Lastly, students develop sustainability, responsibility, and ethics skills by assessing the social, ecological, economic, and cultural impacts of branding, applying the UN Sustainable Development Goals, and addressing ethical branding issues through responsible and justified decision-making.

Learning goals:

Upon completion of the course, students will be able to:

- 1) Critically apply brand management theories and sustainability frameworks to analyse and develop systemic brand strategies that account for complex stakeholder interdependencies across local and global contexts.
- 2) Evaluate and strategically integrate sustainability considerations into branding processes to shape brand value, identity, and reputation in support of long-term competitive advantage.
- 3) Develop responsible and future-oriented brand strategies that address contemporary global challenges and contribute to sustainable business and societal outcomes.

Generic skills:

Analytical, critical, and creative thinking skills: Apply analytical and critical thinking skills within the context of strategic sustainable branding, considering interfaces between marketing, sustainability, and related fields; apply creative thinking and problem-solving to develop new knowledge, solutions, and procedures for sustainable brand challenges; and critically analyse arguments and communicate well-reasoned positions.

International and multicultural skills: Work effectively in international and multicultural contexts, taking into account global contexts, diverse stakeholder expectations, and international operating environments in the development and management of sustainable brands.

Sustainability, responsibility, and ethics skills: Recognize the interdependencies between social, ecological, economic, and cultural dimensions of sustainability in the context of branding and marketing; is able to assess the impacts of branding activities on these dimensions; apply the UN Sustainable Development Goals in professional branding activities and identify ways to participate in societal debate and decision-making; and address ethical issues in branding with sound reasoning, justifying actions while considering diverse backgrounds, power relations, values, and operating environments.

Official course record: [BO00BB80](#)

BO00AV06 | Sustainability Reporting and Assurance

6 ECTS | Accounting | Advanced Studies | English

Person in charge: Juha-Pekka Kallunki

Content

ESRD-directive, ESRS standards, IFRS S1 and S2 standards, assurance of sustainability reports by auditors, research evidence on sustainability reporting.

Learning outcomes

After completing the course, a student is familiar with the sustainability reporting (ESG reporting) requirements and can analyze published sustainability reports. A student is familiar with the assurance of sustainability reports. Students are able to apply analytical and critical thinking skills, to analyze arguments and to argue appropriately, to promote constructive cooperation with people from different backgrounds, recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study, to solve ethical questions in their field, and to communicate as an expert in a way suitable for the target audience in a foreign language.

Official course record: [BO00AV06](#)

BO00AR11 | Sustainable Banking and Financial Economics

6 ECTS | Economics | Advanced Studies | English

Person in charge: Juha Junntila

Content

Introduction to money, banking and financial markets for interest yielding assets. Period of zero lower bound and negative interest rates. Forms of Alternative Finance (AltFi) and the basic ideas and role of Decentralized Finance (DeFi) and cryptocurrencies. Digital banking, disruption and financial intermediation, FinTech regulation and financial stability, policy responses to FinTech activities. Recent steps in the regulation of traditional banks. Role of direct (markets) and indirect (banks) financing channels in the value creation through sustainable finance. Differences in the function of stakeholder and shareholder banks. Role of ESG and other sustainability related information and approaches to banking and other forms of financing real investments. Connection of especially climate related themes (carbon markets and clean energy) to financial intermediation. Central banking and monetary policy, role and forms of conventional and unconventional monetary policy actions. The idea of Central Bank Digital Currency (CBDC) and its role in monetary policy. Role of central banks in green transition and fight against climate change and biodiversity loss.

Learning outcomes

After completing the course the student understands the main roles and functions of banks and financial markets in the financial transmission processes and recognizes the forms of Alternative Finance (AltFi) and the basic ideas and role of Decentralized Finance (DeFi) and cryptocurrencies, digital banking, disruption and financial intermediation. He/she is also familiar with the recent steps in the regulation of traditional banks, the role of direct and indirect financing channels in the value creation through sustainable finance, and differences in the function of stakeholder and shareholder banks. The student also recognizes the role of ESG and other sustainability related information and approaches to banking and other forms of financing real investments. In addition, the role of central banking and monetary policy and forms of conventional and unconventional monetary policy actions are clear to him/her. The student also understands the idea of Central Bank Digital Currency (CBDC) and its role in monetary policy, and more generally the main principles of the role of central banks in green transition and fight against climate change and biodiversity loss.

Official course record: [BO00AR11](#)

BO00BB81 | Sustainable Consumption

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Mohsin Rehman

Content

This course gives an advanced understanding of consumer behavior with a focus on sustainable consumption. The central topics discussed are: 1) consumers as individuals (e.g., psychological theories explaining consumer behavior and decision-making), and 2) contemporary social and cultural influences on sustainable purchasing and consumption behavior (e.g., culture, reference groups, digitality).

Learning outcomes

Upon completion of the course, students will be able to:

- 1) Analytically assess and apply central theories and models on sustainable consumer decision-making and sustainable consumption in local and global contexts
- 2) Identify internal and external aspects that influence sustainable consumption, and critically evaluate their implications for sustainable domestic and international marketing strategies
- 3) Design, execute, and evaluate a small-scale consumer behavior study

Upon completion of the course, the following generic skills will also be developed:

- Analytical, critical, and creative thinking skills: Students develop analytical and critical thinking skills by applying consumer behavior theories and models to sustainable consumption issues. Designing and conducting a consumer behavior study strengthens students' ability to analyze and address complex sustainability-related marketing phenomena.
- Communication and interaction skills: Through group work, written reporting, oral presentations, and an individual reflective learning diary, students learn to express ideas clearly and analytically for different audiences. Collaborative tasks enhance teamwork, discussion, and feedback skills in an academic context.
- Research and methodological skills: The course builds essential research competencies by guiding students through the full research process, from research plan to data collection and analysis to drawing evidence-based conclusions, by using appropriate research methods.
- Sustainability, responsibility, and self-development skills: By critically examining sustainable consumption and reflecting on their own learning, students strengthen their understanding of responsibility in marketing, while fostering self-awareness, independent learning, and professional development.

Official course record: BO00BB81

BO00BB86 | Sustainable Procurement

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Nimi päivitty myöhemmin

Content

The course introduces the following topics: 1) The role of procurement in sustainable business: definition and principles of sustainable procurement and procurement's potential in driving sustainability and innovation; 2) Regulatory frameworks guiding sustainable procurement; 3) Procurement process: public and private procurement processes, procedures and technologies; 4) Management of supplier and relevant stakeholder relationships; 5) Sustainable supply chain: responsible supplier selection, ethical sourcing and effects of wider supply networks to sustainability; 6) Emerging trends and challenges influencing sustainable procurement in different contexts.

Learning outcomes

Upon successful completion of the course, students will understand the role of organizational procurement in sustainable supply chains and networks. Students possess knowledge and skills about tools to make responsible purchasing decisions. Students possess knowledge of collaborative innovation processes in procurement as a driver for environmental and social change. Students can identify and find knowledge about different procurement contexts, including public and private sectors and different industries. Students understand the connectedness of organizations in cross-sectoral supply networks. Students can act professionally in procurement processes, express their ideas analytically, and effectively.

In terms of generic skills:

Analytical, critical, and creative thinking: Students understand the interconnectedness of supply chains and are able to apply a holistic perspective using multiple theoretical approaches.

International and multicultural competence: Students gain a global perspective on supply chains and supply networks.

Sustainability, responsibility, and ethical competence: Students develop the ability to support sustainable development through responsible procurement and supply chain practices.

Official course record: [BO00BB86](#)

BO00BE69 | Sustainable Systems for Nature Positive Business MOOC

2 ECTS | Business Analytics (Economics and Business Administration) | Intermediate Studies | English

Person in charge: Julius Gomes

No description supplied in the collected record.

Official course record: [BO00BE69](#)

724614P | Tax Law II

5 ECTS | Corporate Law | Basic Studies | Finnish

Person in charge: Markku Pulkkinen

Content

The course gives readiness to understand main structure of Finnish tax procedure and especially company taxation and company acquisition. To get acquainted with new tax practice and the most important new tax prejudicates. The difference between tax avoidance, tax aversion and tax planning. Current issues in tax policy.

Learning outcomes

The student knows the role of the tax politics and understands connections of taxation and economics.

The student knows the basic structure of the Finnish tax system. The student masters the principles of Finnish corporate taxation and is able to critically evaluate different forms of corporate taxation, also knowing business arrangements, groups in taxation and the special issues of taxation of the company and its owner. Similarly, the student knows the main features of the possibilities of tax planning and knows its special questions. The student is familiar with the latest jurisprudence and tax legislation development projects, as well as current taxation issues.

The student knows the most important norms of the taxation procedure and knows how to avoid the risks of tax evasion norms.

Official course record: [724614P](#)

721618A | Tax Process Law

9 ECTS | Corporate Law | Intermediate Studies | Finnish

Person in charge: Mikko Pikkujämsä

Content [Finnish source]

Vero-oikeuden tietojen syventäminen

Learning outcomes [Finnish source]

Kurssin tavoitteena on syventää opiskelijoiden vero-oikeudellista tietämystä liiketoiminnassa yleisesti esiin tulevista verokysymyksistä. Opiskelu perustuu omatoimiseen perehtymiseen artikkelimuotoiseen kirjallisuuteen ja oikeuskäytäntöön sekä luentoihin.

Verokysymysten tarkastelu on ilmiölähtöistä. Pääpaino on tuloverotuksessa ja erityisesti elinkeinoverotuksessa, mutta tarkastelu ei rajoitu vain yhteen verolajiin, vaan lisäksi tarkastelun kohteena ovat arvonlisävero, varainsiirtovero ja perintö- ja lahjaverot. Kurssin menestyksellinen suorittaminen edellyttää kattavia perustietoja Suomen verojärjestelmästä ja -lainsäädännöstä.

Opiskelijan edellytetään ennen kutakin luentokertaa perehtyvän kyseistä aihepiiriä koskevaan alempana lueteltuun aineistoon. Luennoilla käydään kokoavasti läpi kunkin aihepiirin systematiikka, keskeiset säännökset ja viimeaikainen oikeuskäytäntö. Viimeinen luentokerta muodostuu opitun kertaamisesta ja tentistä. Tentissä vaaditaan kirjallisen aineiston ja luennoilla esitetyn hyvää hallintaa.

Official course record: [721618A](#)

BO00BB79 | Technology and Marketing

6 ECTS | Marketing | Advanced Studies | English

Person in charge: Tero Huhtala

Content

This course introduces students to a variety of current and emerging technologies (e.g. VR/AR, data analytics, AI and agentic AI) and solutions used in marketing, including their application areas, their challenges, and opportunities. This context is linked to relevant marketing theories and analytical marketing frameworks (e.g. SOSTAC, RICE, etc.). During the course, students will structurally assess and evaluate the feasibility and suitability of different marketing technologies to different stages of a marketing plan and develop creative solutions to marketing challenges presented by real companies.

Learning outcomes

After successful completion, the students possess an understanding of the modern technological context of marketing and have an overview of the various extant and emerging technologies that are implemented in marketing at both strategic and tactical levels. They can categorize and evaluate the suitability of different marketing technologies to the marketing plan of an organization and are able to assess the value of a specific technology in a particular use case now and in the future.

In terms of generic skills, the students will learn...

Analytical, critical, and creative thinking skills: students will learn to apply analytical and critical thinking skills within the context of modern digital marketing; apply creative thinking and problem-solving to create new solutions, knowledge, and workflows for digital marketing; consider and critically analyze technological and societal challenges and communicate well-reasoned positions.

Well-being, and self-development skills: Handling disruptive change and technologies with a structured approach contributes to personal and professional development by helping students understand the constancy of change and the importance developing adaptability and fostering resiliency.

Communication, interaction and digital skills: students will learn skills to communicate as an expert in a way suitable for the target audience; work effectively in a group and to negotiate and assign tasks; utilize and critically evaluate digital solutions and AI technologies appropriately, safely and responsibly.

Official course record: [BO00BB79](#)

721071P | Towards Sustainable Future

5 ECTS | International Business Management | Basic Studies | English

Person in charge: Asta Salmi

Content

The course focuses on contemporary opportunities and challenges related to responsibility in business when operating in the global business environment. The ideas of circular economy and shared value creation are discussed. The course examines the United Nation's SDGs and how they are adopted in business situations. Some basic theories about the changing role of business corporations in society are explored, and these ideas are analyzed and reflected in the context of case examples from the business world.

Learning outcomes

Upon completion of the course students will be aware of the role of business corporations in society, considered from the point of view of responsibility/sustainability. They will be able to critically analyze business practices and express their own viewpoints regarding responsibility in business in both written and oral forms.

In terms of generic skills, after completing the course, the student is able to:

- recognize the interdependence between social, ecological, and economic dimensions of sustainability
- identify the UN Sustainable Development Goals (SDGs)
- apply analytical skills in evaluating companies' stance on sustainability
- interact in a multicultural group
- reflect on their own actions in relation to sustainability dimensions

This course is included in the course catalogue of Sustainability studies network.

Official course record: [721071P](#)

721559S | Venture Growth Strategies

6 ECTS | International Business Management | Advanced Studies | English

Person in charge: Sakari Sipola

Content

The course provides an overview of high-growth entrepreneurship and the process of building and scaling startups with significant business potential. It examines recent developments in global startup ecosystems, with a particular focus on Silicon Valley, entrepreneurial finance, and venture capital.

Learning outcomes

After completing the course, students can understand different types of entrepreneurship and growth strategies, recognize the fundamental elements of successful ventures, and identify the resources and competencies needed to develop and scale them in international markets. Students are able to interpret startup ecosystems in different geographical contexts and apply these insights both in startups and in growth initiatives within established organizations.

Official course record: [721559S](#)

Chemistry & biochemistry

774311A | A Basic Course in Geochemistry

5 ECTS | Geochemistry | Intermediate Studies | Finnish

Person in charge: Pertti Sarala

Content

Geochemistry as a field of science; history of geochemistry; tasks and fields of geochemistry; origin and electron configuration of chemical elements; origins and structure of the Earth; meteorites; the geochemical classification of the elements; composition of earth's different spheres; geochemical differentiation; composition of magmas; dissolution and precipitation of minerals; pH-Eh-diagrams; introduction to isotope geochemistry.

Learning outcomes

Upon completion of this course, the student will have a broad overview of the different fields of geochemistry, be able to relate the behavior of elements to different physico-chemical processes in nature, be able to convert geochemical data from one form to another (wt.%, molar and cation proportions, milliequivalents), and can plot geochemical data on different diagrams can carry out simple mineral dissolution/precipitation and mass balance calculations.

[Official course record: 774311A](#)

740079Y | Activities in University and Student Organizations

1-10 ECTS | Biochemistry | General Studies | English, Finnish

Person in charge: Kaija Autio

Content

The course can include functions in a number of positions of trust as follows:

- Student Union Board, 1 year, 4-5 credits
- Student Union representatives, 2 years, 2 credits
- University Board of Directors, 2 years, 4 credits
- University Collegium, 2 years, 2 credits
- Education Council, 2 year, 2 credits
- Education Management, 2 years, 4 credits
- Faculty steering group, 2 years, 2 credits
- Faculty Board, 2 years, 2 credits
- Faculty education committee, 2 years, 2 credits
- Board of a subject organization or a student guild, 1 year, 1-3 credits
- National student organization such as SYL, 1 year, 1-5 credits
- UNIC Student Board, 1 year, 3 credits
- Equality and diversity committee, 2 years, 4 credits
- Other University level, official working groups, 2 years, 2 credits

Learning outcomes

Upon completion of the course, the student will be able to

- apply the skills needed in academic positions of trust (interaction skills, meeting techniques, working in a group, cooperation skills, leadership skills)
- evaluate critically the issues to be decided, take a stand on them and justify his or her viewpoint
- attend to the functions related to his or her position of trust in a responsible manner
- work as a member of multiprofessional team and apply meeting techniques
- communicate clearly in group, listen actively others, give constructive feedback and solve conflicts constructively
- describe own skills, develop own professional identity, advance learning and development in the group and recognize the need for lifelong learning

Official course record: [740079Y](#)

780322A | Activities in university and student organizations

1-10 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Matti Niemelä

Content

- Student Union Board, 1 year, 4-5 credits
- Student Union representatives, 2 years, 2 credits
- University Board of Directors, 1 year, 2 credits
- University Collegium, 2 years, 2 credits
- Education Council, 1 year, 2 credits
- Education Steering Group, 1 year, 2 credits
- Faculty Steering Group, 1 year, 2 credits
- Faculty Board, 2 years, 2 credits
- Faculty Education Committee, 2 years, 2 credits
- Board of a subject organization or guild or interest society of the Student Union, 1 year, 1-3 credits
- National student organization such as SYL, Loimu, TEK etc., 1 year, 1-5 credits
- UNIC Student Board 1 year 3 credits
- The Equality and Diversity Committee, 2 years, 4 credits
- Other important functions in the field of education policy and/or development of teaching, 1-3 credits.

Learning outcomes

After this course, the student will be able to:

- critically evaluate the issues to be resolved, take a stand on the issues to be decided, and justify their views.
- perform the duties related to the position of trust in a responsible manner.
- work as a member of a multi-professional working group and apply meeting technology.
- is able to communicate clearly in a group, listen actively to others, give constructive feedback and resolve conflicts constructively.
- is able to describe his/her competence, develop his/her own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [780322A](#)

780660S | Advanced water treatment chemistry

5 ECTS | Chemistry | Advanced Studies | English

Person in charge: Anne Heponiemi

Content

Legislation concerning to the municipal domestic water and wastewater treatment and physical, chemical and biological unit operations as a treatment method. Case studies from municipal domestic water and wastewater treatment. Urban Wastewater Treatment Directive.

Learning outcomes

Upon completing the course, the student will be able to:

- recognize key Finnish requirements for drinking water and wastewater quality, understand relevant European wastewater legislation, and assess the significance of these regulations in professional work.
- identify common physical and chemical unit operations in raw water and wastewater treatment, including sewage sludge treatment methods, and critically analyze the related chemical phenomena for practical application.
- develop self management skills by planning and scheduling independent work in ways that support well being and effective learning.

Official course record: 780660S

774304A | Analytical methods in geochemistry

5 ECTS | Geochemistry | Intermediate Studies | Finnish

Person in charge: Pertti Sarala

Content

Detection limits and errors in analysis, presentation of analytical results, sampling, sample pre-treatment, sample digestion (melts, solutions), silicate analysis theories and practice of different instrumental methods (AAS, XRF, ICP-AES, ICP-MS, TIMS), a visit to a chemical laboratory.

Learning outcomes

Upon completion of this course, the student will:

- know which kind of sample pre-treatment and analysis methods are used for geological samples
- is aware of different factors that need to be taken into account when planning a geochemical research project.

Official course record: 774304A

740376A | Bachelor's Thesis

10 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Joni Mäki

Content

The theme of the thesis is to acquaint students with the ways of searching and presenting information needed by a researcher and in other work, to get acquainted with a biochemical topic by preparing a literature thesis on it, and to prepare a presentation in the desired format. The student presents their thesis either in a designated seminar, as a poster, or in another equivalent format. In addition, the student attends a required number of scientific presentations. The course is divided into two parts. The self-study online course component introduces the different reporting methods (articles, research plan, news) and, taking into account their use, also good language skills. The course period also includes mandatory information retrieval exercises provided by the library, as well as an optional additional exercise. By completing the optional exercise, the student will also complete the course 030005P Information Retrieval Course (1 ECTS). The second part involves the preparation of a thesis on a topic of interest to the student. For his / her own work, the student chooses a topic based on the issues raised or their own interest. After getting acquainted with the literature, the student prepares a thesis on the topic and prepares a presentation based on it, which can be, for example, a poster, a publication script, a website, a blog, a presentation at school, etc. The dissertation is supervised by one teacher. The course is related to the course 901050Y Second Domestic Language (Swedish), Written Language Skills (BMTK), 1 cr, where the material produced by the students can be used as study material. At the end of the course, the student writes a maturity test (740377A, 0 cr) on the topic of his / her thesis, with which the student demonstrates mastery of both his / her thesis and his / her mother tongue.

Learning outcomes

The student is able to evaluate and combine the understanding and information gained in different courses about biochemistry. The student is able to search for information in the literature and other relevant sources, evaluate it and present it in writing in a manner typical of the field of biochemistry. The student is able to communicate both orally and in writing about issues and research related to the work of a biochemist. The course also teaches shared general skills, which include analytical, critical, and creative thinking skills (the student evaluates and integrates the understandings and knowledge gained from different courses, searches for and analyzes information from literature, and communicates their topic both in writing and orally); wellbeing and self-development skills (the student becomes more independent and self-directed, manages their own time, and engages in self-reflection on the material they produce); internationality and multicultural skills (the written report is compiled mainly from English-language sources, which develops professional language proficiency); sustainability, responsibility, and ethical skills (the student has an ethical responsibility for their thesis/report); multidisciplinary and interdisciplinary skills (depending on the topic, the student gains experience with knowledge formation and approaches from different fields); and communication, interaction, and digital skills (the student communicates interactively with the instructor about their topic, presents to their peers, listens to other presentations, and becomes familiar with digital communication tools).

[Official course record: 740376A](#)

781321A | Bachelor's Thesis

8 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Katja Lappalainen

Content

Chemistry literature, guidelines for good scientific practice and scientific writing. Preparation and presentation of a poster and seminar talk from the subject, which is related to the Bachelor's thesis. The structure, content and preparation of the Bachelor's thesis.

Learning outcomes

After this course, the student

- can search for scientific information in the chemistry literature
- can evaluate, structure and apply knowledge in the drafting of a scientific thesis, poster and presentation
- understands and can explain basic concepts and theories of chemistry
- masters the basics of writing scientific text
- can apply oral communication practices in holding a poster and seminar presentation, and ethical principles in research and reporting
- can work in a group
- is capable of independent work and scheduling their own work; identifies stressors related to expert work (well-being and self-development skills)
- is able to critically evaluate knowledge in their own field and can apply it to solve problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support their learning (communication, interaction and digital skills)
- can communicate clearly orally and in writing in their mother tongue, and give constructive feedback (communication, interaction and digital skills)

[Official course record: 781321A](#)

AY740157P | Basic biochemistry 1: Biomolecules (OPEN UNI)

4 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Sanna-Maria Karppinen

Content

The course is implemented entirely as an online course. The course consists of three modules, which are completed in order. The modules are:

1. Basics of biomolecules. This section covers the basics of the structures and functions of all groups of biomolecules.
2. Biomolecules in-depth section. This section deepens the knowledge of the structures and functions of each group of biomolecules.
3. A functioning cell. This section will introduce, how a functional cell is formed by the precise interaction of four major groups of biomolecules – proteins, nucleic acids, lipids, and carbohydrates – and how these molecules interact structurally and functionally.

Learning outcomes

After completing the course, the student will be able to:

- describe the composition, structure and function of the main biomolecular groups – proteins, nucleic acids, carbohydrates and lipids.
- describe the forces that regulate the structure and function of biomolecules.
- use computer-based methods for understanding the structures and functions of biomolecules.
- apply the learned knowledge in the right context and evaluate this knowledge critically.

[Official course record: AY740157P](#)

AY740153P | Basic biochemistry 2: Methods (OPEN UNI)

2 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Sanna-Maria Karppinen

Content

The course is implemented entirely as an online course. It is not possible to carry out laboratory work online, so different techniques are also presented in videos. The course includes the following topics:

1. Laboratory safety and good laboratory practices
2. Solution calculations and preparation of solutions
3. Centrifugation
4. Presentation of chromatography, electrophoresis and molecular biological methods

Learning outcomes

After completing the course, the student will be able to:

- describe the basics of safety in laboratory work.
- describe principles of buffer solution preparation and its importance.
- describe the theoretical basis of the most important basic laboratory techniques in biochemistry.
- explain where and how these techniques are used.

[Official course record: AY740153P](#)

AY740158P | Basic biochemistry 3: Metabolism (OPEN UNI)

4 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Mirva Saaranen

Content

The course is implemented entirely as an online course. The processed sub-assemblies are:

- * Basic concepts of metabolism
- * Glycolysis
- * Citric acid cycle
- * Respiratory chain and ATP production
- * Gluconeogenesis
- * Pentose phosphate pathway
- * Storage polysaccharides
- * Oxygen metabolism
- * Fat circulation in the body and cholesterol
- * Breakdown and biosynthesis of fatty acids, and ketogenesis

Learning outcomes

After completing the course, the student will know:

- concepts and basics of metabolism
- reaction pathways of energy metabolism, their interconnection and regulation
- molecular mechanisms of energy metabolism
- basics about the connection of energy metabolism to biosynthetic and decomposition reactions
- how apply this knowledge in terms of normal physiology and diseases

Official course record: [AY740158P](#)

748624J | Basic course in teaching biochemistry

2 ECTS | Biochemistry | Post-graduate Studies | English

Person in charge: Vastuuhenkilö

Content

The course covers:

- the fundamentals of pedagogy
- teaching practices and competencies with focus on teaching on laboratory courses
- communication and interaction skills in teaching
- reflective teaching practice
- digipedagogical approaches

Learning outcomes

By the end of this course, students will be able to:

- explore their role and responsibilities as educators
- reflect on the specific Biochemistry course they will be teaching
- identify common challenges in teaching and develop strategies to address them
- create a personal teaching portfolio, integrating feedback from students

Generic skills developed during the course:

- Well-being, and self-development skills: Student is able to set professional goals, plan their career and develop and maintain one's own competence in teaching activities
- International and multicultural skills: Student is able to promote constructive cooperation with people from different backgrounds
- Communication, interaction and digital skills: Student is able to apply methods, practices, and solutions based on digital technology and AI appropriately, safely, and responsibly in teaching related tasks

Official course record: [748624J](#)

780120P | Basic Principles in Chemistry

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Minna Tiainen

Content

Introduction to chemistry, stoichiometry, redox reactions, chemical equilibrium, the equilibrium of acids and bases, buffer solutions, titration, and thermodynamics.

Learning outcomes

Upon completing the course, students will demonstrate an understanding of basic chemistry phenomena, including the equilibrium of acids and bases, chemical equilibrium, redox reactions, and stoichiometry. Students will be able to critically evaluate knowledge of basic chemical phenomena and apply it to solve various problems. They can connect basic concepts of chemistry to their field of study and examine chemical phenomena from the perspectives of other disciplines. The student is able to present and justify his/her views clearly and to act and communicate constructively in a group, including giving and receiving constructive feedback in peer review. The student is able to identify key factors for their own learning and well-being, assess their own competence, schedule their work and understand the importance of lifelong learning.

[Official course record: 780120P](#)

782608S | Battery chemistries and components

5 ECTS | Chemistry | Advanced Studies | English

Person in charge: Ulla Lassi

Content

Battery types and history; Lithium ion battery and principle; Anode and cathode materials used in lithium-ion batteries; Electrolytes and other significant components for lithium-ion batteries; Preparation of a single battery cell, Battery cell assembling; Overview of other emerging battery technologies.

Learning outcomes

The student will learn the basic knowledge of the battery materials and structures. The student understands the operation principle of Li-ion battery, its structure, cell assembling. Further, student will learn how to improve the battery performances and especially, battery development from green chemistry viewpoint. The student will familiarize basics of chemistry and components in the battery system and emerging battery technologies.

[Official course record: 782608S](#)

782644S | Battery recycling chemistry and ecosystems

5 ECTS | Chemistry | Advanced Studies | English

Person in charge: Ulla Lassi

Content

Battery types for recycling; Current state-of-the-art of battery recycling; Mechanical treatment of spent batteries and battery cell disassembling; Pyrometallurgical processes for battery recycling; Hydrometallurgical processes; Challenges related to sustainability of battery recycling; Legislation and battery directive; Key industrial activities on battery recycling.

Learning outcomes

The student will learn the basic knowledge of the battery recycling and ecosystems. The student understands the chemistry of pyrometallurgical and hydrometallurgical processes for battery recycling. Mechanical recycling is also studied. Further, student will learn how to improve battery recycling from sustainable chemistry viewpoint. The student will familiarize also legislation related to battery recycling, and some recent industrial activities are presented.

[Official course record: 782644S](#)

740394A | Bio-data

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Valerio Izzi

Content

Typical approaches to data structures in R

Learning outcomes

After completing the course, students :

- learn how to develop code, mostly by thinking how to frame questions in a way algorithms would give them an answer,
- are encouraged to constructive co-operation with people from different backgrounds, developing (field specific) language skills,
- learn concepts of scientific integrity, especially in the context of data manipulation and presentation. Data used in the course are always open access,
- learn to combine biology/biomedical sciences with mathematics and informatics,
- learn to communicate theories, methods and results digitally and effectively, with rigor but also understanding how user perception participates in data communication.

[Official course record: 740394A](#)

744641S | Bio-data

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Valerio Izzi

Content

Typical approaches to data structures in R

Learning outcomes

After completing the course, students :

- learn how to develop code, mostly by thinking how to frame questions in a way algorithms would give them an answer,
- are encouraged to constructive co-operation with people from different backgrounds, developing (field specific) language skills,
- learn concepts of scientific integrity, especially in the context of data manipulation and presentation. Data used in the course are always open access,
- learn to combine biology/biomedical sciences with mathematics and informatics,
- learn to communicate theories, methods and results digitally and effectively, with rigor but also understanding how user perception participates in data communication.

[Official course record: 744641S](#)

740144P | Biochemical Methodologies I

8 ECTS | Biochemistry | Basic Studies | Finnish, English

Person in charge: Kaija Autio

Content

This module covers the basic methodologies used in practical biochemistry. The following topics will be addressed: safety in the laboratory, qualitative and quantitative observations, the calculations of concentrations and dilution factors, pipette cleaning and calibration, identification and quantification of biological molecules, principal and practice of the use of centrifuges, spectrophotometry, SDS-PAGE, agarose gel electrophoresis, thin-layer and paper chromatography, basics of protein purification, extraction of chromosomal DNA from bacteria, mini-prep extraction of plasmid DNA, extraction of RNA from mammalian tissue, basic microbial growth, dialysis, filtration and pH measurement.

Learning outcomes

Upon successful completion students are able to:

- Use basic methods used in biochemical research laboratory
- Use laboratory equipment and work safely
- Prepare solutions used in the lab
- Document and present lab experiments and their results

[Official course record: 740144P](#)

740151P | Biochemical methodologies I

10 ECTS | Biochemistry | Basic Studies | Finnish, English

Person in charge: Kaija Autio

Content

This module covers the basic methodologies used in practical biochemistry. The following topics will be addressed: safety in the laboratory, qualitative and quantitative observations, the calculations of concentrations and dilution factors, pipette cleaning and calibration, identification and quantification of biological molecules, principal and practice of the use of centrifuges, spectrophotometry, SDS-PAGE, agarose gel electrophoresis, thin-layer and paper chromatography, basics of protein purification, extraction of chromosomal DNA from bacteria, mini-prep extraction of plasmid DNA, extraction of RNA from mammalian tissue, basic microbial growth, dialysis, filtration and pH measurement. In addition, transferable skills like text processing (Microsoft Word) and spreadsheet (Microsoft Excel), drawing of charts, the basics of oral presentation, ethics in scientific research and good scientific practice are involved.

Learning outcomes

Upon successful completion students are able to:

- Use basic methods used in biochemical research laboratory
- Use laboratory equipments and work safely
- Prepare solutions needed in the lab
- Document and present lab experiments and their results
- is familiar with research integrity and knows ethical principles of biochemical research

[Official course record: 740151P](#)

747616S | Biochemical methodologies II

10 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Albert Galera Prat

Content

During this module students will analyze their own protein samples. The course will cover principles and practical applications of some of the more advanced methodologies used in practical biochemistry, including chromatography, fluorescence spectroscopy, stopped flow analysis, circular dichroism, bio-layer interferometry, micro-calorimetry, multi-angle light scattering, mass spectrometry and proteomics based on 2D electrophoresis and LCMS. For assessment each student has to answer a series of short technical questions and write a research report. Attendance is compulsory. The course has limited enrollment for 22 students.

Learning outcomes

Upon successful completion students are able to:

Field specific skills:

- describe the theoretical basis of the main biochemical analysis methods for proteins
- use the different instruments
- describe the potential of the different analytical techniques and develop strategies for addressing specific questions in protein & proteome-analysis
- integrate data from multiple sources and evaluate it critically
- describe why control experiments are essential for interpreting data and for scientific conclusions and design adequate controls for common biochemical methods

Specific generic skills:

- independently draw analytical conclusions, examine data critically and outline creative solutions by integrating experimental information of different sources.
- is able to work in a multicultural group towards a common goal.
- is able to complete the assignments required by the course in accordance with the RCR instructions.
- is able to work effectively in multidisciplinary teams, utilising the expertise of different disciplines and promoting common research objectives.
- is able to work, discuss and communicate effectively in a group

Official course record: 747616S

783666S | Biomass-based platform chemicals and their organic analysis

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Katja Lappalainen,

Content

Common biomass-based platform chemicals and the (waste) biomasses used as rawmaterial to produce them. Conversion of biomass to platform chemicals. Analysis of platform chemicals using thin-layer and liquid chromatography.

Learning outcomes

Upon completion of the course, the student:

- knows the most common biomass types
- knows the common platform chemicals, which can be prepared from biomass, and can describe the chemistry related to biomass refining
- is able to perform a biomass conversion reaction to platform chemicals in practice and determine the reaction products using liquid chromatography
- understands the separation mechanisms related to liquid chromatography and the operating principle of a chromatography equipment
- is able to perform simple measurements using liquid chromatography equipment
- is able to report the work in a form of a scientific article
- can identify learned generic skills (time management, group work, problem solving)

Official course record: 783666S

NB00AM63 | Biomolecules

5-8 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Joni Mäki

Content

This module provides an overview of biochemistry, outlining the forces involved in biomolecule structure and the chemical structures, properties and functions of polynucleic acids, proteins, carbohydrates and lipids. The module is arranged into lectures or workshops including computer exercises, and laboratory work. Part of the course materials are also available in English, but both English and Finnish are used in teaching. Both a final examination and continuous assessment of the various course activities will count towards the final mark.

Learning outcomes

Upon successful completion students are able to:

- tell the composition, structure and function of the major groups of biomolecules in cells; nucleic acids, proteins, carbohydrates and lipids and describe the forces that modulate their function.
- use basic bioinformatics tools to study and present structural and functional properties of biomolecules and search for knowledge on these
- apply information in the right context and evaluate it critically
- In addition, students who complete 8op are able to work in the biochemical laboratory, are able to solve calculations and problems and are able to interpret the scientific data they generate.
- The course also teaches shared general skills, which include analytical, critical, and creative thinking skills (the laboratory work, computer exercises, and exams help develop these skills); wellbeing and self-development skills (some of the lecture content relates to health and nutrition, as well as taking responsibility for one's own learning); internationality and multicultural skills (the computer exercises are completed in English, and some of the laboratory instruction may also be in English); sustainability, responsibility, and ethical skills (in the laboratory work, for example, correctly disposing of biological and chemical waste); multidisciplinary and interdisciplinary skills (the lectures cover topics related to multidisciplinary and emphasize broad expertise); and communication, interaction, and digital skills (using the Moodle platform to complete/submit assignments, working in laboratory groups, and coordinating one's own schedules).

[Official course record: NB00AM63](#)

740389A | Biosensors and introduction to microfabrication

5-7 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Caglar Elbuken

Content

Biosensors have a wide field of use and serves not only for end-user analysis but also for biochemical process characterization. There are several types of biosensors that use various operating principles. This course builds on the introductory fluidics course (740387A/744637S) and introduces engineering concepts of biosensors and microfluidic systems. The course covers functioning principles of major types of biosensors such as electrochemical, optical and mass-based biosensors and also discusses methodologies required to fabricate these structures. Cleanroom micromanufacturing techniques are explained. The course discusses engineering concepts governing the design principles of such fully integrated biosensor systems.

Optional laboratory is for students interested in getting their hands dirty. This module is composed of three successive sessions that build on each other. Group work is preferable. Groups of 3-4 students are ideal. (will be decided depending on lab infrastructure, availability of equipment and class size), Laboratory sessions aim for understanding electrochemical biosensors and the use of common electrochemical sensing protocols.

Learning outcomes

The students are expected to learn common types of biosensors, their operating principles, the common fabrication types. The course will provide the background and the jargon required to follow the leading journals of the field such as Biosensors and Bioelectronics, Analytical Chemistry. Basics of electrochemistry and optics are also covered for studying electrochemical and optical biosensors. Fabrication techniques are presented together with a visit to University of Oulu cleanroom. The laboratory infrastructure used for biosensor microfabrication and characterization are introduced. The course also involves a series of laboratory sessions for hands-on practice with electrochemical sensors.

Official course record: 740389A

744639S | Biosensors and introduction to microfabrication

5-7 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Caglar Elbuken

Content

Biosensors have a wide field of use and serves not only for end-user analysis but also for biochemical process characterization. There are several types of biosensors that use various operating principles. This course builds on the introductory fluidics course (740387A/744637S) and introduces engineering concepts of biosensors and microfluidic systems. The course covers functioning principles of major types of biosensors such as electrochemical, optical and mass-based biosensors and also discusses methodologies required to fabricate these structures. Cleanroom micromanufacturing techniques are explained. The course discusses engineering concepts governing the design principles of such fully integrated biosensor systems.

Optional laboratory is for students interested in getting their hands dirty. This module is composed of three successive sessions that build on each other. Group work is preferable. Groups are 3-4 students are ideal. (will be decided depending on lab infrastructure, availability of equipment and class size), Laboratory sessions aim for understanding electrochemical biosensors and the use of common electrochemical sensing protocols.

Learning outcomes

The students are expected to learn common types of biosensors, their operating principles, the common fabrication types. The course will provide the background and the jargon required to follow the leading journals of the field such as Biosensors and Bioelectronics, Analytical Chemistry. Basics of electrochemistry and optics are also covered for studying electrochemical and optical biosensors. Fabrication techniques are presented together with a visit to University of Oulu cleanroom. The laboratory infrastructure used for biosensor microfabrication and characterization are introduced. The course also involves a series of laboratory sessions for hands-on practice with electrochemical sensors.

Official course record: 744639S

782641S | Catalysis

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Teija Kangas, Anne Heponiemi

Content

The course covers the basic principles of heterogeneous and homogeneous catalysis. The focus is on kinetics of heterogeneous catalysis, the preparation of catalysts and their analysis. In addition, the learned knowledge is applied through a case study.

Learning outcomes

Upon completing the course, the student will be able to:

- * identify the key properties, reaction kinetics, and common reaction mechanisms of heterogeneous catalysts, and examine them critically.
- * describe major preparation and characterization methods for heterogeneous catalysts and assess the information obtained through these techniques.
- * apply course knowledge to water-treatment technologies based on heterogeneous catalysis and to solving related scientific problems.
- * develop self-management skills by planning and scheduling independent work in ways that support well-being and learning.

[Official course record: 7826415](#)

NC00AU31 | Catalytic processes for biomass conversion

5 ECTS | Chemistry | Advanced Studies | English

Person in charge: Varsha Srivastava

Content

This course includes the basics of catalytic materials, catalytic processes, and their applications in the conversion of biomass into value-added chemicals and materials. These include e.g. catalytic conversion of biomass into platform chemicals, photocatalysis in biomass conversion, graphitization of biomass, and thermocatalytic conversion of biomass.

Learning outcomes

Upon completion of this course, students will be familiar with the chemistry fundamentals of the catalysis approach and their role in biomass conversion into biobased chemicals and materials.

[Official course record: NC00AU31](#)

740362A | Cellular Biology

6 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Krista Juurikka

Content

The aim of the course is to deepen the knowledge about where in the cell different biochemical reactions take place, how the molecules are trafficked between organelles, and how these phenomena can be studied in cultured cells. The course aims to address specifically the specific functions, structure and biosynthesis of the organelles in an eukaryotic cell, transport of material into and out of the cells, and how the cytoskeleton affects many of these functions. The course contains practical lab work, during which the students learn basic skills on cell culture and fluorescence microscopy.

Learning outcomes

Field-specific skills. Upon successful completion students are able to:

- describe the general molecular mechanisms of how cells function
- understand how such molecular mechanisms can be studied
- familiarize themselves with basics of cell culture and tools and work practices in cell culture laboratory

Generic skills - Communication, interaction and digital skills. Upon successful completion students are able to:

- search, compile and orally present topics related to course contents, utilizing digital tools at the same time.
- demonstrate their ability to work in a group and assign tasks

Generic skills - Analytical, critical and creative thinking skills. Upon successful completion students are able to:

- present results from their experiments and critically evaluate the results and identify possible limitations of the experimental set up

Generic skills - Sustainability, responsibility and ethics skills. Upon successful completion students are able to:

- understand the ethical challenges and opportunities of cell culture.

Official course record: [740362A](#)

740366A | Cellular Communication

6 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Thomas Kietzmann

Content

The course covers basic aspects of the main cellular signalling pathways. The main emphasis will be made on the signalling pathways involved in the action of various hormones, growth factors, lipid-derived signaling molecules, and their cell surface and intracellular receptors, intracellular second messengers and protein kinases and phosphatases. The course involves a 40 h practical course (+written reports) in which cultured cells are used as targets to visualize certain hormone or drug-induced signaling molecules, their interactions, and how these regulate e.g. normal cell growth and/or cell death in culture. Attendance at practical course is obligatory.

Learning outcomes

Upon successful completion students are able to:

Field-specific skills

- Name, list, and discuss the major intra- and intercellular signalling pathways
- Present, describe, and discuss characteristic features of signalling pathways
- Describe and apply methods used to study, examine, and analyse signalling pathways

Specific generic skills

- Reflect on their own learning activities and independently seek support when needed
- Verbally describe their professional skills and competencies
- Follow and critically engage with the development of scientific and professional knowledge in their field
- Analytical, critical, and creative thinking
- Use field-specific English in intercultural teamwork
- Demonstrate responsible and ethical laboratory conduct

Official course record: [740366A](#)

780397A | Chemistry for Teachers

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Suvi Lapinkangas

Content

The course introduces students to experimental chemistry teaching by planning, testing, and videotaping laboratory work and demos. The work is also presented to other course participants. At the same time, the basic concepts needed in chemistry teaching are reviewed and chemical safety is introduced. Teaching materials are also made for the prepared laboratory work, which are distributed to the course participants.

Learning outcomes

After this course, the student...

- understands the importance of experiments in the teaching of chemistry.
- will be able to plan and implement demonstrations and laboratory experiments suitable at different levels of learning, taking into account occupational safety aspects.
- can identify solutions to problems in laboratory work based on previously learned theoretical knowledge.
- can give and receive constructive feedback on teaching.
- will be able to assess their own competence, develop their professional identity and recognize the need for lifelong learning.
- work equally with different people and experts from different disciplines while promoting common goals.
- can communicate clearly in a group, listen to others and share their own expertise and perspectives orally and in writing.
- can utilize digital and artificial intelligence applications appropriate to their field appropriately, safely and responsibly.

Official course record: [780397A](#)

782338A | Chemistry in Industrial Applications

5 ECTS | Physical Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content

During the course, recent industrial applications of chemistry are reviewed. These include e.g. chemistry in mining industry and in chemical industry. Especially, energy storage materials and metal refining are considered. Further, bioeconomy and circular economy processes, such as catalytic applications in water purification, preparation of biofuels and materials from biomass, and hydrogen economy are studied. Overall, the increasing role of inorganic circular economy in material chemistry, and in the utilization of waste and side streams are studied.

Learning outcomes

Upon completion of the course, the student knows in theory and in practice novel industrial applications of chemistry. Student understands and is able to analyze the role of fundamental chemistry in these industrial applications.

Official course record: [782338A](#)

782638S | Chemistry in Industrial Applications

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Ulla Lassi

Content

Course introduces in theory and practice the recent industrial applications of chemistry. These include e.g. processes of mining and chemical industry, applications of renewable energy and bioeconomy, energy storage applications (batteries, fuel cells, and hydrogen economy) and related new materials, and metal refining applications. Further, new possibilities of circular economy in material chemistry, i.e. in the utilization of waste materials and side streams are studied. Course has visiting lecturers from the companies.

Learning outcomes

Upon completion of the course, the student will be able to explain several chemical applications of process and environmental technology in industry. In particular, the student knows the novel applications and the role of chemistry in industrial applications.

[Official course record: 7826385](#)

AY782338A | Chemistry in Industrial Applications (OPEN UNI)

5 ECTS | Physical Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content [Finnish source]

Opintojaksolla tutustutaan teoriassa ja käytännössä uusiin ja nopeasti kehittyviin kemian teollisiin sovelluksiin, kuten mm. kaivannais- ja kemian teollisuuden prosesseihin, uusiutuvan energian ja biotalouden kemiallisiin sovelluksiin, vetytalouteen, energiaa varastoiviin uusiin materiaaleihin sekä metallien valmistukseen. Lisäksi opiskellaan kiertotalouden avaamia uusia mahdollisuuksia materiaalikemialla, mm. jätteiden ja sivutuotteiden hyödyntämisessä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee teoriassa ja käytännössä uusia kemian teollisia sovelluksia. Lisäksi hän ymmärtää ja osaa analysoida kemian merkitystä teollisissa sovelluksissa.

[Official course record: AY782338A](#)

782640S | Chemistry of Hydrometallurgical Processes

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Ulla Lassi

Content

Introduction to hydrometallurgical processes, pre-treatment of concentrates (oxidation/roasting, heat treatment), principles of leaching (including bioleaching) and solution purification, chemical precipitation and other metals recovery processes (crystallization, cementation, extraction, ion-exchange), iron removal, electrical processes and process chemistry (electrowinning, electrorefining, corrosion).

Learning outcomes

Upon completion of the course, the student will be able to explain chemical principles of hydrometallurgical processes and phenomena. The student knows the most important chemical reactions and variables affecting hydrometallurgical processes. Process chemistry is significant in several industrial applications, and those applications are considered during the course.

[Official course record: 782640S](#)

NC00AV14 | Chemistry Subject Teacher Master's Thesis

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's advisor. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity.

Official course record: [NC00AV14](#)

740393A | Data mining and data-based models

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Irene Hemel

Content

Sources and types of biomedical data, aggregated vs. sparse data, use of data for hypothesis generation and validation

Learning outcomes

After completing the course, students should be able to:

- understand, find and mine biomedical data sources
- devise strategies for the mining of aggregated and sparse data
- identify static and responsive databases and interact with them
- perform basic data mining operations, including ontological enrichments and pathway/network analysis
- evaluate the quality of data and their usability in further contexts

Generic skills

- Assess ethical considerations related to biomedical data use, including data quality and transparency.
- Consider the societal and sustainability impacts of data-driven research and modelling in biomedical applications.
- Understand how concepts and methods from data science, bioinformatics and biochemistry-based research can be integrated to address complex research questions
- Communicate data-driven findings effectively in both written and oral formats

Official course record: [740393A](#)

744640S | Data mining and data-based models

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Irene Hemel

Content

Sources and types of biomedical data, aggregated vs. sparse data, use of data for hypothesis generation and validation

Learning outcomes

After completing the course, students should be able to:

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- devise strategies for the mining of aggregated and sparse data
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Generic skills

- Assess ethical considerations related to biomedical data use, including data quality and transparency.
- Consider the societal and sustainability impacts of data-driven research and modelling in biomedical applications.
- Understand how concepts and methods from data science, bioinformatics and biochemistry-based research can be integrated to address complex research questions
- Communicate data-driven findings effectively in both written and oral formats

Official course record: [744640S](#)

743663S | Developmental biology, stem cells and tissue engineering

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Artem Zhyvolozhnyi

Content

The course provides knowledge on use of various model organisms, basic information about embryology and early developmental mechanisms and signaling molecules. Introduces detailed description of development of few organ systems and provides knowledge about classical and novel study techniques to discover new developmental ques. The laboratory work has limited enrollment for 12 students. Lecture part (2 credits) is open for all students.

Learning outcomes

Upon completion of the course the student have obtained an overview of how the development of tissues and organs is regulated and executed via developmental gene regulation and developmental programs behind morphogenesis. Students will become familiar with the classical and modern experimental embryological techniques during lectures.

Official course record: [743663S](#)

744631S | Dissertation

15 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lloyd Ruddock

Content

This module is based around the student producing an extensive, in-depth literature report in the style of a scientific review. Students are responsible for finding a suitable supervisor for their dissertation with whom they will discuss the scientific background and relevant literature. Students are strongly encouraged to meet with their supervisor weekly to discuss progress and ideas and to resolve problems. A one-page outline of the dissertation subject area, including details of the supervisor (who need not be from the University of Oulu), must be approved by the module convener before starting this module. While the dissertation subject can be closely linked with the Pro Gradu project subject, students are advised that having distinct topics for these two modules will look better on their CV.

Learning outcomes

Upon successful completion students are able to:

- apply information in the right context, integrate information from a wide range of sources and evaluate it critically
- communicate science in extensive written format and discuss and defend scientific arguments
- demonstrate independent work including self motivation, planning, organizational skills and time management.

Official course record: 7446315

046003J | Doctoral Thesis in Biochemistry and Molecular Medicine

0 ECTS | Biochemistry and Molecular Medicine | Post-graduate Studies | English

Person in charge: Mika Martikainen

No description supplied in the collected record.

Official course record: 046003J

782639S | Electrochemistry

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Ulla Lassi

Content

Introduction to electrochemistry, electrochemical reactions and reaction kinetics, electrolytes and thermodynamics of electrolytic solutions, solid electrolytes, electrochemical cells (batteries and fuel cells), measurement methods of electrochemical properties, applications of electrochemistry.

Learning outcomes

Upon completion of the course, the student will be able to explain the essential phenomena of electrochemistry, such as electrochemical reactions, electrolytes and related thermodynamics. The student knows the principle of electrochemical cells (batteries and fuel cells) and kinetics of electrochemical reactions. These phenomena are significant in chemical and metal refining industry, such as in metal recovery by electrolysis or water purification by electrocoagulation.

Official course record: 782639S

NC00AT96 | Emerging battery technologies

5 ECTS | Chemistry | Advanced Studies | English

Person in charge: Ulla Lassi

Content

Course will focus on emerging battery technologies, such as sodium-ion batteries, solid-state batteries, in green transition. Sustainability of emerging battery materials is also studied. Key topics of lessons: overview of emerging battery technologies, cobalt-free lithium-ion batteries, sodium ion and other alkali metal-ion batteries, lithium metal batteries, lithium-sulfur and lithium-air batteries, solid state batteries, redox flow batteries, sustainability of emerging batteries, biomass-use in batteries.

Learning outcomes

The student will learn the basic knowledge of the emerging battery materials and structures. The student understands the operation principle of these batteries. Further, student will learn how to improve the battery sustainability and especially, battery development from green chemistry viewpoint.

Official course record: NC00AT96

781309A | Environmental Chemistry

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Minna Tiainen

Content

Fundamentals of environmental chemistry; chemistry of the soil, natural and waste waters and atmosphere, circulation of chemical compounds in the nature, chemical releases, environmentally toxic and other noxious compounds, environmental analytics and basics of physical measurements. Environmental friendly chemistry. The principles of green chemistry with examples of real life.

Learning outcomes

Upon completion of the course, the student is able to critically evaluate knowledge in environmental chemistry, recognize its limitations, and apply it to solving complex environmental problems. Student is able to present and justify their views clearly and to collaborate and communicate constructively in multidisciplinary groups.

Student is able to identify key factors related to their own learning and wellbeing, assess their competencies, develop their professional identity, and understand the importance of lifelong learning.

Student understands the connections between environmental chemistry and other scientific disciplines and is able to approach environmental challenges from a multidisciplinary perspective to support sustainable solutions.

Student is able to use the digital tools required in the course safely and appropriately and communicate clearly through presentations, discussions, and peer feedback activities.

Student understands the dimensions of sustainability, the UN Sustainable Development Goals, and principles of good scientific practice, and is able to apply them within the context of environmental chemistry.

Student is able to utilize English language scientific literature and recognize the global and multicultural nature of environmental chemistry.

[Official course record: 781309A](#)

AY781309A | Environmental Chemistry for Chemistry Teachers

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Minna Tiainen

Content

Fundamentals of environmental chemistry; chemistry of the soil, natural and waste waters and atmosphere, circulation of chemical compounds in the nature, chemical releases, environmentally toxic and other noxious compounds, environmental analytics and basics of physical measurements. Environmental friendly chemistry.

Learning outcomes

After completing the course, the student will be able to define the 12 principles of green chemistry and explain their significance from the perspective of chemistry education and sustainable development. They can describe the key basic phenomena of environmental chemistry and the cycles of elements and compounds in nature. They are able to identify hazardous chemicals and apply safe handling, storage, and disposal methods in teaching. The student is able to examine the chemical processes in the atmosphere, water, and soil from the perspectives central to the teacher's work.

[Official course record: AY781309A](#)

743662S | Extracellular matrix

3-5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Sanna-Maria Karppinen

Content

Besides including basic background knowledge on the ECM, the course will highlight the ECM-related topics that are currently being investigated at the Faculty of Biochemistry and Molecular Medicine. Course will introduce to mouse and cell models of ECM molecules and using different databases. Contents of lectures (may vary): Collagens and collagen-related hereditary diseases; Basement membranes and Perivascular ECM; Integrins and other ECM receptors; Elastic fibres; Stem cell microenvironments; Fibrosis; ECM in cancer; ECM glycoproteins and proteoglycans; Biomaterials, ECM remodeling. The number of students admitted to the laboratory course is limited. It is also possible to take a shorter course (3 ECTS) without the laboratory course, thus including lectures, an exam and an exercise (eg. problem-based learning groupwork).

Learning outcomes

Learning outcomes:

Upon successful completion a student has the following knowledge.

Field-specific skills, a student is able to:

- describe the structure and key components of the mammalian extracellular matrix (ECM).
- describe the main significance of the ECM for cell and tissue function.
- define the relevance of the ECM in inherited connective tissue disorders and in other common diseases.
- handle background knowledge of the ECM sufficiently to feel comfortable in undertaking a MSc or PhD level research projects in the ECM field.
- identify connective tissue histology and some of its components in tissue samples using various staining protocols and to use light microscope (laboratory work).

Specific generic skills, a student is able to:

- draw analytical and critical conclusions and creatively solve research problems.
- handle time and self-management in the situation of parallel tasks.
- work in a multicultural group using field specific English and to present research data as an oral presentation.
- identify ethical questions and perspectives.
- develop communication, interaction and argumentation skills and to use different databases.
- to examine, interpret and analyse own results and to write reports based on them (laboratory course).

Official course record: [7436625](#)

740372A | Final Examination

6 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Mirva Saaranen

Content

This examination will test the ability of students to integrate knowledge from the core biochemistry modules they have taken during their BSc. It will include questions covering the material from Biomolecules for Biochemists, Biochemical methodologies I, Physiological biochemistry, Metabolism I, Molecular biology I, Cellular biology, Microbiology, Protein Chemistry I, Cellular communication and Metabolism II. The questions will require an understanding of the basic principles of biochemistry and each will be based on subject specific material from at least two modules.

Learning outcomes

Upon successful completion students are able to:

- present the full breadth of the core topics of biochemistry
- Integrate material from multiple sources

Official course record: [740372A](#)

780600S | Final examination in chemistry

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

Exam book/books and content have to be agreed with the responsible teacher(s) in beforehand.

Learning outcomes

Upon completion of the final examination, the student::

- is able to know extensively the fundamental concepts of his/her field of chemistry.
- can independently search and interpret chemistry-related scientific knowledge.
- can critically handle chemistry-related literature, draw conclusions and produce new knowledge based on it.

Official course record: [780600S](#)

743690S | Final examination in molecular medicine

10 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Thomas Kietzmann

Content

This examination will test the ability of students to integrate knowledge from BSc and MSc level molecular medicine. The questions will require an understanding of the principles of biochemistry and molecular medicine and will be based on subject specific material from relevant BSc and MSc level modules. The format will be an oral examination

Learning outcomes

Upon successful completion students are able to:

Field-specific skills

- make analytical conclusions, examine materials critically, and identify needs for creative solutions based on limited data
- apply creative approaches and methods within the subject area of the course
- independently analyse extensive materials, examine data critically, and outline creative solutions
- independently draw critical conclusions from multidimensional and extensive data and creatively generate new knowledge and applications

Specific generic skills

- reflect on their own thoughts, feelings, and actions in international environments
- develop both general and field-specific language skills in a foreign language
- present their research results to an international audience

Official course record: [743690S](#)

747694S | Final examination in protein science and biotechnology

10 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lloyd Ruddock

Content

This examination will test the ability of students to integrate knowledge from BSc and MSc level protein science and biotechnology. The questions will require an understanding of the principles of biochemistry and protein science and will be based on subject specific material from relevant BSc and MSc level modules. The format will be an oral examination.

Learning outcomes

Upon successful completion students should be able to:

- discuss the full breadth of the core topics of biochemistry, protein science and biotechnology
- Integrate material from multiple sources

Official course record: [7476945](#)

NB00AU62 | From idea to Innovation

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Lloyd Ruddock

Content

This course covers basic aspects of the key skills required for developing ideas toward successful innovation. Concepts relating to how to recognize business opportunities, creative thinking, validating ideas and how to pitch ideas are covered as well as an introduction to intellectual property rights and patent searching.

Learning outcomes

The aim of the course is to get student familiar with:

- the core skill set required to recognize business opportunities/needs and how to validate creative ideas,
- the concepts of intellectual property rights (IPR),
- the core skill set of searching patent databases, and
- the concepts of how to pitch an idea.

Official course record: [NB00AU62](#)

780117P | General and Inorganic Chemistry A

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Johanna Havia

Content

Basic concepts of chemistry, chemical formula, chemical reaction, chemical equation, oxidation-reduction reactions, stoichiometry, gases, chemical equilibrium, acids and bases, additional aspects of acid-base equilibria, solubility and complex-ion equilibria.

Learning outcomes

After this course, the student:

- can explain general and inorganic chemistry fundamentals, basic concepts and terminology.
- can interpret and apply reaction stoichiometry.
- can solve basic level exercises related to stoichiometry, oxidation and reduction, gases, acid base equilibrium and solubility equilibrium.
- can apply chemical equilibrium to acid base, solubility and complex formation reactions
- can apply learnt theoretical knowledge in problem-solving processes for exercises.

Official course record: [780117P](#)

780118P | General and Inorganic Chemistry B

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Teija Kangas, Jarkko Sulasalmi

Content

Thermodynamics, reaction kinetics, electrochemistry, electrons in atoms, periodic table, chemical bond, intermolecular forces.

Learning outcomes

After the course, the student:

- * can explain inorganic chemistry fundamentals, basic concepts and terminology.
- * understand basic concepts of chemistry as described in international general chemistry curriculum.
- * can apply the theory taught in lectures into problem-solving and critically assess the result.
- * can communicate their problem-solving process.
- * can recognize the factors in the self-management of their studies. The student can recognize the significance of planning and scheduling their studies. The student develops in their ability to self-assess their working habits.
- * can compare the similarities and differences of their own and neighboring scientific fields and combine them into their own work.

Official course record: [780118P](#)

774636S | Geochemistry of Mining Environment

5 ECTS | Geochemistry | Advanced Studies | English

Person in charge: Raul Mollehuara Canales

Content

- L1 - Introduction to geochemistry of mining environments
- L2 - Introduction Soil and Aqueous geochemistry
- L3 - Acid mine drainage – source, impacts and prediction
- L4 - Geochemistry Water-Mineral Interactions

Learning outcomes

Objectives

- Provide students with the geochemical principles and laboratory techniques required to predict, monitor, and mitigate the environmental risk and impact of mining on soil and water systems.
- Develop in students the ability to design evidence-based waste management and remediation strategies that balance economic viability with ethical and environmental responsibility.
- Integrate and construct a multidisciplinary perspective where students apply critical thinking and digital modeling tools to solve complex, real-world mining challenges that relate to environmental geochemistry in mining.

Learning Outcomes

Students must shift their perspective beyond the "chemistry of the beaker" to the "chemistry of the landscape." Students can advance their knowledge and generic skills:

- To understand geochemical assessments and to interpret standardized geochemical tests both static and kinetic tests to quantify the potential of various rock types to generate or neutralize acidity.
- To develop 'systems thinking & modeling' by using geochemical software to simulate metal mobility and predict the long-term evolution of mine-impacted water chemistry under different scenarios.
- To reinforce collaborative communication by synthesizing technical data into professional reports and presentations that effectively communicate environmental risks and sustainability goals to both specialists and community stakeholders.

Official course record: [774636S](#)

743664S | Hypoxia response pathway - molecular mechanisms and medical applications

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Peppi Karppinen

Content

General physiology of hypoxia, Hypoxia response in bacteria, Hypoxia response in yeast, Hypoxia-inducible factors (HIFs), Regulation of HIFs on the transcriptional, translational and post-translational level, Conditions related to hypoxia response (erythropoiesis and iron regulation, angiogenesis and metabolism), Experimental models to study hypoxia, HIFs and HIF prolyl 4-hydroxylases as drug targets. Lecture topics may vary.

Learning outcomes

Upon completion the student should be able to:

- Present and discuss the basic mechanisms involved in regulation of oxygen homeostasis on cellular, tissue, organ/organism level
- To integrate/adapt regulation of oxygen homeostasis under normal physiological conditions to pathological situations
- Display an understanding on how the basic biochemical knowledge translates from the bench to the bedside
- Understand the meaning of translational research

Official course record: [7436645](#)

747613S | In silico methodologies in biochemistry and molecular medicine

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Andre Juffer

Content

This course aims at emphasizing the quantitative aspects of scientific research. For this, the course contains two main components,

- Searching and evaluating protein structural data from various databases using structural bioinformatics tools,
- Using scientific computing (computer simulation) to study structural, dynamical, functional and thermodynamic properties of proteins and their interaction with other molecules.

Students will learn to access biological databases, search and retrieve relevant data, analyze data in a meaningful manner, and link data and results obtained from different tools. A very brief introduction to metabases and data compilation is provided as well. Interaction studies are emphasized through proteomics-based bioinformatics. An overview of commonly employed modeling and simulation techniques will also be provided. These include atomic and coarse-grained molecular dynamics, Monte Carlo and Langevin (stochastic, Brownian) dynamics, dissipative particle dynamics, continuum electrostatics, statistical thermodynamics, protein modeling techniques, protein-ligand docking, protein-ligand affinity calculations, including the prediction of acid dissociation constants, and enzyme action (reaction mechanism). For the latter, a brief introduction to quantum mechanics will be provided.

Learning outcomes

After a successful completion of this course, students will have

- Obtained an appreciation of the quantitative aspects of analyzing scientific data generated by sophisticated modeling and simulation tools.
- Gained a basic understanding of applying various bioinformatics methods
- Realized the potential of scientific computing for the study of the behavior of biological systems, in particular large biological macromolecules.

Official course record: [747613S](#)

780341A | Industrial Training I

2 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content

Instructed practicing/training in industry or in a research institute.

Learning outcomes

Upon completion of the course, the student is able to discuss about working life his/her own specialization line in industry. The student can analyze his/her strengths and challenges related to working life, and evaluate the competence which he/she has learned during the course.

[Official course record: 780341A](#)

780342A | Industrial Training II

4 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content

Instructed practicing/training in industry or in a research institute.

Learning outcomes

Upon completion of the course, the student is able to discuss about working life his/her own specialization line in industry. The student can analyze his/her strengths and challenges related to working life, and evaluate the competence which he/she has learned during the course.

[Official course record: 780342A](#)

780343A | Industrial Training III

6 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content

Instructed practicing/training in industry or in a research institute.

Learning outcomes

Upon completion of the course, the student is able to discuss about working life his/her own specialization line in industry. The student can analyze his/her strengths and challenges related to working life, and evaluate the competence which he/she has learned during the course.

[Official course record: 780343A](#)

780344A | Industrial Training IV

8 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Ulla Lassi

Content

Supervised practical training in industry or in a research institute.

Learning outcomes

Upon completion of the course, the student is able to discuss about working life his/her own specialization area in industry. The student can analyze his/her strengths and challenges related to working life, and evaluate the competence which he/she has learned during the training.

[Official course record: 780344A](#)

781301A | Inorganic Chemistry I

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Aino Karhu, Jarkko Sulasalmi

Content

Atomic structure, chemical bond and molecular structure, molecular symmetry, solid state chemistry, acid-base theories, oxidation and reduction, synthetic methods.

Learning outcomes

The course familiarizes the student with the most important principles of modern inorganic chemistry. After the course the student can critically apply the learned information when analyzing chemical structures and reactions.

Official course record: [781301A](#)

781302A | Inorganic Chemistry II

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Aino Karhu

Content

Structure, bonding and reactions of complexes of transition metals, organometallic chemistry, catalysis.

Learning outcomes

The course deepens knowledge in inorganic chemistry with a focus on key concepts and methods of coordination chemistry and organometallic chemistry. After completing the course, the student will be able to apply these concepts in the examination of chemical structures and reactions, as well as evaluate their suitability for solving complex and unpredictable problems. The course equips students to consider the course topics and their applications in a multidisciplinary context and to identify interdisciplinary connections. In addition, the student will learn to recognize key factors related to their own well-being and self leadership during the learning process.

Official course record: [781302A](#)

781308A | Instrumental Analysis

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Matti Niemelä

Content

Atomic and molecular spectroscopy, X-ray fluorescence spectrometry, Electroanalytical methods, Thermal analysis, Mass spectrometry, Chromatography.

Learning outcomes

After this course, the student:

- can explain the principles of the most common instrumental analytical methods.
- understands how the instrumental methods of analysis are applied, for example, in industry and research.
- can apply theoretical knowledge about instrumental analytical methods to solve real world problems.
- can work in team towards the common goal and appreciate expertise of other team members.

Official course record: [781308A](#)

780119P | Introduction to Analytical Chemistry

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Matti Niemelä

Content

Steps in quantitative analysis, statistical evaluation of analytical data, chemical equilibrium in aqueous solutions, gravimetry, titrimetry, spectrophotometry.

Learning outcomes

After this course, the student:

- can explain analytical chemistry fundamentals, basic concepts, and terminology.
- understand basic concepts of quantitative chemical analysis employing classical methods of analysis.
- is able to critically evaluate the reliability of analytical results and classical methods of analysis.
- is able to solve analytical problems by applying chemical reactions and equilibrium to classical methods of analysis.
- is able to work in multidisciplinary teams and appreciate expertise across different fields.

[Official course record: 780119P](#)

AY740159P | Introduction to Biochemistry (OPEN UNI)

2 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Mirva Saaranen

Content

Biochemistry is a natural science that studies the chemical structure of organisms and the chemical changes that occur in them. The subjects of research are the various phenomena of life at the molecular level in humans, animals, plants and microorganisms. Research information from the field of biochemistry can be used in the development of medicines and food products and to support UN sustainable development goals (UN Sustainable Development Goal 3: Good Health and Well-being). Introduction to biochemistry-course introduces the discipline of biochemistry, what a biochemist can do job-wise, how biochemistry can be seen in our everyday life and how biochemistry is utilized in many different fields is discussed. This course supports UN Sustainable Development Goal 4: Quality Education.

In the course, the biochemistry laboratory is virtually introduced. Cells are important biochemistry research material. The course examines the basic functions of cells and how cells are used in biochemical studies.

Learning outcomes

After completing the course, the student understands:

- what biochemistry is, how biochemistry manifests itself in everyday life
- what is biochemical research, what are the related sciences of biochemistry
- what is a typical biochemistry research laboratory like

[Official course record: AY740159P](#)

551311S | Introduction to bioinformatics

5 ECTS | Epidemiology and Biomedical Data Science, Biochemistry and Molecular Medicine, Biomedicine | Advanced Studies | English

Person in charge: Ville Pimenoff

Content

Topics cover: Programming and bioinformatic workflows. Sequence data, pre-processing, sequence alignment, SNPs and genome assembly. Metagenomic Data Analysis and Multivariate Statistics. Parallel computing for genomic and metagenome data. Genome-wide analysis and Causality. Multi-omics Integration and exposomics

Learning outcomes

By the end of the course, students should be able to:

1. Critically evaluate bioinformatic workflows and understand R coding
2. Process and assess sequencing data and data quality
3. Perform genome alignment and variant analysis
4. Construct and evaluate genome assemblies
5. Apply multivariate statistical methods to metagenomic data
6. Implement k-mer-based similarity and Tversky indexing to genomic data
7. Understand parallel computing for large-scale omics data
8. Understand genome-wide association and causal inference analyses
9. Understand and analyze basic high-dimensional exposomic data
10. Integrate and interpret multi-omics and exposomics data
11. Critically interpret genomic/exposomic results
12. Understand limitations and biases in (meta)genomics/exposomics analyses

Student should also be able to acquire the following generic skills during the course:

1. to make analytical conclusions and apply methods in the subject of the course
2. to deal with the challenges of coping caused by new topics and workload
3. to take into account the linguistic and cultural diversity of his/her study group
4. to complete the assignments for the course in accordance with the instructions
5. to take into account students/teachers in the course and treat them with respect
6. to apply the knowledge and methods of different disciplines for exposomics

Official course record: 5513115

AY780173P | Introduction to green chemistry (OPEN UNI)

2 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Minna Tiainen

Content

Basic principles the of green chemistry 12. Basics for catalytic, green solvents, and activation of reactions by ultrasound and microwaves. Introduction to risk and lifecycle assessment.

Learning outcomes

After the course, the student will be able to search for and evaluate reliable information on green chemistry and sustainable development from various sources. The student is able to examine the principles of green chemistry from their chosen perspective and reflect on their significance both socially and in their everyday life. The student understands the global nature of green chemistry and sustainable development and recognizes the role of natural sciences in the development of future solutions. They can apply the principles of green chemistry and sustainable development in the course assignments and analyse the environmental impacts associated with the chosen theme. They can structure and present their knowledge clearly in a portfolio and to prepare reasoned answers to the course assignments. In addition, they can assess their own learning and working methods and identify their strengths and areas for development through self-assessment.

Official course record: AY780173P

740384A | Introduction to immunology

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Jane Chen

Content

The course handles the basis of immunology, covering cells and mechanisms of innate and adaptive immune responses (inflammation, anti-microbial and anti-viral defenses, T-cell activation, antibody production, etc.). The course also offers insights into the physiopathology of the immune responses (chronic inflammation, allergy, autoimmune disorders, and cancer) and the clinical (immunotherapy, cytokine therapy, etc.) applications of immunological processes.

Learning outcomes

After the course students will be able to:

Field specific skills:

- understand, identify, analyze and apply essential concepts of cellular and molecular components and mechanisms of immunology,
- integrate their previous knowledge of molecular and cellular biology and protein chemistry with immunology and immunobiochemistry instances.

Specific generic skills:

- Analytical, critical, and creative thinking
- Use field-specific English for intercultural teamwork
- Has the know-how of responsible laboratory conduct

[Official course record: 740384A](#)

743666S | Introduction to immunology

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Jane Chen

Content

The course handles the basis of immunology, covering cells and mechanisms of innate and adaptive immune responses (inflammation, anti-microbial and anti-viral defenses, T-cell activation, antibody production, etc.). The course also offers insights into the physiopathology of the immune responses (chronic inflammation, allergy, autoimmune disorders, and cancer) and the clinical (immunotherapy, cytokine therapy, etc.) applications of immunological processes.

Learning outcomes

After the course students will be able to:

Field specific skills:

- understand, identify, analyze and apply essential concepts of cellular and molecular components and mechanisms of immunology,
- integrate their previous knowledge of molecular and cellular biology and protein chemistry with immunology and immunobiochemistry instances.

Specific generic skills:

- Analytical, critical, and creative thinking
- Use field-specific English for intercultural teamwork
- Has the know-how of responsible laboratory conduct

[Official course record: 743666S](#)

740387A | Introduction to microfluidics and lab-on-a-chip devices

5-7 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Caglar Elbuken

Content

Microfluidics has emerged as an enabling multidisciplinary field. The application of fluidic concepts to micro/nanosystems yielded lab-on-a-chip (LOC) devices as a solution for several scientific challenges. Today, LOC systems are forming the backbone of several biochemical analysis methods including biosensors, organ-on-chip systems and point-of-care diagnostic devices. The goal of this course to cover the basics and the latest developments in the field of microfluidics and their application areas in sensing and diagnostics. The first half of the course is intended to cover the fundamental fluidic concepts. The second half of the course covers the application areas of microfluidic, e.g. biosensors, lateral flow kits, organ-on-chip devices and next generation sequencing devices.

For students interested in a hands-on experience, an extended module with hands-on laboratory sessions is available. The lecture is a pre-requisite to take the laboratory practice session. If you want to get your hands wet and have a feel for microfluidics, join us. Labs are composed of 5 successive sessions and will take place in a state-of-the-art research laboratory. The first session will cover the basics of generating flow, measuring flow rate and making simple fluidic devices/connectors/adaptors (lab 1). In the following exercise (lab 2), the goal is to analyze a given microfluidic circuit, specifically a Y-shape microflow mixer, and evaluate its performance and flow characteristics. In the last module (lab 3a,b,c) the goal is to work on high throughput droplet microfluidic systems.

Learning outcomes

Understanding biology requires familiarity to two substances: water and air. Hence, understanding the behavior of fluids is fundamental to life. In this course, we cover the fundamentals of fluidics at small scale and apply those concepts to several applications such as digital detection systems and organ-on-chip devices. The course does not require a deep physics or mathematics background and tailored as an introductory course for biochemistry, biomedical engineering and medicine students. Point of care diagnostic devices and state-of-the-art microfluidic devices and techniques are introduced. During laboratory sessions, students practice with microfluidic tools and devices.

Official course record: [740387A](#)

744637S | Introduction to microfluidics and lab-on-a-chip devices

5-7 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Caglar Elbuken

Content

Microfluidics has emerged as an enabling multidisciplinary field. The application of fluidic concepts to micro/nanosystems yielded lab-on-a-chip (LOC) devices as a solution for several scientific challenges. Today, LOC systems are forming the backbone of several biochemical analysis methods including biosensors, organ-on-chip systems and point-of-care diagnostic devices. The goal of this course to cover the basics and the latest developments in the field of microfluidics and their application areas in sensing and diagnostics. The first half of the course is intended to cover the fundamental fluidic concepts. The second half of the course covers the application areas of microfluidic, e.g. biosensors, lateral flow kits, organ-on-chip devices and next generation sequencing devices.

For students interested in a hands-on experience, an extended module with hands-on laboratory sessions is available. The lecture is a pre-requisite to take the laboratory practice session. If you want to get your hands wet and have a feel for microfluidics, join us. Labs are composed of 5 successive sessions and will take place in a state-of-the-art research laboratory. The first session will cover the basics of generating flow, measuring flow rate and making simple fluidic devices/connectors/adaptors (lab 1). In the following exercise (lab 2), the goal is to analyze a given microfluidic circuit, specifically a Y-shape microflow mixer, and evaluate its performance and flow characteristics. In the last module (lab 3a,b,c) the goal is to work on high throughput droplet microfluidic systems.

Learning outcomes

Understanding biology requires familiarity to two substances: water and air. Hence, understanding the behavior of fluids is fundamental to life. In this course, we cover the fundamentals of fluidics at small scale and apply those concepts to several applications such as digital detection systems and organ-on-chip devices. The course does not require a deep physics or mathematics background and tailored as an introductory course for biochemistry, biomedical engineering and medicine students. Point of care diagnostic devices and state-of-the-art microfluidic devices and techniques are introduced. During laboratory sessions, students practice with microfluidic tools and devices.

Official course record: 7446375

780116P | Introduction to Organic Chemistry

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Katja Lappalainen

Content

Classification and naming of organic compounds, and their properties. The most typical reactions of organic compound groups (addition, elimination and substitution) along with the reaction mechanisms. Basics of stereochemistry.

Learning outcomes

After this course, the student:

- can recognize and name basic organic compounds and explain their properties
- can explain basic concepts of organic chemistry
- can deduce basic reaction types and solve their mechanisms
- can identify learned generic skills (time management, organization of work, problem solving)
- is capable of independent work and scheduling their own work (well-being and self-development skills)
- can apply what they have learned to solve simple problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support their learning (communication, interaction and digital skills)

Official course record: 780116P

747615S | Introduction to structure-based drug discovery

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lari Lehtiö

Content

The course will consist of assignments, lectures and a project work carried out during the course in study groups. Groups will present their project plans and the results. All students will give feedback and share ideas during the discussions. The project carried out during the course will be supported by lectures and discussions. The final mark comprises marks from continuous assessment, active participation to the group work and oral exam. Attendance to some parts of the course is compulsory. The course has limited enrollment for 18 students.

Learning outcomes

After completion of this course student should be able to:

- Find and analyze a protein structure of interest from databases from the point of view of drug discovery
- Critically assess a quality of an experimental protein-small molecule complex structure
- Discuss the process of creating a virtual small molecule library
- Describe the commonly used computational methods for screening of small molecule libraries against a protein target
- Critically judge the results of the computational screening

[Official course record: 7476155](#)

780123P | Introductory Laboratory Works in Chemistry

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Suvi Lapinkangas

Content

Introduction to laboratory equipment, gravimetric determination of nickel, determination of sulfuric acid by acid-base titration, titration curves, acid-base indicators and buffer solutions, spectrophotometric determination of iron, preparation and analysis of iron oxalate by oxidation-reduction titrations, preparation of acetylsalicylic acid and thin-plate chromatography.

Learning outcomes

After this course, the student will be able to...

- work in the laboratory in accordance with occupational safety instructions.
- name and use basic laboratory equipment properly.
- plan their own work in the laboratory.
- utilize the basic chemistry techniques and determination methods in the given task.
- make laboratory notes and write a report on the performed task.
- critically examine their research results and identify possible sources of error in their work.
- take into account other students and teachers in the course and treat them with respect.
- have an open and appreciative attitude towards the perspectives of other disciplines and identify their possible effects on the development of their own field.
- work in a group and to negotiate and assign tasks.

[Official course record: 780123P](#)

780331A | Laboratory Course I in Physical Chemistry

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Anne Heponiemi

Content

Calorimetric studies, distribution law, vapour pressure of solvent, partial molar volume, distillation of a mixture of liquids, crystallization of a liquid mixture, cell potential

Learning outcomes

Upon completing the course, the student will be able to:

- identify and take into account occupational safety issues in their laboratory work and evaluate their own performance in the laboratory
- apply previously learned theoretical knowledge, as well as course materials, to solve phenomena in physical chemistry
- communicate clearly, both orally and in writing, using discipline specific terminology when collaborating with representatives of other scientific fields

Official course record: [780331A](#)

780354A | Laboratory Course in Inorganic Chemistry

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Matti Niemelä, Johanna Havia, Suvi Lapinkangas

Content

Water analysis, neutralization, synthesis and characterization of inorganic compound.

Learning outcomes

After this course, student:

- is able to work independently and in a group in the laboratory taking into account safety aspects
- is able to independently plan and schedule laboratory work
- knows how to work equally with different people and in accordance with good scientific practice.
- understand the principles of classical quantitative inorganic chemistry and basic inorganic synthetic chemistry
- is able to critically evaluate knowledge in their own field and apply it to solve complex problems in the laboratory

Official course record: [780354A](#)

781307A | Laboratory Course in Organic Chemistry

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Katja Lappalainen

Content

Syntheses of organic chemistry. Basic laboratory practices such as vacuum filtration, distillation, liquid-liquid extraction, and recrystallization. Some key analyses, including thin-layer chromatography.

Learning outcomes

After this course, the student:

- can perform laboratory scale organic syntheses utilizing basic laboratory practices
- can solve reaction mechanisms of the performed reactions
- can fill out a laboratory notebook and prepare a report of the made synthesis
- can work safely in the laboratory
- can use the main analytical methods
- is capable of independent work and scheduling their own work (well-being and self-development skills)
- can apply what they have learned to solve problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support their learning (communication, interaction and digital skills)
- can communicate clearly orally and in writing, and give constructive feedback (communication, interaction and digital skills)

Official course record: [781307A](#)

747614S | Macromolecular X-ray crystallography

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lari Lehtiö

Content

The course will describe the principles of X-ray diffraction theory and practice. It includes a hands on project done throughout the course on protein crystallization, data collection, solving and refinement of the protein structure and validation of the model. Following topics will be covered during the lectures and practicals: crystallisation theory, symmetry of crystals, handling of crystals, data collection, diffraction pattern and the reciprocal lattice, the phase problem, molecular replacement, isomorphous and anomalous differences, structure refinement and validation. Attendance to the lectures and exercises is compulsory. Three first course days will be given only as contact teaching

Learning outcomes

After completion of this course students are able to:

- Discuss the key aspects of protein crystallization methods and interpret the results
- Describe the diffraction of X-rays and the importance of crystal symmetry
- Describe the importance of the Fourier transform method in the structure determination
- Describe the phase problem and tell the methods to solve it
- Apply knowledge on protein chemistry to refinement of a crystal structure
- Judge the quality of a protein structure

[Official course record: 747614S](#)

781635S | Master's Thesis in Analytical Chemistry

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's supervisor. The Master's Thesis can be, but does not necessarily have to be, on the same topic as the Research project. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity.

[Official course record: 781635S](#)

780682S | Master's Thesis in Applied Chemistry

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's supervisor. The Master's Thesis can be, but does not necessarily have to be, on the same topic as the Research project. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity.

[Official course record: 780682S](#)

781602S | Master's Thesis in Inorganic Chemistry

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's supervisor. The Master's Thesis can be, but does not necessarily have to be, on the same topic as the Research project. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity.

[Official course record: 781602S](#)

783602S | Master's Thesis in Organic Chemistry

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's supervisor. The Master's Thesis can be, but does not necessarily have to be, on the same topic as the Research project. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity..

[Official course record: 783602S](#)

782602S | Master's Thesis in Physical Chemistry

20 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

The student is required to write a survey of literature on a topic which will be decided together with the student's supervisor. The Master's Thesis can be, but does not necessarily have to be, on the same topic as the Research project. The length of the survey must be 40-60 pages with approximately 50 references. Title page, acknowledgements, list of figures/tables, list of abbreviations, table of contents, declaration of generative AI and AI-assisted technologies in the writing process or references are not included in the page count.

Learning outcomes

Upon completion of the course student:

- can independently search, absorb, interpret and organize information from the chemistry literature.
- can critically investigate chemistry-related data and information and draw conclusions based on it.
- is able to utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately and responsibly, and to identify their impacts
- can report, also in a foreign language, on the research topic using scientific expressions and terminology typical to chemistry.
- knows how to build their professional identity and understands the goal-oriented development of own competence in terms of both well-being and professional identity.

[Official course record: 782602S](#)

740397A | Mathematics for biomedical data analysis

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Valerio Izzì

Content

Efficient approaches to problem framing, probability theory and the correct form of tests and visualizations to use

Learning outcomes

After completing the course, students :

- learn how to develop code, mostly by thinking how to frame questions in a way algorithms would give them an answer,
- are encouraged to constructive co-operation with people from different backgrounds, developing (field specific) language skills,
- learn concepts of scientific integrity, especially in the context of data manipulation and presentation. Data used in the course are always open access,
- learn to combine biology/biomedical sciences with mathematics and informatics,
- learn to communicate theories, methods and results digitally and effectively, with rigor but also understanding how user perception participates in data communication.

[Official course record: 740397A](#)

744643S | Mathematics for biomedical data analysis

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Valerio Izzì

Content

Efficient approaches to problem framing, probability theory and the correct form of tests and visualizations to use

Learning outcomes

After completing the course, students :

- learn how to develop code, mostly by thinking how to frame questions in a way algorithms would give them an answer,
- are encouraged to constructive co-operation with people from different backgrounds, developing (field specific) language skills,
- learn concepts of scientific integrity, especially in the context of data manipulation and presentation. Data used in the course are always open access,
- learn to combine biology/biomedical sciences with mathematics and informatics,
- learn to communicate theories, methods and results digitally and effectively, with rigor but also understanding how user perception participates in data communication.

[Official course record: 744643S](#)

780381A | Maturity test

0 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Matti Niemelä

Content

An essay-type test of the topic the B.Sc. Thesis. The maturity test is a test for the language skill and for the knowledge of the research topic.

Learning outcomes

Upon completion the maturity test the student has shown that he/she can describe his/her research topic in a logical and crispy way using scientific terminology typical to chemistry.

[Official course record: 780381A](#)

780699S | Maturity Test

0 ECTS | Chemistry | Advanced Studies | Finnish

Person in charge: Matti Niemelä

Content

Maturity test will be agreed with the responsible person of the Master's Thesis. Abstract from the Master's Thesis can be accepted as an Maturity test .

Learning outcomes

Upon completion of the essay-type maturity test the student has shown that he/she has knowledge of the topic of the research area.

Official course record: [7806995](#)

740377A | Maturity test (B.Sc. degree)

0 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Joni Mäki

Content

Maturity test (B.Sc.) will be written in the topic of B.Sc. thesis. In the test student proves to command both the subject of B.Sc thesis and native language.

Learning outcomes

After BSc maturity test student is able to write a logical and analytical summary of his BSc thesis.

Official course record: [740377A](#)

740672S | Maturity test (M.Sc. degree)

0 ECTS | Biochemistry | Advanced Studies | Finnish, English

Person in charge: Alexander Kastaniotis

Content

Will be written in context to MSc thesis. In the test student must show a good command of both language skills and their field of MSc thesis. If student's native language is not Finnish or Swedish Faculty of Biochemistry and Molecular Medicine will define language in the test.

Learning outcomes

-

Official course record: [740672S](#)

NB00AM64 | Metabolism I

4-6 ECTS | Biochemistry | Basic Studies | Finnish

Person in charge: Joni Mäki

Content

The course introduces the key concepts and mechanisms of metabolism, the organization of reaction pathways and the regulation of metabolism. In particular, energy metabolism is addressed: carbohydrates, fat, and the respiratory chain. Together with the course Metabolism II, the student gets a good overview of the main principles of metabolism, organization, chemistry and research methods, and together with the course Physiological Biochemistry, the broader picture of metabolism in physiology.

Learning outcomes

The student is able to explain both the main principles of metabolic structure and the processes and molecular details of energy metabolism pathways, and to explain how energy metabolism is networked with the synthesis and degradation of biomolecules. The student understands the medical and research-related connections associated with metabolic pathways.

In this course, students also learn shared general skills, which include: 1) analytical, critical, and creative thinking skills (the laboratory work, work diary, extra assignments, and exams help develop these skills); 2) wellbeing and self-development skills (the lecture topics relate to health and nutrition, and taking responsibility for one's own learning); 3) sustainability, responsibility, and ethical skills (in the laboratory work, for example, disposing of biological and chemical waste correctly); and 4) communication, interaction, and digital skills (laboratory work and diaries, communication within groups, submitting assignments, and general use of Moodle).

Official course record: [NB00AM64](#)

740367A | Metabolism II

6 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Lauri Eklund

Content

Metabolism II completes the discussion of energy metabolism by combining it with metabolism of nitrogen-containing compounds and synthesis and degradation of different biomolecules, as well as extends the analysis of the central concepts and mechanisms of metabolism. It will be seen how the metabolic pathways that were examined separately will be connected to each other and regulated. Some chemical mechanisms of pathways as well as ways to supply precursors for the main stream pathways will be handled. Special aspects of metabolism, like tissue specificity and physiological states, will also be studied. Photosynthesis is studied as continuation to energy metabolism.

Learning outcomes

Field-specific skills:

- Students should be able to outline in detail how cells use various small and large molecules, how cells synthesize and degrade metabolites for their needs, and how metabolic network is connected and integrated.

Generic skills:

- Analytical, critical and creative thinking skills.

Official course record: [740367A](#)

740390A | Metabolism II for bioscientist

3 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Lauri Eklund

Content

The course completes the discussion of energy metabolism by including the key metabolic pathways of nitrogen, amino acids and nucleotides. The course also covers the chemical mechanisms of some reaction pathways.

Learning outcomes

Field-specific skills:

- The student can describe certain metabolic events as a whole and discuss them using professional terminology related to the topic.
- The student can describe the most relevant compounds, reaction pathways and mechanisms related to these events.

Generic skills:

- Analytical, critical and creative thinking skills.

Official course record: [740390A](#)

NB00AK96 | Microbiology, laboratory practicals

3 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Henni Piirainen

Content

Introduction to basic microbiological methods and techniques for aseptic work. These include culture on solid and in liquid media, transfer of bacteria by streaking or spreading, the use of dilution and enrichment techniques, preparation of bacterial spreads and stainings for microscopy, physiological characterization of micro-organisms, bacterial growth curve, inhibition of bacterial growth, transformation and bacteriophage infection.

Learning outcomes

Upon successful completion students are able to:

Field-specific skills:

- work aseptically
- transfer bacteria by streaking and spreading
- culture and measure/control of growth of standard laboratory microorganisms
- isolate discrete colonies from mixed bacterial culture
- enrich microorganisms from the environment
- prepare bacterial spreads and gram/spore stained samples, and examine them under microscope
- characterize bacterial physiology using catalase and oxidase tests
- transform bacteria with plasmid-DNA
- determine bacteriophage titer

Specific generic skills:

- critically and analytically evaluate obtained results and their significance
- recognize their own strengths and weaknesses and the importance of emotional skills in social interaction
- work in a multicultural environment
- communicate clearly in a group, actively listen to others, and resolve conflicts constructively
- communicate clearly orally, taking into account the target audience

Official course record: [NB00AK96](#)

740361A | Molecular Biology I

8 ECTS | Biochemistry | Intermediate Studies | Finnish, English

Person in charge: Mirva Saaranen

Content

The course covers gene structure, DNA replication, recombination, transcription, translation and basics of gene expression. The student will learn the most common recombinant DNA techniques, such as PCR, use of restriction endonucleases, preparation of recombinant plasmids and DNA sequencing. Attendance in some parts is compulsory.

Learning outcomes

Field specific skills:

- After this course student can understand the basics of molecular biology and is able to use modern molecular biology methods.

Generic skills:

- Analytical, critical and creative thinking skills: After this course student will be able to critically evaluate knowledge and research results related to the subject of the course and apply it to solve simple unpredictable problems.

- International and multicultural skills: After this course student will be able to utilize English-language research literature to solve simple questions in their own field and participate in scientific discussions. The student will be able to work in collaboration with other students from different backgrounds and share information clearly in a group.

- Communication, interaction and digital skills: After the course student knows the basic of how to use different digital tools and databases for molecular biology. The student will be able to work efficiently in a group and to negotiate and assign tasks thus enhancing their ability to communicate clearly in a group, actively listen to others, give constructive feedback and resolve conflicts constructively. Student will be able to communicate about a pre-given subject clearly orally and in writing to scientific audiences, including in a foreign language.

[Official course record: 740361A](#)

740373A | Molecular Biology I

4 ECTS | Biochemistry | Intermediate Studies | Finnish

Person in charge: Mirva Saaranen

Content

The course covers gene structure, DNA replication, recombination, transcription and translation. The student will learn the most common recombinant DNA techniques, such as PCR, use of restriction endonucleases, preparation of recombinant plasmids and DNA sequencing.

Learning outcomes

Field specific skills:

- After this course student can understand the basics of molecular biology and knows modern molecular biology methods.

Generic skills:

- Analytical, critical and creative thinking skills: After this course student will be able to critically evaluate knowledge related to the subject of the course and apply it to solve unpredictable problems.

- Communication, interaction and digital skills: After the course student will be able to use different digital tools and databases for molecular biology.

[Official course record: 740373A](#)

744627S | Molecular biology II

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Elitsa Dimova

Content

This module provides a "real-life" approach to practical molecular biology, including DNA cloning strategies, site directed mutagenesis, generation of transgenic mice, etc. It comprises concept overview lectures, complex problem solving based exercises and includes written reports and student presentations. Attendance of the course is required.

Learning outcomes

After the course students are able to demonstrate the following field-specific skills:

- describe the general features of DNA manipulating enzymes and CRISPR-Cas9
- explain CRISPR-Cas9 principles and genome editing
- design oligonucleotides for PCR amplification
- design and set up restriction digests and ligation reactions in order to carry out basic and advanced cloning procedures
- analyze experimental results from basic molecular cloning procedures and site-directed mutagenesis experiments
- use basic datasets and basic online bioinformatics tools for genetic engineering
- integrate cloning, mutagenesis, and bioinformatics for experiments
- familiar with basic transgenic, knockout, and CRISPR mouse model generation workflows

In addition, the course supports the development of the following specific generic skills:

- develop analytical and problem-solving skills through designing, troubleshooting, and analyzing molecular biology experiments
- strengthen written and oral scientific communication via reports, presentations, and Q&A sessions
- collaborate effectively in group and individual tasks through discussions and peer feedback
- apply ethical reasoning and consider societal and environmental impacts through debates and case studies, sustainability, and responsible research
- utilize and deepen existing digital competencies through the use of databases and data analysis tools
- enhance adaptability, time management, and self-directed learning by managing project timelines and balancing course tasks
- cultivate reflective thinking and a growth mindset through feedback-based revisions and class discussions

Teaching Mode:

- Blended

Official course record: [7446275](#)

740396A | Molecular, cell biological and genetic aspects of diseases

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Mikko Karpale

Content

The course provides knowledge on structure and function of organs and organelles and diseases associated with them. Some specific topics may change due to availability of expert teachers or emerging hot topics, and may be such as mitochondria, peroxisomes, endoplasmic reticulum, the Golgi apparatus, myelin, inherited diseases, Finnish disease heritage, gene defects, detection and correction with gene therapy.

Learning outcomes

Upon completion of the course, the student should be able to:

Field specific skills:

- based on biogenesis, structure and function of the key cell organelles discuss their role in pathology and describe organelle-specific disease mechanisms
- describe typical inherited diseases in terms of their occurrence, biochemistry behind their origin, and their analysis and treatment possibilities

Specific generic skills

- Analytical, critical and creative thinking

Official course record: [740396A](#)

743665S | Molecular, cell biological and genetic aspects of diseases

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Mikko Karpale

Content

The course provides knowledge on structure and function of organs and organelles and diseases associated with them. Some specific topics may change due to availability of expert teachers or emerging hot topics, and may be such as mitochondria, peroxisomes, endoplasmic reticulum, the Golgi apparatus, myelin, inherited diseases, Finnish disease heritage, gene defects, detection and correction with gene therapy.

Learning outcomes

Upon completion of the course, the student should be able to:

Field specific skills:

- based on biogenesis, structure and function of the key cell organelles discuss their role in pathology and describe organelle-specific disease mechanisms
- describe typical inherited diseases in terms of their occurrence, biochemistry behind their origin, and their analysis and treatment possibilities

Specific generic skills

- Analytical, critical and creative thinking

[Official course record: 743665S](#)

744691S | MSc thesis (Pro gradu)

30 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Alexander Kastaniotis

Content

This module provides an extensive 3 month project in a research group as well as a written MSc thesis. The experimental work can be started after 30 cp of Masters studies have been completed, but it is recommended that the MSc thesis work is the final module taken in the MSc. Students are responsible for finding a suitable research group in academia or in industry in which they wish to undertake the MSc thesis work. The work may be undertaken in the research groups of the Faculty of Biochemistry and Molecular Medicine or in any other suitable research group in Finland or abroad. Students should produce a short (typically 2 page) study plan detailing the proposed content of their MSc thesis work, supervisor(s), location of the research work and start date. This should be produced at least 2 weeks before the proposed start date and must be approved before they start work. The MSc thesis is based only on the work done during the first 3 months of work (plus a possible extension of 5-30cp, see 744692 MSc thesis, additional experimental work) by the student on the project, except in cases of mitigating circumstances. The MSc thesis (typically 50-60 pages long) is based on the experimental work undertaken by the student and the contextualization of the research and the results based on published literature in the field. Detailed instructions for MSc thesis. The thesis must be submitted within 1 year of the start date, except in cases of mitigating circumstances.

Learning outcomes

After the MSc thesis work students have:

- increased appreciation of how research leads to knowledge and developed abilities to identify and solve practical problems, to design and execute experiments and how to record and critically evaluate data
- developed abilities to work independently and as part of a team including self-motivation, diplomacy, planning, organizational skills and time management
- developed skills in retrieving, critically appraising and integrating information as well as skills in communicating science and making and defending scientific arguments

[Official course record: 744691S](#)

744692S | MSc thesis, additional experimental work

0-30 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Alexander Kastaniotis

Content

This module provides additional experimental time for the MSc thesis work in 5cp blocks. Students should carefully consider the balance between the time required for the experimental part of the MSc thesis based on the topic chosen versus the benefits of additional courses in biochemistry, ancillary subjects or a minor in another subject. If additional experimental work is planned before the start of the thesis this should be indicated on the study plan (see 747691S MSc thesis). If there are proposed changes to the length of the experimental work during the MSc thesis the responsible person should be notified.

Learning outcomes

After the MSc thesis additional experimental work students have:

- increased appreciation of how research leads to knowledge
- developed abilities to identify and solve practical problems, to design and execute experiments and how to record and critically evaluate data
- developed abilities to work independently and as part of a team including self-motivation, diplomacy, planning, organizational skills and time management

Official course record: [744692S](#)

783608S | NMR as an analytical tool in organic synthesis

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Juha Heiskanen

Content

The basic concepts of NMR such as chemical shift, integrals, coupling, 1D proton spectrum, 2D spectra, data processing with spectrum processor program, interpretation and reporting.

Learning outcomes

The student learns to apply one of the most important analytical tool of organic chemistry, NMR analysis in the point of view of synthetic work. The course helps to develop problem-solving and research skills, analytical thinking and working methods of organic chemistry.

Upon completion of the course, the student:

- can independently measure NMR spectra
- can process the measured data with a computer program
- can interpret the measured and processed data
- is capable of demanding independent work and scheduling their own work (well-being and self-development skills)
- can apply what they have learned to solve complex problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support learning and communicate in English (communication, interaction and digital skills)
- can work collaboratively in a multicultural work team and communicate in English (international and multicultural skills)

Official course record: [783608S](#)

781305A | Organic Chemistry I

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Juha Heiskanen, Katja Lappalainen

Content

Structure of molecules, substitution reactions, conformation analysis, delocalization and conjugation, reactions of carbonyl compounds.

Learning outcomes

Upon completion of the course, the student:

- can interpret conformations and stereo chemistry of organic molecules
- can explain and present conjugation, delocalization, and aromaticity in organic compounds in detail
- can analyze and explain mechanisms of substitution reactions and carbonyl compounds in detail
- is capable of demanding independent work and scheduling their own work (well-being and self-development skills)
- can apply what they have learned to solve complex problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support learning (communication, interaction and digital skills)

Official course record: 781305A

781306A | Organic Chemistry II

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Juha Heiskanen

Content

Eliminations, addition to alkenes, Diels-Alder reactions, chemistry of aromatic heterocycles, formation of enols and enolates and their reactions.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain and analyze mechanisms of various organic chemistry reactions in detail
- predict the reaction outcome
- is capable of demanding independent work and of scheduling one's own work effectively (well-being and self-development skills)
- can apply what they have learned and acquire additional information to solve complex problems (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support learning (communication, interaction and digital skills)

Official course record: 781306A

783639S | Organic Chemistry III

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Juha Heiskanen, Katja Lappalainen

Content

Fixed chapters from the textbook.

Learning outcomes

After this course, the student is familiar with various organic chemistry reactions, can profoundly explain and analyze mechanisms, and predict reaction outcome. In addition, the student:

- is capable of demanding independent work and scheduling their own work (well-being and self-development skills)
- can apply what they have learned to solve complex problems (analytical, critical and creative thinking skills)

Official course record: 783639S

740076Y | Orientation

2 ECTS | Biochemistry | General Studies | Finnish

Person in charge: Jari Heikkinen

Content

Course familiarizes students with university studies and environment and illustrate goals and content of biochemistry degree programme. Under the guidance of faculty personel (Chaperones) students see the spectrum of scientific research done in the Faculty and biochemists doing a research work. In a seminar "biochemist in working life" biochemists graduated from the Faculty give a talk on their experiences in working life.

Learning outcomes

Upon completion of the course the students should be able to:

- navigate in Linnanmaa and Kontinkangas campus and find various supporting services
- use university terminology
- plan his studies and create a personal study plan (PSP) according to BSc degree structure
- use Peppi systems to support his studies
- describe research work done in the faculty and biochemist's work

Generic skills:

- Well-being and self-development skills: After completing the course, the student is able to plan their own time management and identify ways to find balance between studying and leisure.
- Communication, interaction and digital skills: After completing the course, the student recognizes the benefits of generative AI in learning and is able to use AI tools ethically and responsibly in accordance with the university's guidelines.

Official course record: 740076Y

780078Y | Orientation Course for New Students

1 ECTS | Chemistry | General Studies | Finnish

Person in charge: Matti Niemelä, Laura Maaninka

Content

The course comprises several modules: Orientation material providend by the university, Degree program orientation week program, orientation in small groups, tutor teaching meetings, principles of scientific information retrieval process and PSP (Personal Study Plan).

Learning outcomes

After this course, student

- is able to find different places in the learning environment
- knows how to register for courses and examinations.
- can use the services offered to students by the university and the Student Union.
- recognizes the linguistic and cultural diversity of their discipline and is able to utilise them as part of their learning process.
- recognize the importance of chemistry in relation to the sustainable development goals.
- can describe the structure of B.Sc. degree in chemistry

Official course record: 780078Y

740382A | Orientation to biochemical work

0-6 ECTS | Biochemistry | Intermediate Studies | English, Finnish

Person in charge: Mirva Saaranen

Content

This module provides an introduction to non-research work in companies or other suitable environment. The work can be either full-time or part-time work, with 1.5op being awarded for each full-time week equivalent worked. A maximum of 6op can be awarded for working in one work placements. Each placement must be agreed in advance with the responsible person.

Learning outcomes

After this course student has gained experience of practical work done in non-research group environment. Student is able to:

- demonstrate goal-oriented teamwork
- apply methods used in proper environment
- discuss the practical work done and reflect his knowledge

Official course record: [740382A](#)

744629S | Orientation to biochemical work

0-20 ECTS | Biochemistry | Advanced Studies | English, Finnish

Person in charge: Alexander Kastaniotis

Content

This module provides an introduction to non-research work in companies or other suitable environment. The work can be either full-time or part-time work, with 5op being awarded for each three full-time weeks equivalent worked. The duration of an orientation corresponds to either three full-time weeks (120 hrs) for 5 credits or six full-time weeks (240 hrs) for 10 credits. Max 10 credits (six full weeks) can be done in one place. Each placement must be agreed in advance with the responsible person.

Learning outcomes

After this course student has gained experience of practical work done in non-research group environment. Student is able to:

- demonstrate goal-oriented teamwork
- apply methods used in proper environment
- discuss the practical work done and reflect his knowledge

Official course record: [744629S](#)

740383A | Orientation to research work

0-6 ECTS | Biochemistry | Intermediate Studies | English, Finnish

Person in charge: Mirva Saaranen

Content

This module provides an introduction to research work via the active integration of students into research groups and/or via one to two week advanced practical courses. The integration into groups can be either full-time or part-time research work, with 1.5op being awarded for each full-time week equivalent worked. A maximum of 6op can be awarded for working in one research group. The research groups do not need to be in the Faculty of biochemistry and molecular medicine, University of Oulu, but advance permission should be sought if the research group is not part of the University of Oulu.

Learning outcomes

Learning outcomes: After this course student has gained experience of practical work done in research groups. Student is able to:

- demonstrate goal-oriented teamwork
- apply methods used in proper environment
- discuss the practical work done and reflect his knowledge

744628S | Orientation to research work

0-20 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Alexander Kastaniotis

Content

This module provides an introduction to research work via the active integration of students into research groups and/or via one to two week advanced practical courses. The integration into groups can be either full-time or part-time research work, with 5op being awarded for a three full-time weeks equivalent or 10op for a six full-time weeks equivalent. The duration of an orientation corresponds to either three full-time weeks (120 hrs) or six full-time weeks (240 hrs). Max 10 credits (six full weeks) can be done in one research group. The research groups do not need to be in the Faculty of Biochemistry and Molecular Medicine, University of Oulu, but advance permission should be sought if the research group is not part of the University of Oulu.

Learning outcomes

After this course student has gained experience of practical work done in research groups. Student is able to:

- demonstrate goal-oriented teamwork
- apply methods used in proper environment
- discuss the practical work done and reflect his knowledge

Official course record: 744628S

740145P | Physical Biochemistry

6 ECTS | Biochemistry | Basic Studies | English

Person in charge: Andre Juffer

Content

This module will cover the concepts of thermodynamics and their application to biochemical systems plus chemical and enzymatic kinetics. Topics covered will include: Concepts of thermodynamics: First, Second and Third Law of Thermodynamics. Heat. Work. Enthalpy. Entropy, Gibbs and Helmholtz free energy, Chemical potential, Chemical potential of a solute, Free energy and equilibrium. Applications of thermodynamics: Chemical reactions, Protein-ligand association, Acids, bases and pH regulation, Acid-dissociation constants, introduction to thermodynamics of protein folding. Chemical kinetics: Basic chemical reactions and single step reactions, Applications of chemical kinetics to multistep reactions, Catalysis and enzyme kinetics. Attendance of some parts of the course is compulsory.

Learning outcomes

Upon successful completion students are able to:

Field specific skills:

- define the relevance of theoretical concepts to the biosciences
- tell where various equations of physical biochemistry come from
- discuss the link between theory and experiment
- perform simple but realistic calculations

Specific generic skills:

- Analytical, critical, and creative thinking
- Multidisciplinary and Interdisciplinary skills

Official course record: 740145P

781303A | Physical Chemistry I

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Anne Heponiemi

Content

Atkins' Physical Chemistry book topics: Properties of gases, 1st, 2nd and 3rd laws, physical transformation of pure substances, simple mixtures, chemical equilibrium

Learning outcomes

Upon completing the course, the student will be able to

- evaluate the roles of enthalpy, entropy, and Gibbs energy in determining chemical equilibrium, and outline mathematical methods used to solve thermodynamic problems
- apply the principles of thermodynamics to explain and predict chemical phenomena
- engage and collaborate respectfully and equitably with students and instructors from diverse academic disciplines

[Official course record: 781303A](#)

781304A | Physical Chemistry II

5 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Teija Kangas

Content

Atkins' textbook, chapters: Molecules in motion, Chemical kinetics, Reaction dynamics and Processes at solid surfaces.

Learning outcomes

After completing the course, the student:

- * understand what factors affect the movement of molecules in gases and liquids and can apply the diffusion equation to describe the spreading of substances.
- * can write and apply reaction laws and their integrated forms, explain the effect of temperature using the Arrhenius equation, and evaluate reaction mechanisms.
- * understands how molecular collisions, diffusion, and energy control the progression of chemical reactions.
- * understands the importance of interfaces in chemical reactions and is familiar with the most common reactions that occur on surfaces.
- * can apply theoretical knowledge learned in lectures to solve practical tasks and critically examine the results of problem solving.
- * can communicate in writing the stages of one's own problem-solving process in the context of chemistry.
- * can utilize their mathematical knowledge to solve chemistry problems and also understand the importance of physics in the development of the theoretical basis of chemistry.

[Official course record: 781304A](#)

740386A | Physiological biochemistry

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Renata Prunskaitė-Hyyryläinen

Content

Lectures include information about morphology, function and role in metabolism of adipose tissue, kidney, muscle tissue and cytoskeleton, alimentary system and liver. They also focus on structure of biomembranes, composition and function of endocrine system, hormone synthesis and signal transduction. Mechanisms of action of hormones (especially steroid hormones), their cell surface and intracellular receptors, second messengers and other regulatory molecules will be discussed.

Learning outcomes

Upon successful completion, students are familiar with/able to:

Field-specific skills:

- specific aspects of human biochemistry
- structure, tasks, and function of different organs
- systemic and intracellular regulation of metabolism
- functional and regulatory relations of different organs

Specific Generic skills:

- critically evaluate knowledge in a given field and apply it to solve associated problems/tasks
- promote self-management and teamwork skills
- use English for field-specific and intercultural teamwork
- knows responsible laboratory conduct
- communicate subject-specific topics, integrate this with multidisciplinary knowledge
- gains digital and presentation skills

Official course record: 740386A

780127P | Principles of Chemistry Labwork

5 ECTS | Chemistry | Basic Studies | Finnish

Person in charge: Suvi Lapinkangas

Content

Introduction to laboratory equipment, gravimetric determination of nickel, determination of sulfuric acid by acid-base titration, titration curves, acid-base indicators and buffer solutions, spectrophotometric determination of iron, preparation and analysis of iron oxalate by oxidation-reduction titrations, preparation of acetylsalicylic acid and thin-plate chromatography, distillation and extraction, and qualitative inorganic analysis.

Learning outcomes

After this course, the student will be able to...

- work in the laboratory in accordance with occupational safety instructions.
- name and use basic laboratory equipment properly.
- plan their own work in the laboratory.
- utilize the basic chemistry techniques and determination methods in the given task.
- make laboratory notes and write a report on the performed task.
- critically examine their research results and identify possible sources of error in their work.
- take into account other students and teachers in the course and treat them with respect.
- work in a group and to negotiate and assign tasks.

Official course record: 780127P

780601S | Project work

12 ECTS | Chemistry | Advanced Studies | English, Finnish

Person in charge: Matti Niemelä

Content

Laboratory work and written report

Learning outcomes

After this course, student:

- can compare chemistry-related knowledge to solve a scientific problem or to produce new knowledge in chemistry
- is able to apply creative thinking and problem solving in their work, and to design scientific experiments using the methods of their own discipline.
- can interpret, justify, and report research results using scientific expressions typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving difficult situations.

Official course record: 7806015

746606S | Project work in Biochemistry

1.5-30 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lloyd Ruddock

Content

Research work done in the Faculty of Biochemistry and Molecular Medicine or elsewhere which is not compensated in other courses. Each 40 hours of work gives 1.5 ECTS. The project work must be accepted beforehand and a report must be written and approved.

Learning outcomes

Upon successful completion students are able to:

- apply scientific knowledge and methods to undertake scientific research with supervision

Official course record: 746606S

740364A | Protein Chemistry I

8 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Rajaram Venkatesan

Content

This module provides more detailed information on the chemistry of proteins.

Topics covered include introduction to the protein folding problem, protein translocation, protein degradation, reversible and irreversible covalent modifications of proteins, enzyme catalysis, protein purification and characterization. The protein characterization part includes introduction to various structural, biochemical and biophysical methods used to understand the various properties of proteins. The module includes lectures, lecture activities, home work/project work, student presentations, and laboratory exercises. Final examination, participation in lecture activities, continuous assessments, student presentations and laboratory reports will all count towards the final grade. Attendance at laboratory exercises is obligatory.

Learning outcomes

Upon successful completion students are able to:

Field specific skills:

- Tell the relevance of proteins, their structures and function
- Understand the various methods available for purifying recombinant proteins
- Have a basic understanding on the various methods available to characterize the structural and functional properties of proteins (and enzymes) and have an appreciation of the applications and limitations of these techniques
- Analyze a wide range of biochemical data and solve problems relating to the interpretation of the experimental data concerning protein/enzyme purification and characterization.

Specific generic skills:

- Critically evaluate available information in the field and apply the knowledge in problem solving/project tasks
- Obtain digital skills in finding specific information, read, analyze and writing (in English)
- Promote self-management and team work skills through group seminar and laboratory work
- Gain communication and presentation skills in English
- Gain responsible and sustainable working skills in laboratory

[Official course record: 740364A](#)

744635S | Protein production and analysis I

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Lloyd Ruddock

Content

This module provides an overview of recombinant protein production and analysis. Topics covered include an overview of DNA technology, PCR, cloning, mutagenesis, protein production, purification, enzyme catalysis, protein structure analysis, and protein folding.

Learning outcomes

Upon successful completion students are able to:

Field-specific skills:

- tell and discuss the relevance of protein structure, including post-translational modification, to protein function
- assess the techniques available to purify proteins and to study protein function and an appreciation of the applications and limitations of these techniques
- interpret a wide range of biochemical data and to solve problems relating to the interpretation of data relating to protein function and basic structural characterization

Specific generic skills:

- work more effectively in a group and to negotiate and assign tasks
- identify audience dependent factors in communication and more effectively communicate with different audiences
- apply knowledge from different disciplines to develop new solutions to complex problems
- work more effectively in a multicultural group towards a common goal
- examine material critically and able to make analytical conclusions based perceived error weighted analysis

[Official course record: 744635S](#)

744636S | Protein production and analysis II

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Rajaram Venkatesan

Content

This module provides an overview of recombinant protein production and analysis. It includes mainly problem-solving sessions addressing the relevance of protein structure and function and laboratory experiments concerning protein purification, enzyme kinetics, protein crystallization and protein analysis by immunoprecipitation-western blotting. Attending laboratory exercises and submitting lab reports are obligatory.

Learning outcomes

Upon successful completion students are able to:

Field specific skills:

- Tell and discuss the relevance of protein structure, including post-translational modification, to protein function
- Assess the techniques available to purify proteins and to study protein function and an appreciation of the applications and limitations of these techniques
- Interpret a wide range of biochemical data and to solve problems relating to the interpretation of data relating to protein function and basic structural characterization

Specific generic skills:

- Critically evaluate available information in the field and apply the knowledge in problem solving tasks
- Promote self-management and team work skills through group discussion and laboratory work
- Gain communication and writing skills in English
- Gain responsible and sustainable working skills in laboratory

Official course record: [7446365](#)

748617J | Research Plan Seminar

1 ECTS | Biochemistry, Biochemistry and Molecular Medicine | Post-graduate Studies | English

Person in charge: Pääohjaajat

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- *is able present his/her research plan to a wider audience
- *is able to answer questions and critical comments concerning the research plan
- *is able to prepare a scientific presentation

Official course record: [748617J](#)

781660S | Research Project in Analytical Chemistry

30 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

In the Research project, student aims to solve the research problem agreed with the supervisor. The completion of the laboratory work and the research report is expected to take approximately four months of full-time work. The written report of the results of the Research project is given to the supervisor.

Learning outcomes

Upon completion of the course student:

- is able to apply the methods of their own discipline, creative thinking and problem solving in their work to develop new knowledge
- can independently apply adopted, advanced knowledge to solve a scientific problem, justify their actions ethically and produce new knowledge in his/her area of expertise
- can plan scientific research using scientific methods, critically handle data and draw conclusions based on it.
- can use with justification research methods typical for his/her field and is familiar with the theoretical subject matter of his/her field.
- can interpret, justify, and report research results using scientific expressions and terminology typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving complex and difficult situations.

Official course record: 781660S

780685S | Research Project in Applied Chemistry

30 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

In the Research project, student aims to solve the research problem agreed with the supervisor. The completion of the laboratory work and the research report is expected to take approximately four months of full-time work. The written report of the results of the Research project is given to the supervisor.

Learning outcomes

Upon completion of the course student:

- is able to apply the methods of their own discipline, creative thinking and problem solving in their work to develop new knowledge
- can independently apply adopted, advanced knowledge to solve a scientific problem, justify their actions ethically and produce new knowledge in his/her area of expertise
- can plan scientific research using scientific methods, critically handle data and draw conclusions based on it.
- can use with justification research methods typical for his/her field and is familiar with the theoretical subject matter of his/her field.
- can interpret, justify, and report research results using scientific expressions and terminology typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving complex and difficult situations.

Official course record: 780685S

781607S | Research Project in Inorganic Chemistry

30 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

In the Research project, student aims to solve the research problem agreed with the supervisor. The completion of the laboratory work and the research report is expected to take approximately four months of full-time work. The written report of the results of the Research project is given to the supervisor.

Learning outcomes

Upon completion of the course student:

- is able to apply the methods of their own discipline, creative thinking and problem solving in their work to develop new knowledge
- can independently apply adopted, advanced knowledge to solve a scientific problem, justify their actions ethically and produce new knowledge in his/her area of expertise
- can plan scientific research using scientific methods, critically handle data and draw conclusions based on it.
- can use with justification research methods typical for his/her field and is familiar with the theoretical subject matter of his/her field.
- can interpret, justify, and report research results using scientific expressions and terminology typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving complex and difficult situations.

Official course record: 781607S

783607S | Research Project in Organic Chemistry

30 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

In the Research project, student aims to solve the research problem agreed with the supervisor. In addition to the laboratory work, the project also consists literature search and analysis work. The written report of the results of the Research project is given to the supervisor.

Learning outcomes

Upon completion of the course student:

- is able to apply the methods of their own discipline, creative thinking and problem solving in their work to develop new knowledge
- can independently apply adopted, advanced knowledge to solve a scientific problem, justify their actions ethically and produce new knowledge in his/her area of expertise
- can plan scientific research using scientific methods, critically handle data and draw conclusions based on it.
- can use with justification research methods typical for his/her field and is familiar with the theoretical subject matter of his/her field.
- can interpret, justify, and report research results using scientific expressions and terminology typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving complex and difficult situations.

Official course record: 783607S

782607S | Research Project in Physical Chemistry

30 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Matti Niemelä

Content

In the Research project, student aims to solve the research problem agreed with the supervisor. The completion of the laboratory work and the research report is expected to take approximately four months of full-time work. The written report of the results of the Research project is given to the supervisor.

Learning outcomes

Upon completion of the course student:

- is able to apply the methods of their own discipline, creative thinking and problem solving in their work to develop new knowledge
- can independently apply adopted, advanced knowledge to solve a scientific problem, justify their actions ethically and produce new knowledge in his/her area of expertise
- can plan scientific research using scientific methods, critically handle data and draw conclusions based on it.
- can use with justification research methods typical for his/her field and is familiar with the theoretical subject matter of his/her field.
- can interpret, justify, and report research results using scientific expressions and terminology typical to chemistry.
- knows how to act constructively in situations of uncertainty and understands the importance of interaction and communality in solving complex and difficult situations.

Official course record: 7826075

780304A | Research Training - Inorganic Chemistry

3 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Matti Niemelä, Johanna Havia, Aino Karhu

Content

Three laboratory projects on different fields of inorganic chemistry: ICP-OES-analysis, protonation constant, XRD experiment. Additionally, written laboratory reports, one per practical.

Learning outcomes

After this course, student

- is able to work independently and in a group in the laboratory taking into account safety aspects
- is able to independently plan, schedule and implement laboratory work related to inorganic and analytical chemistry.
- can critically evaluate knowledge in their own field and apply it creatively to solve complex problems in the laboratory
- is able to analyse the experimental results obtained and report the results of laboratory work in accordance with the principles of scientific writing
- can describe their own expertise, develop their own professional identity, and recognize the importance of critical thinking in scientific and professional activities.

Official course record: 780304A

780303A | Research Training - Organic Chemistry

3 ECTS | Chemistry | Intermediate Studies | Finnish, English

Person in charge: Juha Heiskanen

Content

Four synthetic exercises. Basics of FTIR and ¹H NMR analytical methods.

Learning outcomes

After completing this course, the student is able to carry out laboratory scale syntheses, document the stages of work and write a scientific report.

In addition, the student:

- is capable of demanding independent work (well-being and self-development skills)
- can apply theoretical knowledge to practice and observe and draw conclusions from experiments they have conducted (analytical, critical and creative thinking skills)
- knows how to utilize the online learning environment effectively to support learning (communication, interaction and digital skills)

780302A | Research Training - Physical Chemistry

3 ECTS | Chemistry | Intermediate Studies | Finnish

Person in charge: Anne Heponiemi

Content

Bomb calorimetric study, conductivity of an electrolytic solution, rate of chemical reaction, adsorption of solution, surface tension

Learning outcomes

Upon completing the course, the student will be able to:

- identify and take into account occupational safety issues in their laboratory work and evaluate their own performance in the laboratory
- analyze and critically evaluate their measurement results, and apply previously acquired theoretical knowledge as well as course materials to solve complex and potentially unforeseen problems in physical chemistry
- produce clear and well structured research reports that accurately document and reflect on the investigations they have conducted

Official course record: 780302A

744625S | Scientific presentation

1-2 ECTS | Biochemistry | Advanced Studies | Finnish, English

Person in charge: Kaija Autio

Content

Student participates in a conference and delivers a poster, a talk or equivalent. The contents of which must include student's own results, for example from the Master's Thesis work. The pro gradu supervisor or other suitable person supervises the planning and realization of the presentation.

Learning outcomes

The student makes a presentation and participates in an international scientific conference with their own presentation. The presentation may be a poster, a talk or equivalent. The student uses the skills learned in the Bachelor's thesis course or otherwise in planning and realizing the presentation. The student practices communication skills necessary for research work.

Official course record: 744625S

780690S | Seminar for the Degree of M.Sc

3 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Minna Tiainen, Sari Tuomikoski

Content

The student delivers two 20-minute presentations (15 minutes for presentation + 5 minutes for questions) on scientific topics related to their master's (M.Sc.) thesis or Research Project.

Learning outcomes

After completing the course, the student

- is able to deliver a clear and well-structured seminar presentation based on their Master's thesis and/or research project work in English, and communicate the key elements of their research appropriately for the target audience.
- is able to respond to audience questions in a knowledgeable and constructive manner.
- is able to participate in seminar discussions and give and receive feedback in a developmental and professional way.
- is able to prepare concise and informative abstracts for both presentations in Finnish and English and identify the essential messages of their research.
- is able to evaluate their own presentation performance, recognize strengths and areas for improvement, and write a brief reflection to support future presentation situations.

Official course record: 780690S

781652S | Solid State Chemistry

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Minna Tiainen

Content

Preparation of solid materials, structures of solids, crystal defects, thermodynamics and reaction kinetics, the effect of outer conditions on some reactions, phase diagrams and their applications, optical, magnetic and electric properties of solid materials, and industrial applications.

Learning outcomes

Upon completion the student will be able to explain the basic concepts of the solid state and apply theoretical knowledge to examine the structure and properties of different materials. He/she is able to search for and evaluate information about the inorganic or organic material of his/her choice and describe its structure, manufacturing, properties and analytics. The student is able to work both in a group and independently, share their observations constructively, and use group work to deepen their understanding of the theory. They can use the course's digital learning environments and tools appropriately and safely, as well as assess their own learning and working methods and identify their strengths and areas for development.

Official course record: 781652S

NC00AV44 | Student tutoring

2 ECTS | Chemistry | General Studies | Finnish

Person in charge: Matti Niemelä, Laura Maaninka

Content

Tutor training and planning, implementation (max. 20 hours) and reporting.

Learning outcomes

After working as a tutor, the student can act as a small group tutor, helping new students to get together and become part of the university community by familiarizing them with university practices, services that support studying and student life, among other things. Student is able to tell about studying chemistry and the main principles of the degree programme. In addition, the tutor identifies the key elements related to their own and students' well-being and self-management.

Official course record: NC00AV44

781658S | Surface Analytical Techniques

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Minna Tiainen

Content

Field emission scanning electron microscope, Energy filtered transmission electron microscope, Computer controlled electron probe microanalyzer and X-ray photoelectron spectroscopy, sample preparation, applications.

Learning outcomes

Upon completion of the course, students will be able to explain the operating principles of field emission scanning electron microscopes, energy-filtered transmission electron microscopes, X-ray microanalyzers, and X-ray photoelectron spectroscopy. They will be able to choose the most suitable sample preparation technique for each sample and device. Additionally, students will be able to interpret various images and results generated by these instruments. They will also assess the suitability of each method for different analytical needs

Official course record: [7816585](#)

782637S | Surface Chemistry

5 ECTS | Chemistry | Advanced Studies | Finnish, English

Person in charge: Ulla Lassi

Content

Course will focus on the properties and structures of liquid-gas, liquid-liquid, solid-gas and solid-liquid interfaces. In addition to surface structures and phenomena, surface analytical methods are also studied. A wide range of applications are considered on molecular level, such as emulsions, foams, flotation, nucleation, and surface active agents.

Learning outcomes

Upon completion of the course, the student will be able to explain the essential phenomena of surface chemistry, such as surface tension, interfaces and surface reactions. The student knows the properties of liquid surfaces and interfaces, and the role of surface active agents. The student will be able to explain properties of surfaces and surface phenomena. The student knows the most important surface structures and methods used in surface science studies. Surface phenomena are significant in several industrial applications, and those applications are theoretically studied during the course.

Official course record: [782637S](#)

743668S | Tumor cell biology

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Daniela Ungureanu

Content

This course provides a comprehensive overview of the key pathways and processes involved in tumor formation and progression. Emphasis is placed on understanding modes of carcinogenesis, the role of oncogenes and tumor suppressor genes, and hallmarks of cancer. Students will also explore contemporary approaches to tumor diagnostics and therapy, including emerging technologies and personalized treatment strategies.

The course includes 20 hours of lectures given by dedicated researchers in cancer fields. Students are expected to engage with assigned literature and demonstrate their understanding through a written exam which consist of 2 essays and 10 short definitions covering all lectures.

This course is designed to provide a strong foundation for students pursuing advanced studies or careers in oncology, molecular biology, or translational medicine.

Learning outcomes

This course provides an in-depth exploration of the cellular and molecular mechanisms underpinning tumor biology. Students will gain a comprehensive understanding of how normal cells transition to malignant states, delving into the processes that drive tumor formation, progression, and metastasis. By integrating fundamental concepts with cutting-edge research, the course will educate students with the theoretical knowledge and practical skills necessary to study cancer biology effectively.

Upon successful completion of this course, students will be able to:

Field Specific Skills

1. Understand and Discuss Tumor Formation:

- Identify and explain the key cellular and molecular changes involved in tumorigenesis.
- Discuss the hallmarks of cancer, including genomic instability, evasion of apoptosis, and deregulation of signaling pathways.

2. Analyze the interactions between tumor cells and the tumor microenvironment, including angiogenesis and immune evasion.

3. Analyze Oncogenes and Tumor Suppressor Genes:

- Differentiate between oncogenes and tumor suppressor genes in the context of cancer initiation and progression.
- Explore key examples such as TP53, Rb, HER2, and RAS, understanding their roles and mechanisms of dysregulation.
- Discuss the clinical implications of genetic mutations and their relevance to cancer therapy.

4. Apply Experimental Techniques in Cancer Research:

- Utilize a range of laboratory methods to study tumor cell biology, including cell culture, molecular profiling, and imaging techniques.
- Analyze tumor formation and progression using assays such as migration, invasion, and clonogenic survival.
- Interpret experimental data and critically evaluate research findings in cancer biology.

5. Explore Pharmacotranscriptomics and Personalized Cancer Therapy:

- Investigate the intersection of transcriptomics and pharmacology to understand how gene expression profiles influence drug responses.
- Analyze case studies of pharmacotranscriptomic approaches in cancer, including biomarker discovery for drug sensitivity or resistance.
- Integrate knowledge of tumor genomics and transcriptomics to propose personalized therapeutic strategies.

6. Harness Bioinformatics and Database Research in Oncology:

- Navigate and utilize cancer-focused databases such as TCGA, COSMIC, and DepMap for genomic and transcriptomic analyses.
- Perform in silico analyses to identify potential drug targets or pathways driving tumor progression.
- Apply basic bioinformatics tools to visualize and interpret large-scale datasets, enhancing understanding of cancer biology and therapeutic development.

Specific generic skills:

- Analytical, critical, and creative thinking
- Use field-specific English for intercultural teamwork

Official course record: 7436685

740081Y | Tutoring

2 ECTS | Biochemistry | General Studies | Finnish

Person in charge: Jari Heikkinen,

Content

For this study a student acts as a tutor for a group of newdegree students or as a kummi for incoming exchange students

Learning outcomes

Upon succesful completion students are able to

- communicate and treat other students matter-of-factly, provide peer support and encourage
- share information about university practices and studying in one's own field

Official course record: [740081Y](#)

740385A | Virology

5 ECTS | Biochemistry | Intermediate Studies | English

Person in charge: Thomas Kietzmann

Content

The course covers basic aspects of virology. The main emphasis will be made on viral infection, replication, transcription, proteinsynthesis, virological diagnostics, infection kinetics, defense against viruses, ways of infection, vaccination, and antiviral therapy. The course involves lectures 10h, 10h seminars, and reading literature with which the students should be able to recapitulate major aspects of the teached material in 5-7 min presentations.

Learning outcomes

Upon successful completion students are able to:

Field-specific skills

- Discuss the major groups of viruses and their infection and replication mechanisms
- Present and discuss characteristic features of specific viruses and their relation to pathogenesis and immunity
- Describe and explain diagnostic methods and antiviral therapies

Specific generic skills

- Analytical, critical, and creative thinking
- Use field-specific English for intercultural teamwork
- Demonstrate responsible and ethical laboratory conduct

Official course record: [740385A](#)

743667S | Virology

5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Thomas Kietzmann

Content

The course covers basic aspects of virology. The main emphasis will be made on viral infection, replication, transcription, proteinsynthesis, virological diagnostics, infection kinetics, defense against viruses, ways of infection, vaccination, and antiviral therapy. The course involves lectures 10h, 10h seminars, and reading literature with which the students should be able to recapitulate major aspects of the teached material in 5-7 min presentations.

Learning outcomes

Upon successful completion students are able to:

Field-specific skills

- Discuss the major groups of viruses and their infection and replication mechanisms
- Present and discuss characteristic features of specific viruses and their relation to pathogenesis and immunity
- Describe and explain diagnostic methods and antiviral therapies

Specific generic skills

- Analytical, critical, and creative thinking
- Use field-specific English for intercultural teamwork
- Demonstrate responsible and ethical laboratory conduct

Official course record: [7436675](#)

740078Y | Working life course

6 ECTS | Biochemistry | General Studies | Finnish

Content

Workshops will address the generic working life skills which are needed in every working environment. Communication, social interaction, time management, giving and receiving feedback are among the topics studied. The skills and experiences the students have obtained already, will be recognized and considered in terms of how to best present them when applying for a job for instance. The summer job, which needs to last at least 1 month, can be of any branch. During the summer job, the students will have assignments concerning working life related issues, e.g. safety, working environment or interactions between people at the working place. By the end of the course the students will write a report to describe their experiences reflecting the development of their working life skills. Reports will be evaluated by the teacher and also by a fellow student. Thus also giving constructive feedback to a fellow student will be practiced.

Learning outcomes

Subject-specific skills:

After completing the course, the student is able to describe general working-life skills, regardless of the field.

Generic skills:

- Well-being and self-development skills: After completing the course, the student can identify their own strengths and areas for development, and present their own competencies. The student can evaluate themselves as a professional, a job seeker, and an employee. The student is able to recognize ways to find balance between work, studying and free time.
- Communication, interaction, and digital skills: After completing the course, the student is able to express their own opinions, listen actively to others, and give constructive feedback. Student is able to utilize different digital communication tools and is able to recognize suitability of the tools for different needs.

Official course record: [740078Y](#)

744632S | Yeast genetics

3.5-5 ECTS | Biochemistry | Advanced Studies | English

Person in charge: Alexander Kastaniotis

Content

This course is an introduction to *Saccharomyces cerevisiae* as a model organism and the use of classical and molecular genetic approaches in this yeast to study basic cellular processes. We will also focus on genetic screens and selections designed to identify targets of interest. Aspects of transcriptional regulation will be discussed to provide a basic understanding for some of the screens and selections introduced. Performance in the course will be assessed by participation in the course review session at the beginning of each lecture (10% of total grade) and by a final written examination. The practical part of this is a block practical spread over four weeks running almost parallel to lecture course. It is designed to provide training in techniques and concepts commonly used in yeast genetics (streaking, spotting, mating, tetrad analysis, transformation, colony-color based assays, carbon source-dependent expression of genes, as well as generation and cloning of mutants). The course has limited enrollment for 16 people. It is also possible to only attend the lecture part of the course for 3.5 ECTS credits.

Learning outcomes

Upon successful completion students are able to:

- tell a basic knowledge of yeast genetics and physiology
- tell the basic principles of using the yeast model organism to address fundamental genetic and cell biological problems
- (practical course) describe variety of genetic and molecular biology techniques commonly used to manipulate baker's yeast in the pursuit of biological questions.

Generic skills trained during the course:

- Analytical, critical and creative thinking
- International and multicultural skills
- Multidisciplinarity and interdisciplinarity
- Communication and interaction and digital skills

Official course record: 7446325

Computing & data

521040A | 3D Virtual Environments and Applications

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Matti Pouke

Content

Game engine architecture, basics of 3D graphics, 3D modeling and animation, textures and materials, audio, interaction, multiplayer, game AI, performance and profiling, virtual reality.

Learning outcomes

Upon completion of the course, the student will be able to:

- Independently develop 3D applications containing an interactive environment utilizing contemporary game engines
- Develop game-engine compatible 3D objects utilizing low-polygon modeling
- Develop game-engine compatible materials utilizing Physically Based Rendering workflow
- Understand the principles of 3D application design for different platforms (mobile, desktop, VR)

[Official course record: 521040A](#)

521027S | Advanced practical training

5 ECTS | Computer Science and Engineering | Advanced Studies | Finnish

Person in charge: Christian Wieser

Content

Planning and preparation, carrying out work assignments in the students field of studies, documentation of own accomplishments, writing report and reflection.

Learning outcomes

- Student can apply knowledge and skills learned during university studies to complete work assignments in his/her own field.
- Student can evaluate and develop himself/herself as a learner and worker.
- Student can plan and evaluate his/her time management and working methods.
- Student is capable of working in systematic and goal-oriented manner in group as well as independently.
- Student can name important factors that direct the actions of work community and the employer.
- Student can name duties where he/she can work after graduating from university.

[Official course record: 521027S](#)

812649S | Advanced Research Methods

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Netta Iivari

Content

Introduction to qualitative, quantitative and design science research in information systems and software engineering, their scientific background, philosophical assumptions and guiding principles, variety involved in them, relationships between the research approaches and associated frameworks, methods, processes and practices, advanced data analysis methods, reporting and evaluating research within the approaches.

Learning outcomes

After completing the course, the student will be able to: * describe the background, philosophical assumptions and guiding principles of quantitative, qualitative and design science research, their role in information systems and software engineering research and the variety involved in them; * evaluate the strengths and weaknesses of the research approaches and methods in relation to her or his research topic as well as select the suitable approach and methods; * use more advanced data analysis methods; * prepare a research plan for a research project, including formulating research problems, specifying research designs and choosing appropriate data collection and analysis methods for solving the problems; * describe state-of-the-art ways of reporting the results; * evaluate the methodological quality of her or his research and research publications more generally; as well as * search more information on research methods from scientific literature as well as to adapt and refine methods for her or his research problems and interests.

[Official course record: 8126495](#)

811602S | Advanced Software Quality and Security

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Olli Korhonen

Content

Advanced testing concepts such as: test oracles, test automation, code reviews, static analysis, test-driven development, exploratory testing, search-based testing, combinatorial testing, and techniques for security testing.

Learning outcomes

After completing the course, the student will be able to:

- * understand and utilize fundamental and advanced software testing and security techniques, and understand their benefits and limitations, as well as
- * apply software testing and security techniques in small scale projects.
- * seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group

[Official course record: 811602S](#)

812650S | Advanced Topics in Digital Cultures and Design

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Dorina Rajanen

Content

The course introduces and discusses current topics in human-computer interaction (HCI), user-centred design and digital cultures. Some topics address macro-level issues (such as sustainability in HCI and the social impact of design), while others focus on micro-level issues (e.g., user experience in different contexts) and technological advancements (e.g. artificial intelligence in digital cultures). The range of topics varies over time. Current themes covered include User experience as an object of analysis and design, Participatory design, Information ecologies and infrastructures, Design for all and Accessibility, Ethical issues of design, Various development contexts (Open source software development, Game development, Information visualization and Visual culture), Sustainable HCI, Practice, Work-interaction design, Artificial intelligence in digital cultures.

Learning outcomes

After completing the course, the student will be able to:

- * describe state-of-the-art research results related to digital cultures and design;
- * understand the strengths and limitations of various methods and frameworks used;
- * show competence in critiquing research articles published in some of the leading academic journals and conference proceedings;
- * show competence in critical thinking, and analysis and synthesis of academic sources;
- * show competence in verbally presenting arguments in an academic fashion;
- * write a literature review on a relevant research topic;
- * acquire knowledge and critically read relevant research articles on digital culture and design related research topics; and
- * describe ethical aspects involved with work related to digital cultures and design.

Generic skills exercised and advanced in the course through reading, written assignments, discussions:

Analytical, critical and creative thinking skills (x) A person with a master's degree...

(x) is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

(x) is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures

(x) is able to analyse arguments and argue appropriately

Well-being and self-development skills (x) A person with a master's degree...

(x) knows how to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner

International and multicultural skills (x) A person with a master's degree...

(x) is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

Sustainability, responsibility and ethics skills (x) A person with a master's degree...

(x) recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them

(x) is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field

(x) is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

Multidisciplinary and Interdisciplinary skills (x) A person with a master's degree...

(x) is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines

(x) is able to seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group

Communication, interaction and digital skills (x) A person with a master's degree...

(x) is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

(x) is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society

[Official course record: 8126505](#)

521285S | Affective Computing

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Haoyu Chen

Content

The history and evolution of affective computing; psychological study about emotion theory and modeling; emotion recognition from different modalities: facial expression, speech, EEG; crowdsourcing study; synthesis of emotional behaviors; emotion applications

Learning outcomes

After completing the course, student

1. is able to explain the emotion theory and modeling
2. is able to implement algorithms for emotion recognition from visual and audio signals or the fusion of multi-modalities
3. has the ideas of wide applications of affective computing

[Official course record: 5212855](#)

521281S | Application Specific Signal Processors

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Mehdi Safarpour

Content

Examples of modern signal processing applications, main types of signal processors, parallel signal processing, transport triggered architectures, algorithm-architecture matching, TCE design environment and Altera FPGA tools.

Learning outcomes

After completing the course, student

- Can distinguish the main types of signal processors
- Can design basic customized transport triggered architecture processors
- Is capable of assembling a signal processor out of basic entities
- Can match the processor performance and the application requirements
- Applies the TTA codesign environment and Altera's FPGA tools to synthesize a system

[Official course record: 521281S](#)

521152S | Applied Computing Project II

10 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Timo Ojala

Content

An advanced software or a research project in the domain of applied computing done in groups of 2-4 students.

Learning outcomes

Upon completion of the course, the student:

1. has advanced understanding on how to collaboratively design a medium-scale software or research project,
2. has advanced understanding on how to implement and evaluate a medium-scale software or research project,
3. is able to extensively document a medium-scale software or research project,
4. has advanced skills in presenting and pitching a software or a research project in form of a good and concise presentation.

[Official course record: 521152S](#)

521495A | Artificial Intelligence

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Pekka Sangi, Jaakko Suutala

Content

Intelligent agent types, uninformed search methods, informed (heuristic) search, local search, constraint satisfaction problems, adversarial search, uncertainty handling, probabilistic reasoning, utility, machine learning, decision networks, Markov decision process, reinforcement learning, applications of artificial intelligence

Learning outcomes

After completing the course, students

- know the basic search strategies that can be applied in problem solving and optimization.
- understand how search-based decisions are made in game-like competitive applications.
- know the basic principles of probabilistic reasoning in artificial intelligence systems.
- know how rational decision making under uncertainty can be formulated using utility theory.
- understand the fundamentals of machine learning and how some of the established methods can be applied to problems in AI.
- are familiar with advanced AI applications

In the course projects, students get some experience in programming and using search, decision making and machine learning methods.

[Official course record: 521495A](#)

811383A | Bachelor Thesis

7 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Elina Annanperä

Content

Conducting literature review independently under supervision.

Learning outcomes

After completing the course, the student will be able to:

- produce a step-by-step concrete plan for their own research work and refine it during work;
- retrieve source material from both the library and electronic databases,
- analyze and criticize scientific texts,
- draw their own conclusions from them and create new outlines,
- refer to sources correctly and properly document the sources they use as a source list,
- use digital tools and (AI)systems responsibly to produce the thesis,
- produce a well-structured scientific text,
- identify emerging problems at work as well as
- seek guidance from the supervisor and use the guidance given to direct the work.

[Official course record: 811383A](#)

811398A | Bachelor's project

8 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Elina Annanperä

Content

During the course the skills required by the software project are studied in the situation which simulates the practice. The students design and carry out a simple software product. The course initiates the working methods and project practices which are used in the projects. During the course, the students apply to the practice skills that have been learned in their studies.

Learning outcomes

After completing the course, the student will be able to:

- master the principles of a time management and prioritisation needed in the project,
- design and to govern the project wholeness with the help of the analytic and systematic thinking,
- work independently according to the objectives of the project,
- identify own strengths and development targets,
- develop themselves after the transition to the working life,
- describe the principles of the good project management,
- describe and avoid the challenges of the communication of the multi-cultural community,
- evaluate the group and own production critically,
- find solutions to the most general problem situations of the project activity,
- describe the significance of the customer meetings,
- work as a member of the group in the demanding and changing environment,
- produce documentation and to present them intelligibly, as well as
- describe the possibilities and demands of technical methods of implementation.

Official course record: [811398A](#)

IC00AU29 | Bachelor's Thesis / Biomedical Engineering

8 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Antti Isosalo

Content

Contents of the thesis depend on the choice of topic.

Learning outcomes

The student is able to set goals for a given task. He / she is able to structure the topic consistently, emphasizing the key issues in the problem area. The student is able to make critical use of information sources. The student is able to clearly present the solution he / she has planned and implemented, to justify the choices he / she has made and to evaluate the functionality of the solution using appropriate testing and evaluation methods. In addition, the student is able to compare the results with the set goals. The student is able to produce impeccable, clear and finalized text in accordance with the technical and scientific writing practices of the field.

In addition, student will learn about many kinds of generic skills, naturally depending on the working environment (such as university, research institute, company):

- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- identify the problems of cultural diversity and stereotypes related to different linguistic, national and ethnic groups, and identify stereotyped ways of thinking
- is able to work in multicultural teams and work openly in international and multinational situations with people from different cultural backgrounds
- is able to communicate clearly orally and in writing to both experts in their own field and the rest of the public also in a foreign language
- is able to communicate and discuss in Finnish.

Official course record: [IC00AU29](#)

523991A | Bachelor's thesis / Computer Science and Engineering

8 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish, English

Person in charge: Satu Tamminen

Content

Contents of the thesis depend on the choice of topic.

Learning outcomes

The student is able to set goals for a given task. He / she is able to structure the topic consistently, emphasizing the key issues in the problem area. The student is able to make critical use of information sources. The student is able to clearly present the solution he / she has planned and implemented, to justify the choices he / she has made and to evaluate the functionality of the solution using appropriate testing and evaluation methods. In addition, the student is able to compare the results with the set goals. The student is able to produce impeccable, clear and finalized text in accordance with the technical and scientific writing practices of the field.

[Official course record: 523991A](#)

811397A | Basics of Project Work

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Joni Rajala

Content

The course gives basic abilities to understand the special characteristics of the projects, phasing, timing, the preparing of the project plan, the realization of the project and project practices, meeting practices and project reporting.

Learning outcomes

After completing the course, the student is able to:

- * describe the principles of a time management and prioritization needed in the project,
- * work self-directed and to produce material independently,
- * identify its own strengths and its development targets,
- * describe the principles of good project management,
- * evaluate own and group's results critically,
- * identify solutions to the most general problem situations of the project,
- * make decisions required during the project work,
- * produce documentation and to present them comprehensible,
- * find correct and essential information and based on it produce new analysed information as well as
- * identify key elements related to one's own well-being and self-management.

[Official course record: 811397A](#)

II00AR82 | Basics of Research Work

2 ECTS | Information Processing Science | Basic Studies | English

Person in charge: Olli Korhonen

Content

Concepts of knowledge, information and research, reporting and argumentation, research process and evaluation, research ethics and misconduct

Learning outcomes

After completing the course, the student will be able to: * Understand the research process as a whole, * identify and describe the significance of analytical and critical thinking in scientific work, * recognize the ethical aspects of research and act accordingly,

Official course record: [II00AR82](#)

521283S | Big Data Processing and Applications

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Ekaterina Gilman

Content

General introduction into big data, namely: big data fundamentals, data storage, batch and stream data processing, data analysis, privacy and security, big data use cases.

Learning outcomes

Upon completion of the course, the student :

- is able to explain the big data phenomenon, its challenges and opportunities.
- is able to explain the requirements and common principles for data intensive systems design and implementation, and evaluate the benefits, risks and restrictions of available solutions.
- can explain the principles of big data management and processing technologies and utilize them on a basic level.

Official course record: [521283S](#)

521284S | Biomedical Engineering Project

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Advanced Studies | Finnish, English

Person in charge: Kai Noponen

Content

A small-scale research work in an active research group or industrial company R&D department. Topics may be selected from the needs of present R&D activities in the site of work and the interests of student. Main emphasis is on the development and application of methods and algorithms for biomedical data processing. Often the work includes programming with Matlab, C or Java languages.

Learning outcomes

After completing the course, student:

1. has develop skills for being initiative and creative to apply theoretical knowledge to solve practical data analysis problems in biomedical engineering,
2. can prepare a technical report in a standard IEEE journal article format.

Official course record: [521284S](#)

IC00AQ54 | Biomedical Instrumentation

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Erkki Vihriälä

Content

Diagnostic instruments (common theories for medical devices, measurement quantities, sensors, amplifiers and registering instruments). Introduction to medical imaging and monitoring methods and instruments and physical therapy devices. Electrical safety aspects.

Learning outcomes

After the course the student is

- capable to explain principles, applications and design of medical instruments
- can describe the electrical safety aspects of medical instruments
- can present the physiological signals commonly measured on humans
- able to explain medical instrumentation development process and the factors affecting it
- recognizes typical measurands and measuring spans

[Official course record: IC00AQ54](#)

521273S | Biosignal Processing I

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Advanced Studies | English

Person in charge: Kai Noponen

Content

Biomedical signals. Digital filtering. Analysis in time-domain and frequency domain. Nonstationarity. Event detection. Signal characterization.

Learning outcomes

After completing the course, student:

1. knows about special characteristics of the biosignals and typical signal processing methods
2. can solve small-scale problems related to biosignal analysis
3. implement small-scale MATLAB software for signal processing algorithms.

In addition, the student learns about the following generic skills:

4. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, taking into account the interfaces between fields and new knowledge
5. is able to apply creative thinking and problem solving in their work in order to develop new knowledge and new methods.

[Official course record: 521273S](#)

521282S | Biosignal Processing II

5 ECTS | Biomedical Engineering (Computer Science and Engineering), Signal Processing | Advanced Studies | English

Person in charge: Jukka Kortelainen

Content

Introduction to neural signals, artifact removal, anesthesia and natural sleep, topographic analysis and source localization, epilepsy, evoked potentials.

Learning outcomes

After completing the course, student

- knows the special characteristics of neural signals and the typical signal processing methods related to them
- can solve advanced problems related to the neural signal analysis

[Official course record: 521282S](#)

IC00BD91 | Biosignal Processing III

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Advanced Studies | English

Person in charge: Kai Noponen

Content

The course covers selected areas of advanced biosignal analysis techniques such as compressed sensing, decomposition techniques and machine learning. Physiologic signals such as cardiovascular, respiratory and motion-related kinematic signals are included.

Learning outcomes

The main learning objectives are:

1. Learn about advanced techniques for biosignal analysis.
2. Learn to design algorithmic solutions to signal analysis problems and implement them.
3. Learn to validate the solutions with real biosignal data and assess their accuracy.

In addition, the student learns about the following generic skills:

4. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, taking into account the interfaces between fields and new knowledge
5. is able to apply creative thinking and problem solving in their work in order to develop new knowledge and new methods
6. is able to communicate as an expert in a way suitable for the target audience also in a foreign language and build professional networks
7. is able to evaluate the activities of individuals and groups, such as achievement of goals, group dynamics, communication and working atmosphere, is able to provide constructive feedback, guidance and development suggestions to others, and leads a team
8. is able to utilize and critically evaluate digital solutions and AI technologies in their area of expertise in an appropriate, safe and responsible manner, and to identify their effects on research, working life and society.

Official course record: [IC00BD91](#)

813320A | Business Intelligence: Applications and Projects

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Tero Päivärinta, Heidi Hietala

Content

The focus of the course is on organizational decision-making and how BI technologies and projects support it. The course covers a spectrum of topics and technologies such as analytics, dashboards and visualizations, data warehousing, big data, data-driven decision-making, and management of BI projects.

Learning outcomes

After completing the course, the student will be able to:

- 1) Explain and apply the concepts of business intelligence (BI).
- 2) Explain how data-driven decisions are made in organizations and supported by BI, analytics, and big data.
- 3) Design and evaluate a BI system, and critically analyze and reflect on its components.
- 4) Plan how to manage and implement a BI project.
- 5) Design meaningful dashboards and visualizations through storytelling to solve a business problem and support data-driven decision-making.

Official course record: [813320A](#)

812362A | Business Process Management and Modelling

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Helena Tokkonen

Content

Stages of business process management. Aligning business processes with company strategy. Syntax for modelling business processes. Business process modelling tools. Frameworks to support business process management and planning. Business process KPI.

Learning outcomes

After completing the course, the student will be able to:

- * describe the phases and challenges related to the management and modelling of business processes,
- * describe how business process are related to each other,
- * make use of different frameworks related to IT process planning,
- * identify process-related problems,
- * make use of KPI (key performance indicator) thinking when managing and modelling business processes,
- * model simple business process on a company-level and process-level alone and with a team, and
- * identify most common mistakes related to process modelling.

Official course record: 812362A

IC00AQ92 | C++ Programming

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Anna LaValle

Content

Basic tools for developing, documentation, testing, and debugging C++ code. C++ concepts: methods, functions, classes, encapsulation, variables, pointers, memory, recursion, lists, overloading, inheritance, templates, polymorphism. Data-storage structures: lists, trees, heaps, hash tables, graphs.

Learning outcomes

Upon the completion of the course the students:

Know major ideas of the C++ language and features.

Learn about C++ computing concepts, such as: generic programming, object-oriented programming, and manual memory management.

Learn how to use C++ and what to use it for: a variety of ways to store collections of data in a computer program, and advantages and disadvantages associated with the different methods.

Implement basic data-storage structures with analysis, and justification.

Official course record: IC00AQ92

521140S | Computer Graphics

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Haoyu Chen, Matteo Pedone

Content

The history and evolution of computer graphics; 2D graphics including: line and circle drawing, polygon filling, clipping, and 3D computer graphics algorithms including viewing transformations, shading, texture mapping and hierarchical modeling; graphics API (PyOpenGL) for implementation.

Learning outcomes

1. is able to specify and design 2D graphics algorithms including: line and circle drawing, polygon filling and clipping
2. is able to specify and design 3D computer graphics algorithms including transformations, viewing, hidden surface removal, shading, texture mapping and hierarchical modeling
3. is able to explain the relationship between the 2D and 3D versions of such algorithms
4. possesses the necessary basic skills to use these basic algorithms available in PyOpenGL and C++

Official course record: 521140S

521009S | Computer Science and Engineering, The Maturity Test for Master`s Degree

0 ECTS | Computer Science and Engineering | Advanced Studies | Finnish

Person in charge: Satu Tamminen

Content

The aim of the maturity test is to confirm the student's familiarity of the thesis area as well as his/her command of the domestic language of his/her school education.

Learning outcomes

After the maturity test, the student has demonstrated that his/her language skills meet the requirements of the work life.

[Official course record: 521009S](#)

521155S | Computer Security

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Juha Rönning

Content

The course covers the essential aspects of computer security and computer security research in theory and through practical examples.

Learning outcomes

Upon completion of this course, students know and understand the basics and advanced concepts of the following key areas of the course and cybersecurity, know key terminology and can write about the topics clearly and with justifications:

- Finding software errors and vulnerabilities with fuzz-testing
- Vulnerabilities and testing of websites and communication protocols
- Principles of hardware level vulnerabilities and their testing and detection
- Principles of different software vulnerabilities, malware programs and shellcode and memory protection measures
- Cyber crime, cyber forensics and botnets
- Mobile and IoT security and manufacturing security, testing and protection measures

Additionally, students that have attained grades 2 or 3 have demonstrated technical capacity to perform practical work relevant to the course key areas. Students that have attained grades 4 or 5 have additionally demonstrated capacity for independent, ambitious work on the key areas working on advanced and challenging security research questions.

[Official course record: 521155S](#)

521286A | Computer Systems

8 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Ivan Sanchez Milara

Content

- Overview of computer architecture
- Introduction to Embedded systems
- Data representation and memory management
- Introduction to C programming: variables, control structures, functions, pointers, I/O, data structures, bitwise operations and libraries
- Introduction to RTOS and programming a development board using C programming language
- Embedded systems main concepts: I/O, serial and wireless communication, interruptions, interactions with peripherals.
- Floating point representation
- CPU's architectures and data paths
- Basics of Assembly language and instruction cycles

Learning outcomes

Upon completing the course a student:

- understands the basics of computer architecture and CPU operations.
- is able to describe how data is stored in a computer using different representation formats
- implements simple programs for workstations using the C programming language
- understand basics principles of embedded programming and recognizes how embedded systems programming is different from programming general-purpose computers
- setups a development environment for a specific microcontroller / development board
- implements simple programs in C for embedded systems
- explains and writes C programs using basic concepts of embedded programming such as RTOS, I/O, interruptions, networking ...
- applies teamwork and project management strategies to coordinate the implementation of a embedded project using RTOS
- is able to implement simple assembly language programs.
- understands low-level computer instruction cycle in the CPU

Official course record: 521286A

817615S | Creating Domain Value with Data

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Sami Pohjolainen

Content

This course delves into the critical role of data analytics in modern organizations and the growing demand for professionals with analytical expertise. Key topics include:

- * **The role of analytics in decision-making** and its potential to enhance organizational performance.
- * **Characteristics of analytical competitors** and how they achieve a competitive edge.
- * **Strategies for competing on analytics**, including applications in internal and external processes.
- * **A roadmap for advancing analytical maturity**, guiding organizations through stages of capability development.
- * **Key analytical roles within organizations** and strategies for fostering a culture that supports successful analytics implementation.
- * **Aligning technical environments with business strategies** to maximize the impact of analytics.
- * **The architecture of analytics and big data**, including deployment processes and technologies.

Learning outcomes

By the end of the course, students will be able to:

1. Recognize the importance of analytical knowledge for managers and decision-makers.
2. Explain how organizations use analytics to gain a competitive advantage.
3. Understand how data analytics drives value creation within an organization.
4. Describe the role of analytics in both internal and external organizational processes.
5. Identify and understand the analytical skills and responsibilities of professionals within organizations.
6. Understand how organizations across various industries leverage data analytics to their benefit.
7. Describe key analytical technologies and their applications.
8. Understand the processes and architecture involved in deploying analytics.
9. Apply analytical methods to evaluate an organization's analytics maturity and create a roadmap for improving its capabilities and competencies.

[Official course record: 8176155](#)

521042S | Creative Design

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Sohail Soomro

Content

The basic concepts of idea generation, creative problem-solving approaches, and design thinking methodologies.

Learning outcomes

After completing this course, students are able to:

- Understand and apply in practice fundamental design thinking and creative problem-solving approaches.
- Methodically ideate and apply original ideas to a problem, independently as well as in a team.
- Identify, contrast, and assess many facets of creative ideas and solutions.
- Utilize various stimuli for idea generation, including generative stimuli.
- Apply creative design thinking and low-resolution prototyping, with emphasis on empathy, iterative strategies, user interactions, as well as feedback.

[Official course record: 521042S](#)

IC00AK18 | Cryptographic Systems and Their Weaknesses

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Juha Partala

Content

Basic concepts of cryptography, definitions and concepts of cryptographic security and testing these through programming. Showing different cryptographic weaknesses and demonstrating different implementations of these through programming. Basics of quantum computing and post-quantum cryptography.

Learning outcomes

Upon completion of the course the student knows and understands the basics, knows the key terminology and can write fluently and with supporting arguments related to the main topics of the course, which are:

- Basic concepts of modern cryptography and the differences between these
- Basic principles upon which the security of the cryptographic methods is based upon
- How different cryptographic systems break
- The basics of quantum computing and explain how this affects cryptography
- The main principles of post-quantum cryptography and explain what are the challenges in practical implementations

In addition to the above, students have demonstrated adequate programming and/or problem solving skills related to the main topics of the course. Furthermore, students have demonstrated strong programming skills and analytical skills in solving technical and research problems related to the main topics of the course.

Official course record: [IC00AK18](#)

IC00AJ73 | Cyber Security II: Cloud and Network Security

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Kimmo Halunen

Content

- Network traffic analysis
- Web application security
- Security of connected appliances
- Botnets
- Container security
- Cloud platforms

Learning outcomes

After passing the course the student

- Knows and understands key concepts and principles in cloud and network security
- Is familiarised with security solutions, threats and key test methodologies in cloud and network security.
- and has developed varying level of skill in various areas of cloud and network security as represented by the grade.

Official course record: [IC00AJ73](#)

IC00AJ74 | Cyber Security III: Software and Hardware Security

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Kimmo Halunen

Content

- Software testing including fuzzing
- Malware analysis
- Reverse-engineering
- Memory errors and vulnerabilities
- Return oriented programming exploits and shellcoding
- Hardware glitching and side-channel attacks
- Hardware security modules

Learning outcomes

After passing the course the student

- Knows and understands key concepts and principles in software and hardware security.
- Is familiarised with security solutions, threats and key test methodologies in software and hardware security.
- Has developed varying level of skill in various areas of software and hardware security as represented by the grade.

Official course record: IC00AJ74

IC00AK16 | Cyber Security Project

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Kimmo Halunen

Content

Choosing, implementing, reporting and presenting a practical computer security project.

Learning outcomes

Upon completion of the course, the students have:

- Furthered the knowledge attained from the Cyber Security Specialization by using them in an actual computer security project
- Understand the basics of reporting and presenting of computer security projects
- Have at the very least shown that they're capable of repeating existing security projects, but in the best case have made a positive impact on computer security in some way
- Developed stronger skills in the area of their project topic.

Official course record: IC00AK16

812364A | Data Analytics and Business Intelligence

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Sami Pohjolainen

Content

- * Fundamental concepts in the topic.
- * Processes and methods for gathering data and information.
- * Preparation, modeling, analysis, and visualization of data.
- * Effective communication of findings.
- * Utilization of tools for data analytics and business intelligence.

Learning outcomes

Upon completion of this course, students will achieve the following learning outcomes:

****Terminology Proficiency:**** Understand key terms associated with data analytics, business analytics, and business intelligence.

****Value Recognition:**** Recognize the significance of acquiring skills related to data analysis.

****Data-Driven Decision Making:**** Explain the critical importance of data-driven decision-making for organizations.

****Fundamental Data Analysis Steps:**** Grasp the three essential steps in data analysis:

1. How to gather relevant data and information.
2. How to analyze data, decipher findings, and acknowledge limitations and potential pitfalls.
3. How to communicate findings effectively.

****Tool Utilization:**** Utilize a data analytics and business intelligence tool.

Moreover, this course serves as a gateway to pursuing a recognized professional certificate in the dynamic field of data analytics.

Official course record: [812364A](#)

811319A | Data Modeling and Design

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Juha Iisakka

Content

Database transactions; distributed databases; NoSQL- and NewSQL databases; consistency models

Learning outcomes

After completing the course, the student will be able to:

- Explain the concepts related to Data models & database design.
- Determine the role of big data and the use of technologies such as Hadoop, NoSQL, and NewSQL data models to manage big data.
- Choose a proper consistency model for application
- Explain the role of data warehouses and data models for large data volumes
- Understand the use of data mining techniques to support business intelligence
- Apply the theory of database transaction management as well as distributed database
- Understand the roles of database users and database security.

Official course record: [811319A](#)

811312A | Data Structures and Algorithms

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Antti Juustila, Pertti Karhapää

Content

- * Basic data structures
- * Analysis of correctness and time complexity of algorithms
- * Sorting algorithms
- * Hash tables
- * Binary search trees
- * Graphs and their algorithms
- * Algorithm design paradigms

Learning outcomes

After completing the course the student will be able to: * select and implement data structures and algorithms to an application,* apply induction, invariants and tests when proving algorithm correctness * implement recursive algorithms,* knows trees, hash tables and functions, graphs and their basic algorithms and implement and use those in a program,* implement some sorting algorithms and describe the commonly known sorting algorithms, as well as* analyse the correctness and time complexity of an algorithm implemented in a program.

Official course record: [811312A](#)

811325A | Databases

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Juha Iisakka

Content

* Conceptual modelling* Relational model and database* SQL* Quality of database * Storing objects to the relational database.

Learning outcomes

After completing the course, the student will be able to:* apply the theory of the relational databases and the basics of the set theory,* build a good quality relational database and use queries,* use a relational database for storing persistent objects,* use conceptual modelling for designing databases, as well as* normalise a database and assess its quality.

Official course record: [811325A](#)

521153S | Deep Learning

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Janne Mustaniemi

Content

The introductory course on deep learning presents the basic concepts, theory, algorithms and models, and provides hands-on experience on implementing, training and utilizing deep neural networks. The topics covered include: linear and logistic regression, loss functions, fully-connected feed-forward neural networks, backpropagation, gradient descent, convolutional neural networks (CNNs), recurrent neural networks (RNNs), attention (including transformers and vision transformers), generative adversarial networks (GANs), variational autoencoder, diffusion models, and practical tips for training and utilizing deep neural networks. Various applications of deep learning in fundamental computer vision tasks, such as image classification, object detection and segmentation, are also presented. Finally, limitations, recent progress and new frontiers of deep learning are also discussed.

Learning outcomes

Upon completion of the course, the student

- Understands the fundamentals of deep learning, including deep convolutional neural networks (CNNs), recurrent neural networks (RNNs), attention (transformers) and generative adversarial networks (GANs);
- Is able to implement, train and debug one's own neural networks in PyTorch;
- Knows new frontiers in deep learning

[Official course record: 5211535](#)

811102P | Devices and Data Networks

5 ECTS | Information Processing Science | Basic Studies | Finnish, English

Person in charge: Antti Juustila

Content

Basic structure and development history of microprocessors. Core features of microprocessors (word size, clock frequency, power consumption, level of integration). Different representations of data (binary, hexadecimal, octal), data persistence and presentation formats in computers and networks. Peripheral devices, data buses and interfaces (memory, I/O, USB). Stack and heap memories. Properties and history of internet and internet protocols, layered architecture of protocols. Impact of data network properties on developing services and applications. Wireless networks. Programming principles of networked applications and services.

Learning outcomes

After completing the course, the student will be able to:* explain the basic structure and the development history of a microprocessor* identify the core features of microprocessors (word size, clock frequency, power consumption, level of integration) and based on these, choose a suitable processor regarding the problem at hand* describe the different representations of data (binary, hexadecimal, octal) as well as data persistence and presentation formats within a computer as well as in data transmission through networks* describe the most important peripheral devices, data buses and interfaces (memory, I/O, USB, etc-)* explain the principles of using stack and heap memories from the programmer's perspective* explain the central properties and history of internet and important internet protocols (such as TCP, UDP, HTTP, TLS/SSL, DHCP) as well as the layered architecture of protocols* describe the implications of data networks, such as delays, packet loss and capacity, and understand the effects of these on developing services and applications relying on networks.* explain the particular features of wireless networks * identify the basic techniques of utilizing networks when developing services and applications, using some programming language.

[Official course record: 811102P](#)

AY811102P | Devices and Data Networks (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Antti Juustila

Content

Basic structure and development history of microprocessors. Core features of microprocessors (word size, clock frequency, power consumption, level of integration). Different representations of data (binary, hexadecimal, octal), data persistence and presentation formats in computers and networks. Peripheral devices, data buses and interfaces (memory, I/O, USB). Stack and heap memories. Properties and history of internet and internet protocols, layered architecture of protocols. Impact of data network properties on developing services and applications. Wireless networks. Basic principles of programming networked applications and services.

Learning outcomes

After completing the course, the student is able to:

- explain the basic structure and the development history of a microprocessor
- identify the core features of microprocessors (word size, clock frequency, power consumption, level of integration) and based on these, choose a suitable processor regarding the problem at hand
- describe the different representations of data (binary, hexadecimal, octal) as well as data persistence and presentation formats within a computer as well as in data transmission through networks
- describe the most important peripheral devices, data buses and interfaces (memory, I/O, USB)
- explain the principles of using stack and heap memories from the programmer's perspective
- explain the central properties and history of internet and important internet protocols (such as TCP, UDP, HTTP, TLS/SSL, DHCP) as well as the layered architecture of protocols
- describe the implications of data networks, such as delays, packet loss and capacity, and understand the effects of these on developing services and applications relying on networks
- explain the particular features of wireless networks
- identify the basic techniques of utilizing networks when developing services and applications, using some programming language

Official course record: AY811102P

521337A | Digital Filters

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Matteo Pedone

Content

1. Sampling theorem, aliasing and imaging,
2. Discrete Fourier transform,
3. Z-transform and frequency response,
4. Correlation and convolution,
5. Digital filter design,
6. FIR filter design and realizations,
7. IIR filter design and realizations,
8. Finite word length effects and analysis,
9. Multi-rate signal processing.

Learning outcomes

1. Student is able to specify and design respective frequency selective FIR and IIR filters using the most common methods.
2. Student is able to solve for the impulse and frequency responses of FIR and IIR filters given as difference equations, transfer functions, or realization diagrams, and can present analyses of the aliasing and imaging effects based on the responses of the f
3. Student is able to explain the impacts of finite word length in filter design.
4. Student has the necessary basic skills to use signal processing tools available in a Python environment and to judge the results.

Official course record: 521337A

AY521337A | Digital Filters (OPEN UNI)

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Matteo Pedone, Constantino Alvarez Casado

Content

1. Sampling theorem, aliasing and imaging,
2. Discrete Fourier transform,
3. Z-transform and frequency response,
4. Correlation and convolution,
5. Digital filter design,
6. FIR filter design and realizations,
7. IIR filter design and realizations,
8. Finite word length effects and analysis,
9. Multi-rate signal processing.

Learning outcomes

1. Student is able to specify and design respective frequency selective FIR and IIR filters using the most common methods. 2. Student is able to solve for the impulse and frequency responses of FIR and IIR filters given as difference equations, transfer functions, or realization diagrams, and can present analyses of the aliasing and imaging effects based on the responses of the filter. 3. Student is able to explain the impacts of finite word length in filter design. 4. Student has the necessary basic skills to use signal processing tools available in Matlab environment and to judge the results.

[Official course record: AY521337A](#)

521467A | Digital Image Processing

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Janne Heikkilä

Content

- Introduction
- Fundamentals of digital image
- Intensity transformations and spatial filtering
- Image processing in frequency domain
- Restoration
- Color image processing
- Compression
- Morphological image processing
- Segmentation

Learning outcomes

Upon completion of the course the student:

- understands the basic theory of digital image processing and knows its main applications,
- is able to apply spatial and frequency domain methods in image enhancement, restoration, compression, morphological processing and segmentation.

[Official course record: 521467A](#)

812352A | Digitalisation and Innovation

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Sami Pohjolainen

Content

****1. Digitization, Digitalisation, and Digital Transformation:**** Examining drivers of Digital Transformation and strategic imperatives of digital transformation and organizational structures related to digital transformation.

****2. Digital Transformation Strategy:**** Formulating and implementing a digital transformation strategy.

****3. Innovation:**** Examining how organisations pursue zero-to-one innovations by navigating the challenges of solution development, cultivating innovative cultures, and aligning core business values with strategic goals. Students will explore innovation ecosystems, approaches, and metrics, as well as the digital innovation process, to craft strategies that sustain competitive advantage.

Learning outcomes

This course introduces students to key areas of digitalisation and innovation. After completing the course, students will be able to:

- * Define digitalisation and explain its impact on organisations.
- * Describe the stages of digital transformation and the key drivers behind them.
- * Understand strategic imperatives that guide digital transformation efforts.
- * Recognise the pursuit of digital innovation and the challenges associated with it.
- * Identify the characteristics of innovative organisations.
- * Explain core business values that support innovation.
- * Understand the importance of innovation ecosystems and why organisations rely on them.
- * Describe how innovation occurs, particularly within the field of information technology.
- * Identify opportunities and challenges associated with emerging and future technologies.
- * Develop a plan for digital transformation or innovation strategy.

Official course record: [812352A](#)

AY812352A | Digitalisation and Innovation (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Sami Pohjolainen

Content

****1. Digitization, Digitalisation, and Digital Transformation:**** Examining drivers of Digital Transformation and strategic imperatives of digital transformation and organizational structures related to digital transformation.

****2. Digital Transformation Strategy:**** Formulating and implementing a digital transformation strategy.

****3. Innovation:**** Examining how organisations pursue zero-to-one innovations by navigating the challenges of solution development, cultivating innovative cultures, and aligning core business values with strategic goals. Students will explore innovation ecosystems, approaches, and metrics, as well as the digital innovation process, to craft strategies that sustain competitive advantage.

Learning outcomes

This course introduces students to key areas of digitalisation and innovation. After completing the course, students will be able to:

- * Define digitalisation and explain its impact on organisations.
- * Describe the stages of digital transformation and the key drivers behind them.
- * Understand strategic imperatives that guide digital transformation efforts.
- * Recognise the pursuit of digital innovation and the challenges associated with it.
- * Identify the characteristics of innovative organisations.
- * Explain core business values that support innovation.
- * Understand the importance of innovation ecosystems and why organisations rely on them.
- * Describe how innovation occurs, particularly within the field of information technology.
- * Identify opportunities and challenges associated with emerging and future technologies.
- * Develop a plan for digital transformation or innovation strategy.

Official course record: [AY812352A](#)

521290S | Distributed Systems

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Lauri Loven

Content

- 1 - Introduction
- 2- Communication
- 3 - Time Synchronization, Consensus
- 4 - Non-Functional Requirements (mostly Performance, Elasticity, Scalability)
- 5 - Replication and Consistency
- 6 - Resource Management and Scheduling
- 7 - System Architecture and Programming Models
- 8 - Middleware
- 9 - Datacenter and Cloud Computing (more the hardware and network side)
- 10 - Big Data Processing
- 11 - Distributed ML
- 12 - Cloud, Edge Computing and the Compute Continuum
- (13 and 14 - Project Presentations)

Learning outcomes

After completing the course, the student

1. is able to explain the key principles of distributed systems
2. apply the principles in evaluating major design paradigms used in implementing distributed systems
3. solve distributed systems related problems
4. design and implement a small distributed system, develop skills for distributed programming

Official course record: [521290S](#)

816669J | Doctoral Thesis in Information Processing Science

0 ECTS | Information Processing Science | Post-graduate Studies | Finnish, English

Person in charge: Harri Oinas-Kukkonen

No description supplied in the collected record.

Official course record: [816669J](#)

814339A | Education training

1-5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Tonja Molin, Heidi Hartikainen

Content

Education internship in ICT field for selected participants including the plan, implementation (incl. 10-20 h in contact with the participants) and feedback collection and assessment. In the end, a reflective experience report will be prepared.

Learning outcomes

After completing the course, the student is able to:

- * plan and implement goal-oriented educational entity in ICT field,
- * to take into consideration the different backgrounds and starting points of the participants when implementing the education,
- * to define the learning goals for the educational entity,
- * select such a content and methods for the educational entity that meet the learning goals,
- * reserve enough time for the participants to learn and absorb the educational content,
- * select the measures and criterias to assess the success of the educational entity,
- * value the meaning and importance interaction (between participants, host organization, etc.) for successful implementation of the educational entity,
- * collect, analyze and report feedback from the implementation and success of the educational entity and
- * assess one's own competencies and development potential after implementing the educational entity.

[Official course record: 814339A](#)

521141P | Elementary Programming

5 ECTS | Computer Science and Engineering | Basic Studies | Finnish, English

Person in charge: Mika Oja

Content

In the course, you will learn the basics of Python programming and problem-solving through coding without any scheduling constraints. The teaching consists of theoretical materials presented through examples, along with exercises and practical programming tasks. All course assignments include automatic evaluation. Students aiming for a high grade can also complete the course exam and a project, which provides excellent preparation for further programming studies.

Learning outcomes

1. Is capable of solving problems in the computer's terms
2. Understands the basic concepts of programming
3. Knows the basics of the Python programming language
4. Is able to implement programs independently
5. Is able to use the internet to find information about programming

[Official course record: 521141P](#)

IC00BA09 | Elementary Programming (FITECH)

1-3 ECTS | Computer Science and Engineering | Basic Studies | Finnish

Person in charge: Mika Oja

Content

Problem solving with programming, basic concepts of programming, writing Python code.

Learning outcomes

Achieved goals will depend on the amount of credits completed.

1. Understands the basic concepts of programming
2. Knows the basics of the Python programming language
3. Is capable of solving problems in the computer's terms
4. Is able to use the internet to find information about programming

[Official course record: IC00BA09](#)

AY521141P | Elementary Programming (OPEN UNI)

5 ECTS | Computer Science and Engineering | Basic Studies | Finnish, English

Person in charge: Mika Oja

Content

This course allows you to learn fundamentals of Python programming and problem solving via programming without schedule limitations. Teaching consists of theory materials that approach topics via examples and small tasks, and practical programming exercise tasks. All tasks on the course have automatic checking and feedback. Students aiming for a high grade can also implement a project. Doing so provides a good foundation for future programming studies. The project will also receive feedback from the teacher.

The course includes an exam that must be completed in a supervised E-exam space. Without the exam the course can only be graded as 1.

Learning outcomes

1. Is capable of solving problems in the computer's terms
2. Understands the basic concepts of programming
3. Knows the basics of the Python programming language
4. Is able to implement programs independently
5. Is able to use the internet to find information about programming

Official course record: [AY521141P](#)

521423S | Embedded System Project

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Siva Ariram, Marko Kauppinen

Content

The embedded system design process, from initial specification to implementation of a first functional prototype and demonstrating its functionality in practice. The application can be suggested by the student group, or chosen from the topics suggested by the course organizers. During the work, the students familiarize themselves with modern design tools and methodologies related to embedded system design (according to the microcontroller the student group has chosen to utilize in their work). Most commonly used platforms on the course include STM, Atmel and Microchip based platforms.

Learning outcomes

1. After passing the course, the student is familiar with the design process of an embedded system, from specifying the application leading to the requirement specification for the device, and then to having produced a functional prototype of the defined system.
2. The student is more familiar with the roles of the client and the system developer during the requirement specification, and the role of the iterations as a part of the whole design process. From the specifications, the student is familiar with the process of choosing the suitable hardware components, circuit design and implementation. In the end, the student is also able to know the factors arising from the SW/HW partitioning process of the actual implementation, and the concept of SW/HW dualism. The student can then better utilize the basic development tools used for embedded system design and recognize their possible advantages and disadvantages.
3. The student is more familiar with the testing and problem solving methodology related to the prototype implementation of an embedded system, to have the prototype working correctly according to the specifications.

Official course record: [521423S](#)

AY00BD81 | European Health Data Space in a nutshell

1 ECTS | Information Processing Science | Basic Studies | Northern Sami

Person in charge: Prabhat Ram

Content

- eHealth – Digital health and care
- EHDS regulation and infrastructure
- Tools and technologies for EHDS ecosystem
- Health data security and privacy

Learning outcomes

By completing this crash course, you will:

- Be able to describe the EHDS regulation, its motivation, and its implications
- Acquire a basic knowledge of the infrastructure proposed to implement the EHDS
- Become aware of the relevant legislations in the context of EHDS
- Be able to describe the security and privacy requirements in the context of EHDS

[Official course record: AY00BD81](#)

811166P | Fundamentals of Information Systems

5 ECTS | Information Processing Science | Basic Studies | Finnish, English

Person in charge: Sami Pohjolainen

Content

- * Basic terms and concepts of information systems.
- * Challenges regarding the use of information systems and its users.
- * Basics of organization.
- * Types of information systems and their roles in an organization.
- * How knowledge is formed in organizations.
- * Ethical and social challenges related to information systems.
- * Information systems in decision making process.
- * Possibilities of information systems renewal and financial impact of it.
- * The history of the information systems science.

Learning outcomes

After completing the course, the student will be able to:

- * use basic concepts of information systems,
- * recognize challenges regarding the use of information systems and users,
- * describe the basics of organization, e.g., its structure and function,
- * recognize different types of information systems and their roles in an organization,
- * describe how organizational knowledge is formed and recognize the challenges of managing it,
- * recognize ethical and social challenges related to information systems,
- * describe the role of information systems in leadership and decision-making,
- * recognize the possibilities of information systems renewal and the financial impact of it, as well as
- * understand the history of information systems science.

[Official course record: 811166P](#)

AY811166P | Fundamentals of Information Systems (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Sami Pohjolainen

Content

- * Basic terms and concepts of information systems.
- * Challenges regarding the use of information systems and its users.
- * Basics of organization.
- * Types of information systems and their roles in an organization.
- * How knowledge is formed in organizations.
- * Ethical and social challenges related to information systems.
- * Information systems in decision making process.
- * Possibilities of information systems renewal and financial impact of it.
- * The history of the information systems science.

Learning outcomes

After completing the course, the student will be able to:

- * use basic concepts of information systems,
- * recognize challenges regarding the use of information systems and users,
- * describe the basics of organization, e.g., its structure and function,
- * recognize different types of information systems and their roles in an organization,
- * describe how organizational knowledge is formed and recognize the challenges of managing it,
- * recognize ethical and social challenges related to information systems,
- * describe the role of information systems in leadership and decision-making,
- * recognize the possibilities of information systems renewal and the financial impact of it, as well as
- * understand the history of information systems science.

[Official course record: AY811166P](#)

521292S | Fundamentals of Sensing, Tracking and Autonomy 1

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Steven LaValle

Content

Defining sensors; physical vs virtual sensors. Chronometers, cameras, infrared, laser, temperature, IMU. Sensor mappings, resolution, noise, calibration. Preimages, sources of uncertainty, comparing sensors, stochastic modeling. Multiple sensor readings and networks of sensors. Triangulation principles. Motion models: Discrete time, continuous time, event-based. Linear, complementary, Kalman, Bayesian, and combinatorial filters. Localization and mapping; global positioning systems; tracking humans.

Learning outcomes

Upon completion of the course the students will be able to:

- Deeply understand the fundamentals common to widely used sensing and filtering systems.
- Design new sensors and filters.
- Apply the material to critical problems in robotics, internet of things, and virtual and augmented reality.
- Understand the links between theory and practice in sensing and filtering systems.

[Official course record: 521292S](#)

IC00AK50 | Fundamentals of Sensing, Tracking and Autonomy 2

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Steven LaValle

Content

Advanced filtering concepts; state transition models; discrete planning and autonomy; configuration spaces; sampling-based planning; combinatorial planning; sequential decision theory; game theory; value and policy iteration; reinforcement learning; information-feedback strategies; planning with differential constraints.

Learning outcomes

Upon completion of the course the students will be able to:

Deeply understand the fundamentals common to widely used in robotics and autonomous systems.
Design and analyze planning algorithms.
Apply the material to critical problems in robotics, internet of things, and virtual and augmented reality.
Understand the links between theory and practice in sensing, filtering, and autonomous systems.

[Official course record: IC00AK50](#)

II00BC87 | Fundamentals of Software Engineering

5 ECTS | Information Processing Science | Basic Studies | Finnish, English

Person in charge: Markus Kelanti

Content

Principles of professional software development

- Software processes
- Agile software development
- Requirements engineering
- System modelling
- Architectural design
- Design and implementation
- Software testing
- Software evolution

Learning outcomes

After completing the course, the student will be able to:

- describe the principles, define the key concepts and use professional terminology of software engineering,
- describe software engineering as a professional practice and a field of industry,
- describe and work following professional practices that are important for software engineers,
- describe contemporary software processes and choose appropriate ones for specific situations,
- describe and apply valid problem identification and structuring methods in software engineering,
- identify and apply some contemporary software engineering models, methods and tools, as well as
- describe the necessity of continuing learning and professional development.

[Official course record: II00BC87](#)

II00AM74 | Gamification for Sustainability

3 ECTS | Information Processing Science | Advanced Studies |

Person in charge: Dorina Rajanen

Content

1. Sustainability and climate change
2. Climate change communication
3. Engagement with climate change
4. Gamification, games, serious games
5. User-centred design
6. Interaction design
7. Gamification design
8. Gamification research for sustainability

Learning outcomes

By completing the course, the student will:

- Understand the importance and dimensions of sustainability and climate change
- Understand the challenges of communicating climate change and sustainability issues
- Understand and apply the concepts of user engagement, individual engagement, and public engagement in the context of sustainable behaviour
- Understand and apply the characteristics of gamification to promoting sustainable behaviour
- Understand and apply the principles of user-centred design and interaction design to gamification design
- Familiarize with current research and challenges in gamification research for sustainability
- Design a gamified application for promoting sustainability

Generic skills exercised and advanced in the course through reading, written assignments, discussions:

Analytical, critical and creative thinking skills (x) A person with a master's degree...

(x) is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

(x) is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures

Well-being and self-development skills (x) A person with a master's degree...

(x) knows how to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner

(x) knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being

International and multicultural skills (x) A person with a master's degree...

(x) is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

Sustainability, responsibility and ethics skills (x) A person with a master's degree...

(x) recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them

(x) is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field

(x) is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

Multidisciplinary and Interdisciplinary skills (x) A person with a master's degree...

(x) is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines

(x) is able to seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group

(x) is able to promote multidisciplinary cooperation and lead multidisciplinary and multiprofessional teams

Communication, interaction and digital skills (x) A person with a master's degree...

(x) is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

(x) is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

(x) is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society

Official course record: [II00AM74](#)

TE00AS43 | Hardware Hacking and Reverse Engineering

5 ECTS | Electrical and Information Engineering | Advanced Studies | English, Finnish

Person in charge: Christian Schuss

Content

- Concepts and principles of hardware and software hacking
- Reverse Engineering: Identification of electronic components, creation of block diagram and schematic plan of printed circuit boards, repairability and repair of electronic devices, etc.
- Possible vulnerabilities in wired and wireless communications
- Measurement techniques and instruments (e.g., multimeter, logic analyser, oscilloscope, spectrum analyser, software defined radio, etc.)

Learning outcomes

After completing the course, the student

1. Knows and understands the key concepts and principles of hardware hacking and reverse engineering.
2. Is familiar with potential vulnerabilities in electronic systems and devices.
3. Has developed skills to address cybersecurity challenges in electronic systems and devices.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

[Official course record: TE00AS43](#)

812363A | Human-Centered Design

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Netta Iivari

Content

The principles and central concepts of human-centered design, the basic phases and central analysis, design and evaluation methods of human-centered design, user support, usability, accessibility, universal design, variety involved in human-centered design.

Learning outcomes

After completing the course, the student will be able to: * describe the principles and central concepts of human-centered design, * identify the basic phases and central analysis, design and evaluation methods of human-centered design, * apply the method in user interface design from the perspective of specific user group and system, * describe the significance and design of user support, * describe the significance of usability, accessibility and universal design, as well as * identify variety involved in human-centered design.

[Official course record: 812363A](#)

521145A | Human-Computer Interaction

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Simo Hosio

Content

Fundamental knowledge of human cognition and perception, and how that relates to the design of computer systems and interfaces. Learning to design in different ways, and conducting evaluations of the designs. Evaluation constitutes data collection and analysis, including qualitative and quantitative data.

Learning outcomes

Upon completing this course, students will possess:

- Knowledge of Human Computer Interaction (HCI) fundamentals, including history of the field and potential future directions
- Theoretical knowledge and practical experience of user-centric interface and usability evaluation techniques, such as questionnaires and interviewing
- Knowledge and experience of prototyping techniques (both paper-based and digital)
- Knowledge of how HCI can be incorporated into the software development process
- Limited basics of interaction between humans and Artificial Intelligence

Official course record: [521145A](#)

812651S | ICT and Behaviour Change

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Rosanna Guadagno

Content

The focus of the course is the role of ICT in supporting people with their endeavours to change their habits or lifestyles. The course introduces the main theories and models regarding behaviour change through ICT. The course also introduces some of the more problematic topics in ICT and behaviour, such as the dark side of ICT use and ethics of persuasion.

The course aims at providing existing knowledge to the development and use of persuasive systems. With such base, the student will be able to review the field from a broad perspective with the view to applying appropriate theories and approaches when analysing or developing persuasive systems.

Learning outcomes

After completing the course, the student will be able to:

1. understand the core theories of behaviour change and how they are/can be applied in goal-oriented behaviour change
2. identify and discuss ethical concerns inherent in behaviour change and persuasive systems
3. identify and discuss the possible negative effects of ICT use.

Official course record: [812651S](#)

521001J | Information Engineering, thesis

0 ECTS | Computer Science and Engineering | Post-graduate Studies | Finnish, English

Person in charge: Harri Oinas-Kukkonen

No description supplied in the collected record.

Official course record: [521001J](#)

811168P | Information Security

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Tero Päivärinta

Content

- * Basic concepts of information security
- * Information security threats, vulnerabilities, and risks
- * Relevant regulation and information security frameworks
- * Risk management
- * Cryptography
- * Information security technologies
- * Information security research

Learning outcomes

After completing the course, the student will be able to:

- * define essential information security concepts and components of information systems security,
- * recognize the common types of security threats, and their managerial and technical protection mechanisms,
- * describe the tasks and responsibilities of information security management in organisations,
- * explain the different phases of secure systems development/acquisition,
- * recognize the fundamental characteristics of risk management and evaluate information security risks,
- * recognize basics of technical information security methods and cryptography, as well as
- * explain areas of behavioral information security research and their practical implications.

[Official course record: 811168P](#)

AY811168P | Information Security (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Tero Päivärinta

Content

- Basic concepts of information security
- Information security threats, vulnerabilities, and risks
- Legal issues and information security frameworks
- Risk management
- Cryptography
- Information security technologies
- Behavioral information security research

Learning outcomes

After completing the course, the student will be able to:

- define essential information security concepts and components of information systems security,
- recognize the common types of security threats, and their managerial and technical protection mechanisms,
- describe the tasks and responsibilities of information security, management in organisations
- explain the different phases of secure systems development/acquisition,
- recognize the fundamental characteristics of risk management and evaluate information security risks,
- recognize basics of technical information security methods and cryptography, as well as
- explain areas of behavioral information security research and their practical implications.

[Official course record: AY811168P](#)

812361A | Information Systems Acquisition, Deployment and Management

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Sami Pohjolainen

Content

- * Acquisition processes
- * Procurement procedures in the public sector
- * Information systems deployment in an organisation
- * Creating policies for an organization, considering resilience and sustainability
- * Impact of individual and organizational factors in information systems
- * Risks concerning information systems acquisition, deployment, and management

Learning outcomes

After completing the course, the student will be able to:

1. **describe the basics of the acquisition process** and is familiar with public procurement procedures
2. **participate in the deployment of an information system in an organization**, selecting a sound approach and recognizing the key factors to resistance to change
3. **create organizational policies** supporting efficient and sustainable operation,
4. **identify suitable frameworks for different scenarios**, and apply information systems theories and models,
5. **design processes for information systems management**, with a holistic approach to information security
6. **prepare for crisis situations**, such as a system reboot, and design secure organization policies, and
7. **monitor and control the information system along its life cycle**, considering especially information security, and create policies regarding this.

Official course record: [812361A](#)

812360A | Information Systems Modelling, Design and Development

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Mikko Rajanen

Content

- Basics of modelling
- Importance of modelling when designing information systems
- Modelling types to represent and design informationsystems from different points of view
- Modelling in definition phase of information system design
- Modelling stakeholder groupsfor information system design
- Modelling use cases for information system design
- Modelling in the final parts of the informationsystem design
- Connections between design, modelling and implementation
- Prototyping and modelling as communication method towards stakeholders, as part of requirement specification and as part of evaluating design concepts
- Ethical issues in information system desing and the designer responsibility.

Learning outcomes

After completing the course, the student will be able to:

- describe the basics of modelling,
- describe the importance of modelling when designing information systems,
- use different kinds of modelling types to represent and design information systems from different points of view,
- use modelling in definition phase of information system design,
- recognize and model stakeholder groups for information system design,
- recognize and model use cases for information system design,
- use modelling in the final parts of the information system design,
- describe the connections between design, modelling and implementation,
- use prototyping and modelling as communication method towards stakeholders, as part of requirement specification and as part of evaluating design concepts, as well as
- recognizes the ethical issues in information system desing and the designer responsibility.

Generic skills related to the course: In the course, the student

- identifies the key skills of analytical, critical and creative thinking and is able to observe them in their own activities
- is able to identify the key elements related to their own well-being and self-management
- is able to identify the stressors related to expert work and utilize self-compassion to support well-being
- is able to describe their competence, develop their own professional identity, promote group learning and development and recognize the need for lifelong learning
- is able to compare the differences and similarities between their own field of study and related disciplines
- is able to be open to the perspectives of representatives of other fields and identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field
- works in multidisciplinary and professional teams and values the expertise of different fields
- is able to communicate clearly in a group, actively listen to others, give constructive feedback and resolve conflicts constructively
- is able to use relevant digital and artificial intelligence applications appropriately, safely and responsibly.

[Official course record: 812360A](#)

AY812360A | Information Systems Modelling, Design and Development (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Mikko Rajanen

Content

- Basics of modelling
- Importance of modelling when designing information systems
- Modelling types to represent and design informationsystems from different points of view
- Modelling in definition phase of information system design
- Modelling stakeholder groupsfor information system design
- Modelling use cases for information system design
- Modelling in the final parts of the informationsystem design
- Connections between design, modelling and implementation
- Prototyping and modelling as communication method towards stakeholders, as part of requirement specification and as part of evaluating design concepts
- Ethical issues in information system desing and the designer responsibility.

Learning outcomes

After completing the course, the student will be able to:

- describe the basics of modelling,
- describe the importance of modelling when designing information systems,
- use different kinds of modelling types to represent and design information systems from different points of view,
- use modelling in definition phase of information system design,
- recognize and model stakeholder groups for information system design,
- recognize and model use cases for information system design,
- use modelling in the final parts of the information system design,
- describe the connections between design, modelling and implementation,
- use prototyping and modelling as communication method towards stakeholders, as part of requirement specification and as part of evaluating design concepts, as well as
- recognizes the ethical issues in information system design and the designer responsibility.

Generic skills related to the course: In the course, the student

- identifies the key skills of analytical, critical and creative thinking and is able to observe them in their own activities
- is able to identify the key elements related to their own well-being and self-management
- is able to identify the stressors related to expert work and utilize self-compassion to support well-being
- is able to describe their competence, develop their own professional identity, promote group learning and development and recognize the need for lifelong learning
- is able to compare the differences and similarities between their own field of study and related disciplines
- is able to be open to the perspectives of representatives of other fields and identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field
- works in multidisciplinary and professional teams and values the expertise of different fields
- is able to communicate clearly in a group, actively listen to others, give constructive feedback and resolve conflicts constructively
- is able to use relevant digital and artificial intelligence applications appropriately, safely and responsibly.

Official course record: [AY812360A](#)

817618S | Information Systems Strategy and Leadership

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Marianne Kinnula

Content

This course gives an overview of strategic planning for information systems as well as integration of IS strategies with business objectives. Particular attention will be paid to the tools and frameworks that are available to assist managers in IS strategic analysis and help them understand the strategic impact of technological trends. Issues surrounding business ecosystems and interfirm collaboration will be examined from strategy perspective.

Learning outcomes

After completing the course, the student will be able to: describe how to create and implement long-term plans for designing, delivering, and using organizational information systems to achieve strategic domain goals and objectives; use different kinds of tools for managing this diverse and ambiguous environment; describe the differences between leading and managing and apply these to practice; describe strategic use of information systems in organizations; analyse a company situation in a continually changing, unpredictable and even hostile environment; as well as make well-grounded recommendations for the company courses of action.

Official course record: [817618S](#)

521043S | Internet of Things

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Dinesh Sah

Content

The basic technologies and novel applications of the Internet of Things, including networking technologies as well as Web of Things. IoT sensor technologies and sensing solutions for smart buildings including smart home, city, office, or campus environments, and wearables and other personal devices such as fabrication. Exercises will include hands-on programming and sensing data analytics tasks.

Learning outcomes

Upon completion of the course, the student will be able to:

1. explain application areas of IoT and requirements from such application areas for IoT systems.
2. will be able to explain the state-of-the-art IoT solutions, and understand the basic technologies behind them.
3. learn the principles of the novel IoT technologies and know important directions IoT research towards.

The focus of the course is to learn how to design and implement an end-to-end IoT software pipeline for the given use-case.

[Official course record: 521043S](#)

814311A | Internship in ICT-duties

3-5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Tonja Molin, Heidi Hartikainen

Content

Internship from two to four months in professional ICT duties that include orientation with the tasks and guiding when needed.

Learning outcomes

After completing the course, the student will be able to:

- * work in a typical professional ICT duty,
- * apply in practice the expertise s/he has learnt during ICT studies,
- * understand the value of his/her work experience in order to improve his/her expertise in the future, as well as
- * describe, analyze and report his/her ICT related work experience in order to improve his/her expertise in the future.

[Official course record: 814311A](#)

521160P | Introduction to Artificial Intelligence

5 ECTS | Computer Science and Engineering | Basic Studies | English

Person in charge: Matti Matilainen

Content

Brief introduction to the history of artificial intelligence and the essential concepts and methods

- Search methods
- Supervised learning
- Unsupervised learning
- Reinforcement learning
- Genetic algorithms
- Neural networks and deep learning
- Data preprocessing

Learning outcomes

Upon completion the student:

- Can recognize and tell the difference between search, regression, classification and clustering types of problems
- Is able to identify potentially applicable artificial intelligence techniques for solving different types of problems
- Can explain the difference between supervised, unsupervised, and reinforcement learning, their use cases and the use of their performance measurement metrics

[Official course record: 521160P](#)

AY521160P | Introduction to Artificial Intelligence (OPEN UNIV)

5 ECTS | Computer Science and Engineering | Basic Studies | English

Person in charge: Matti Matilainen

Content

Brief introduction to the birth and history of artificial intelligence as well as to the essential concepts and methods in artificial intelligence:

- Search methods
- Supervised learning (regression and classification)
- Unsupervised learning (clustering and dimensionality reduction)
- Reinforcement learning (Q-learning)
- Introduction to genetic algorithms and deep learning
- Data preprocessing

Learning outcomes

Upon completion the student:

- Can recognize and tell the difference between search, regression, classification and clustering types of problems
- Is able to identify potentially applicable artificial intelligence techniques for solving different types of problems
- Can explain the difference between supervised and unsupervised learning, their use cases and the use of their performance measurement metrics

[Official course record: AY521160P](#)

IC00BA99 | Introduction to C Programming for Embedded Devices FITech 3 ECTS

3 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Ivan Sanchez Milara

Content

Fitech students (3ECTS):

- Overview of computer architecture and CPU
- Introduction to Embedded systems
- Data representation and memory management
- Introduction to C programming: variables, functions, control structures, pointers and data structures.
- Bitwise operations. Reading/writing values from registers.
- Compiling environment, libraries and makefiles

Learning outcomes

Students in Introduction to C programming for embedded devices FITECH 3 ects:

At the end of the course student:

- understands the basics of computer architecture and CPU operations.
- is able to describe how data is stored in a computer using different representation formats, and how operate with data at a low level (byte)
- implements simple C programs using a workstation
- is able to interpret information from a sensor datasheet and write code to read/write in its registers
- can create simple makefiles

Official course record: [IC00BA99](#)

521287A | Introduction to Computer Systems

3-5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Ivan Sanchez Milara

Content

University of Oulu Degree programs students (5ECTS)

- Overview of computer architecture and CPU
- Introduction to Embedded systems
- Data representation and memory management
- Introduction to C programming: variables, control structures, functions, pointers, I/O, data structures, bitwise operations, libraries and build systems/tools
- Introduction to RTOS, finite state machines and programming a development board using C programming language
- Embedded systems main concepts: I/O, serial and wireless communication, interrupts, interactions with peripherals.

Learning outcomes

University of Oulu Degree programs students (5ECTS)

Upon completing the course a student:

- understands the basics of computer architecture and CPU operations.
- is able to describe how data is stored in a computer using different representation formats
- implements simple programs for workstations using the C programming language
- understand basics principles of embedded programming and recognizes how embedded systems programming is different from programming general-purpose computers
- setups a development environment for a specific microcontroller / development board
- implements simple programs in C for embedded systems
- explains and writes C programs using basic concepts of embedded programming such as RTOS, I/O, interruptions, networking ...
- applies teamwork and project management strategies to coordinate the implementation of a embedded project using RTOS

IC00AU61 | Introduction to Cyber Security

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Teemu Tokola

Content

The course consists of 20 lectures covering the following topics:

- Goals of cybersecurity and information security, and their relevance in different disciplines and study programs.
- Cybercrime: threats, phenomena, and methods—from phishing to data breaches.
- Cyberbullying, cyber influence, and cyberstalking, information warfare in cyberspace, OSINT and threat intelligence.
- Legislation related to cybersecurity (GDPR, NIS2, etc.).
- Digital sovereignty, cyberwarfare and hacktivism, cyber defence and threat modelling.
- User accounts and authentication methods, best practices.
- Password cracking and storage.
- Cybersecurity of email and instant messaging, spam, encryption of communications.
- Online privacy, remote work, VPN, and the Tor network.
- Cyber exercises and incident management, national preparedness, cloud services, backups, and logging.
- Endpoint device protection and device compromise techniques, blockchains and cryptocurrencies.
- Network traffic capture and network traffic logs.
- Network monitoring, firewalls, cyber threat intelligence, and enterprise solutions.
- Network scanning, botnets and DDoS, penetration testing.
- Ethical hacking and technical forensics, side-channel attacks, memory dumps, and quantum computing.
- Vulnerabilities (CWE, CVE) and their validation, supply chains and SBOM.
- Bug bounty programs, website vulnerabilities, CTF environments.
- Secure programming and software testing, software supply chain challenges.
- Cybersecurity of artificial intelligence, hardware vulnerabilities and hardware testing, hardware supply chain challenges.
- Cybersecurity in workplaces, certifications and standards.

Learning outcomes

After completing the course, students will know and understand the key phenomena and fundamentals of the field of cybersecurity, be familiar with essential terminology, and be able to write fluently and with justification about the course's core areas. They will also have become acquainted with the related software and technologies.

Official course record: IC00AU61

IC00AI82 | Introduction to Cyber Security Testing

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Teemu Tokola

Content

The course considers case studies of basic problems of cybersecurity and the technical basis of vulnerabilities and how to test and recognise them.

Learning outcomes

Upon completing the course, the student:

- has a solid understanding of the core principles that form the foundation of cyber security
- is familiar with the basic concepts and the terminology of cyber security testing
- is able to use security testing tools
- is familiar with different challenges in the field of cyber security

Official course record: [IC00AI82](#)

II00AT91 | Introduction to European Health Data Space

2-3 ECTS | Information Processing Science | Basic Studies | English

Person in charge: Prabhat Ram

Content

- eHealth – Digital health and care
- EHDS regulation and infrastructure
- Tools and technologies for EHDS ecosystem
- Health-related legislations
- Basics of health data security and privacy

Learning outcomes

By completing the course, the student will:

- Be able to describe the basics of digital health and healthcare in the context of EHDS.
- Be able to describe the EHDS regulation, its motivation, and its implication.
- Acquire a working knowledge of the infrastructure proposed to implement EHDS.
- Become aware of the relevant legislations in the context of EHDS.
- Be able to describe the security and privacy requirements in the context of EHDS.

Official course record: [II00AT91](#)

AY00AX61 | Introduction to European Health Data Space (OPEN UNI)

2-3 ECTS | Information Processing Science | Basic Studies | English

Content

- eHealth – Digital health and care
- EHDS regulation and infrastructure
- Tools and technologies for EHDS ecosystem
- Health data security and privacy

Learning outcomes

By completing the course, the student will:

- Be able to describe the basics of digital health and healthcare in the EU.
- Be able to describe the EHDS regulation and its motivation.
- Acquire a working knowledge of the infrastructure proposed to implement EHDS.
- Have a basic understanding of the legislations like GDPR, Act on Secondary use of data, Data Act, AI Act, etc.
- Be able to describe the security and privacy requirements in the context of EHDS and digital health.
- Navigate, understand, and comment on the EHDS skills and competence framework
- Demonstrate the above knowledge by developing a proposal for innovation under EHDS
- Demonstrate the role of EHDS in the specific case of rare disease
- Demonstrate how EHDS can benefit protected groups, e.g., indigenous population.

Official course record: [AY00AX61](#)

810136P | Introduction to Information Processing Sciences

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Mikko Rajanen

Content

The course consists of lectures on disciplines, essential concepts, historically significant and current research, practical work life as well as responsible conduct of research and professional ethics in Information Processing Science. In addition, the student will familiarize with scientific work skills by listening, reading, thinking critically and creatively, retrieving data, classifying, reflecting and presenting in written form.

Learning outcomes

After passing the course, a student will be able to

- describe the disciplines of Information Processing Science,
- explain the essential Information Processing Science concepts,
- name historically significant and current research topics in Information Processing Science,
- identify the characteristics and requirements of work tasks in the field of Information Processing,
- describe the principles of responsible conduct of research and professional ethics in Information Processing Science
- retrieve, analyse, contest and classify information related to those, as well as
- discuss and report in written form on those using one reference convention of the scientific discipline.

Generic skills related to the course: In the course, the student

- identifies the key skills of analytical, critical and creative thinking and is able to observe them in their own activities
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unforeseen problems
- is able to describe their competence, develop their own professional identity, promote group learning and development and recognise the need for lifelong learning
- is able to identify the dimensions of sustainability (social, ecological, economic, cultural) and is able to assess their own activities in relation to them
- is able to compare the differences and similarities between their own field of science and related sciences
- is able to communicate clearly orally and in writing, both to experts in their own field and to other audiences, also in a foreign language
- is able to develop their communication, interaction and multi-literacy skills
- is able to use digital and artificial intelligence applications relevant to their field of study appropriately, safely and responsibly.

[Official course record: 810136P](#)

AY810136P | Introduction to information processing sciences (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Mikko Rajanen

Content

The course consists of lectures on disciplines, essential concepts, historically significant and current research as well practical work life in Information Processing Science. In addition, the student will familiarize with scientific work skills by listening, reading, thinking critically and creatively, retrieving data, classifying, reflecting and presenting in written form.

Learning outcomes

After passing the course, a student will be able to

- describe the disciplines of Information Processing Science,
- explain the essential Information Processing Science concepts,
- name historically significant and current research topics in Information Processing Science,
- identify the characteristics and requirements of work tasks in the field of Information Processing,
- describe the principles of responsible conduct of research and professional ethics in Information Processing Science
- retrieve, analyse, contest and classify information related to those, as well as
- discuss and report in written form on those using one reference convention of the scientific discipline.

Generic skills related to the course: In the course, the student

- identifies the key skills of analytical, critical and creative thinking and is able to observe them in their own activities
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unforeseen problems
- is able to describe their competence, develop their own professional identity, promote group learning and development and recognise the need for lifelong learning
- is able to identify the dimensions of sustainability (social, ecological, economic, cultural) and is able to assess their own activities in relation to them
- is able to compare the differences and similarities between their own field of science and related sciences
- is able to communicate clearly orally and in writing, both to experts in their own field and to other audiences, also in a foreign language
- is able to develop their communication, interaction and multi-literacy skills
- is able to use digital and artificial intelligence applications relevant to their field of study appropriately, safely and responsibly.

Official course record: AY810136P

IC00AQ53 | Introduction to Internet of Medical Things

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Mariella Särestöniemi

Content

This course introduces the concept, scope, benefits, and challenges of Internet of Things for Healthcare. The course covers the main components and layers of IoT-Health systems, such as sensors, gateways, networks, cloud, and applications, and explains how they interact and communicate with each other. The course also discusses the common standards and protocols used in IoT-Health, and their advantages and disadvantages for different scenarios. The course also addresses the potential risks and threats to IoT-Health systems and the best practices and solutions to ensure security and privacy of IoT-Health data. The course also presents examples of existing and emerging applications and case studies of IoT-Health in various domains, such as remote patient monitoring, smart wearables, smart implants, smart hospitals, smart drug delivery, etc., and discusses their impact and challenges on healthcare quality, efficiency, accessibility, and affordability. The course also explores the topics of edge computing and future network architectures for IoT-Health, AI and deep learning in IoT-Health and its opportunities, healthcare device regulations, virtual and augmented reality in healthcare, and related investigations for current and future's applications.

Learning outcomes

By the end of this course, the students will be able to:

1. Understand the concept and scope of IoT-Health and its benefits and challenges for healthcare
2. Identify the main components and layers of IoT-Health systems and explain how they interact and communicate with each other
3. Compare and contrast the common standards and protocols used in IoT-Health and evaluate their suitability for different scenarios
4. Recognize the potential risks and threats to IoT-Health systems and apply the best practices and solutions to ensure security and privacy of IoT-Health data
5. Recognize and illustrate examples of existing and emerging applications and case studies of IoT-Health in various domains, such as remote patient monitoring, smart wearables, smart implants, smart hospitals, smart drug delivery, etc.
6. Explore the topics of edge computing and future network architectures for IoT-Health, AI and deep learning in IoT-Health and its opportunities, healthcare device regulations, virtual and augmented reality in healthcare, and related investigations for current and future's applications

Official course record: IC00AQ53

811393A | Introduction to Research Work

5 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Olli Korhonen

Content

Concepts of knowledge, information and research, literature review methods, reporting and argumentation, research process and evaluation, research ethics and misconduct, reporting of own study and peer-review.

Learning outcomes

After completing the course, the student will be able to: *Understand the research process as a whole and apply it in their own research work, *formulate research questions from research problems and conduct a literature review, *use databases to search for research articles, *identify and describe the significance of analytical and critical thinking in scientific work, * recognize the ethical aspects of research and act accordingly, * produce academic writing and oral presentations.

During the course, it is possible to start collaboration with the supervisor of the Bachelor's Thesis. The thesis written in the course may be expanded into a Bachelor's Thesis.

Official course record: 811393A

521157A | Introduction to Social Network Analysis

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Mourad Oussalah

Content

The course describes basics of social network analysis, allowing the students to understand structure and evolution of the network, while enabling them to use appropriate tools and techniques to draw inferences and discover hidden patterns from the network. The course is designed to accommodate computer science, mathematical and social science student background, which helps in emergence of multi-disciplinary research in the university

Learning outcomes

Upon completing the course, the student is expected to

- i) understand social aspects of the web;
- ii) learn to collect, clean and represent social media data;
- iii) quantify important properties of social media;
- iv) find and analyze (online) communities;
- v) understand the diffusion process in social network;
- vi) familiarize with simple modelling toolkits for social media analysis.

[Official course record: 521157A](#)

811174P | Introduction to Software Business

5 ECTS | Information Processing Science | Basic Studies | Finnish

Content

This course provides an overview of software business from three different viewpoints: software industry, business logic, and functions of a software company.

Learning outcomes

After completing the course, a student will be able to: * explain how the industry is structured; * describe the software industry's business logic as typically used in business models and the reasoning behind their use; * describe the important areas of the software business; as well as* describe legal issues related to software business.

[Official course record: 811174P](#)

811103P | Introduction to Software Engineering

5 ECTS | Information Processing Science | Basic Studies | Finnish, English

Person in charge: Markus Kelanti

Content

Principles of professional software development

- Software processes
- Agile software development
- Requirements engineering
- System modelling
- Architectural design
- Design and implementation
- Software testing
- Software evolution

Learning outcomes

After completing the course, the student will be able to:

- describe the principles, define the key concepts and use professional terminology of software engineering,
- describe software engineering as a professional practice and a field of industry,
- describe and work following professional practices that are important for software engineers,
- describe contemporary software processes and choose appropriate ones for specific situations,
- describe and apply valid problem identification and structuring methods in software engineering,
- identify and apply some contemporary software engineering models, methods and tools, as well as
- describe the necessity of continuing learning and professional development.

[Official course record: 811103P](#)

AY811103P | Introduction to Software Engineering (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Markus Kelanti

Content

- Principles of professional software development
- Software processes
- Agile software development
- Requirements engineering
- System modelling
- Architectural design
- Design and implementation
- Software testing
- Software evolution

Learning outcomes

After completing the course, the student will be able to:

- describe the principles, define the key concepts and use professional terminology of software engineering,
- describe software engineering as a professional practice and a field of industry,
- describe and work following professional practices that are important for software engineers,
- describe contemporary software processes and choose appropriate ones for specific situations,
- describe and apply valid problem identification and structuring methods in software engineering,
- identify and apply some contemporary software engineering models, methods and tools, as well as
- describe the necessity of continuing learning and professional development

[Official course record: AY811103P](#)

II00BC88 | Introduction to Software Engineering and Information Systems

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Mikko Rajanen

Content

The course consists of lectures on disciplines, essential concepts, historically significant and current research, practical work life as well as responsible conduct of research and professional ethics in Information Processing Science. In addition, the student will familiarize with scientific work skills by listening, reading, thinking critically and creatively, retrieving data, classifying, reflecting and presenting in written form.

Learning outcomes

After passing the course, a student will be able to

- describe the disciplines of Information Processing Science,
- explain the essential Information Processing Science concepts,
- name historically significant and current research topics in Information Processing Science,
- identify the characteristics and requirements of work tasks in the field of Information Processing,
- describe the principles of responsible conduct of research and professional ethics in Information Processing Science
- retrieve, analyse, contest and classify information related to those, as well as
- discuss and report in written form on those using one reference convention of the scientific discipline.

Generic skills related to the course: In the course, the student

- identifies the key skills of analytical, critical and creative thinking and is able to observe them in their own activities
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unforeseen problems
- is able to describe their competence, develop their own professional identity, promote group learning and development and recognise the need for lifelong learning
- is able to identify the dimensions of sustainability (social, ecological, economic, cultural) and is able to assess their own activities in relation to them
- is able to compare the differences and similarities between their own field of science and related sciences
- is able to communicate clearly orally and in writing, both to experts in their own field and to other audiences, also in a foreign language
- is able to develop their communication, interaction and multi-literacy skills
- is able to use digital and artificial intelligence applications relevant to their field of study appropriately, safely and responsibly

Official course record: [II00BC88](#)

IE00AL43 | Introduction to Sustainable Autonomous Systems

5 ECTS | Electrical Engineering, Automation and Information Technology | Intermediate Studies | English

Person in charge: Niina Halonen

Content

1. The concepts and applications for autonomous systems
2. The technology enabling autonomous systems
3. The ethics for autonomous systems
4. Autonomous systems and sustainable development
5. The research for autonomous and sustainable systems

Learning outcomes

Introduction to Sustainable Autonomous Systems course is built to introduce sustainability and autonomous systems for the masters students.

Official course record: [IE00AL43](#)

521293A | Introduction to XR Systems

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Paula Alavesä

Content

In this course, you will learn the fundamentals needed to understand and create immersive VR experiences. The lectures cover the structure of XR systems, the current state of the technology, human factors influencing development, and a high-level understanding of some mathematical tools for 3D space. In the practical part of the course, you will learn to create immersive VR applications from scratch using the Unity game engine. The course is designed so that no prior experience with Unity is required.

Learning outcomes

Upon completion of the course the students will be able to:

- Recall the components of modern XR systems
- Understand the interaction between the hardware, software, and human senses during an XR experience.
- Understand how the choices in hardware and software components influence human perception and the quality of XR experiences.
- Identify challenges facing next generation XR systems.
- Develop a basic VR experience using Unity3D.

Official course record: [521293A](#)

521289S | Machine Learning

5 ECTS | Biomedical Engineering (Computer Science and Engineering), Computer Science and Engineering | Advanced Studies | English

Person in charge: Matti Matilainen

Content

The course covers machine learning fundamentals and key linear and nonlinear methods for regression and classification. You'll learn to build models with good performance and strong generalization. Teaching includes theory lectures and self-paced, auto-graded programming exercises. Grades are based on completed tasks, with additional exercises available for interested students.

Content: Introduction. Mathematical optimization for machine learning. Linear and non-linear models for regression and classification. Feature engineering and optimization. Model validation. Kernel methods, neural networks, tree-based learners.

Learning outcomes

After completing the course, student

1. can design and implement basic machine learning algorithms for regression and classification applications.
2. can design and implement methods for optimizing cost functions for machine learning tasks.
3. can apply the most common methods for machine learning.

In addition, the student learns about the following generic skills:

4. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, taking into account the interfaces between fields and new knowledge
5. is able to apply creative thinking and problem solving in their work in order to develop new knowledge and new methods.

Official course record: [521289S](#)

521466S | Machine Vision

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Janne Heikkilä

Content

1. Introduction,
2. Imaging and image representations,
3. Light and color,
4. Feature extraction,
5. Motion,
6. 2D models and transformations,
7. Perceiving 3D from 2D images,
8. 3D transformations and reconstruction,
9. Recognition,
10. Deep learning fundamentals,
11. Dense prediction and object detection

Learning outcomes

Upon completion of the course the student

1. understands the fundamentals of image acquisition, representation and modeling
2. can utilize elementary methods of machine vision and machine learning for image recognition problems
3. can use 2D transformations in model fitting and image registration
4. can explain the basics of 3D imaging and reconstruction

[Official course record: 521466S](#)

813613S | Master's Thesis

30 ECTS | Information Processing Science | Advanced Studies | English, Finnish

Person in charge: Elina Annanperä

Content

Independent research work under supervision aiming at Master's Thesis.

Learning outcomes

After completing the thesis, the student will be able to:

- define a relevant focused problem in the field of Software Engineering or Information Systems,
- apply a scientific method as a tool in solving the stated research problem,
- synthesize research results and evaluate their validity,
- write a scientific thesis based on the accomplished research according to the programme guidelines, as well as
- participate in the evolution of ICT and postgraduate studies after completing the thesis.

[Official course record: 813613S](#)

521993S | Master's Thesis in Computer Engineering

30 ECTS | Computer Science and Engineering | Advanced Studies | Finnish, English

Person in charge: Satu Tamminen

Content

The thesis work is carried out independently. The student defines the content of the thesis under the guidance of the supervisor. The degree program committee approves the supervisor, the reviewers and the content.

Learning outcomes

The student is able to set goals for a given task. He can structure the topic coherently, with emphasis on the key issues. Depending on the nature of the work, the student is able to present the existing results or technological implementations so that the methods used in the work are justified in relation to the state of the art in the field of engineering or science in question. He is able to apply the knowledge and state of the art methods of the subject area in his work. He can present clearly his plan and solution implemented, justify the choices made, and assess the functionality of the solution with relevant testing and evaluation methods. In addition, he is able to compare the results against goals and to consider their general significance to modern engineering or science, and assess the broader significance of the results to the company, organization or project. The student is able to produce smooth, clear and finalized text based on technical and scientific writing practices of the field.

Official course record: 5219935

813627S | Master's Thesis Seminar

2 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Dorina Rajanen

Content

The course consists of three phases following the structure and progress of a Master's Thesis work:

- 1) formulate research topic and questions, conduct literature review, and select suitable research methods,
- 2) collect and analyse data,
- 3) discuss the results, write conclusions, and present the final thesis.

In each phase, a student is required to participate first as a peer reviewer or audience, and then present his/her own research. During the course, the students familiarise also with current research topics and methods of the degree programme.

Learning outcomes

After completing the course, the students will be able to:

- * present their own research in various stages,
- * give feedback of peers' research results and reporting,
- * use the received and given feedback to improve their own thesis,
- * familiarize with and apply thesis evaluation criteria.

Generic skills exercised and advanced in the course through reading, written assignments, discussions:

Analytical, critical and creative thinking skills (x) A person with a master's degree...

(x) is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

(x) is able to analyse arguments and argue appropriately

Well-being and self-development skills (x) A person with a master's degree...

(x) knows how to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner

(x) knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being

International and multicultural skills (x) A person with a master's degree...

(x) is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

Sustainability, responsibility and ethics skills (x) A person with a master's degree...

(x) is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

Multidisciplinary and Interdisciplinary skills (x) A person with a master's degree...

(x) is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines

Communication, interaction and digital skills (x) A person with a master's degree...

(x) is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

(x) is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society

[Official course record: 8136275](#)

521029S | Master's Thesis, Business Analytics (Computer Science and Engineering)

30 ECTS | Computer Science and Engineering | Advanced Studies | English

No description supplied in the collected record.

[Official course record: 521029S](#)

II00BD01 | Master's Thesis, Business Analytics (Software Engineering and Information Systems)

30 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Timo Koivumäki

No description supplied in the collected record.

521008A | Maturity Test for Bachelor 's Degree in CSE

0 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Satu Tamminen

Content

Relevant to the topic of the thesis.

Learning outcomes

According to the Government Decree on University Degrees (794/2004), to be awarded a lower university degree, the student write a maturity essay which demonstrates familiarity with in the topic of the thesis and skills in the use of Finnish or Swedish. When a student has been educated in a language other than Finnish or Swedish or a student has been educated abroad, the university shall determine separately the language of the maturity essay.

Official course record: 521008A

II00BC91 | Maturity test for Bachelor's Degree, Software Engineering and Information Systems

0 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Elina Annanperä

Content

Relevant to the topic of the thesis.

Learning outcomes

According to the Government Decree on University Degrees (794/2004), to be awarded a lower university degree, the student write a maturity essay which demonstrates familiarity with in the topic of the thesis and skills in the use of Finnish or Swedish. When a student has been educated in a language other than Finnish or Swedish or a student has been educated abroad, the university shall determine separately the language of the maturity essay.

Official course record: II00BC91

II00BC92 | Maturity test for Master's Degree, Software Engineering and Information Systems

0 ECTS | Information Processing Science | Advanced Studies | Finnish

Person in charge: Elina Annanperä

Content

Relevant to the topic of the thesis.

Learning outcomes

According to the Government Decree on University Degrees (794/2004), to be awarded a higher university degree, the student write a maturity essay which demonstrates conversance with in the topic of the thesis and skills in the use of Finnish or Swedish. When a student has been educated in a language other than Finnish or Swedish or a student has been educated abroad, the university shall determine separately the language of the maturity essay.

The student need not demonstrate command of the Finnish or Swedish language in the maturity essay included in the higher university degree if he/she has demonstrated his/her command of the language in a maturity essay included in a lower university degree studied in same language.

II00AS58 | Medical Software Development

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Minna Isomursu

Content

The course includes the following main content elements:

- Principles of professional Medical Software Development, such as regulation, safety and quality
- Software Engineering Methods for Medical Applications
- Standards, Compliance, and Best Practices
- Evaluation, Ethics, and Value in Medical Software

Learning outcomes

At the end of this course the students will be able to:

- understand and apply the fundamental principles of medical software development, including the regulatory, safety, and quality requirements specific to healthcare and medical devices
- design medical software components using appropriate software engineering methods in a responsible way, taking into account reliability, usability, and risk management
- apply standards and best practices relevant to medical software throughout the software development lifecycle
- analyze and evaluate medical software solutions in terms of clinical value, ethical considerations, sustainability and patient value, and communicate findings clearly

Official course record: II00AS58

TE00AS45 | Mixed-Signal Design and Testing

5 ECTS | Electrical and Information Engineering | Advanced Studies | English, Finnish

Person in charge: Christian Schuss

Content

- Concepts and principles of mixed-signal testing and design
- Testing methods: E.g., mask (pass-fail) testing, embedded testing, electromagnetic interference (EMI) pre-compliance testing, testing of biomedical devices, etc.
- Test signal generation and measurements
- Mixed-signal equipment (e.g., mixed-signal oscilloscope, real-time spectrum analyser) and measurements

Learning outcomes

After completing the course, the student

1. Knows and understands the key concepts and principles in mixed-signal testing and design.
2. Is familiar with mixed-signal testing equipment and testing setups.
3. Has developed skills to address challenges in mixed-signal design verification.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

Official course record: TE00AS45

521046A | Mobile Computing

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Elmeri Uotila

Content

The lectures discuss what mobile computing is, where it can be leveraged, what hardware can be found from mobile devices, and how to develop software for mobile devices, taking into account and leveraging their unique features. In the exercises and homework assignments, students get to program Android apps.

Learning outcomes

This course focuses on one of the core demands of the industry today: an understanding of mobile user interaction, computing constraints, an introduction to mobile development (Android) covering multiple aspects of the platform.

This course contains both lectures and practical sessions.

After this class, students can:

- design and prototype a mobile user interface taking into account usability aspects of interaction on smaller displays
- explain and leverage the fundamental concepts of context-awareness using smartphone hardware, software and human sensors
- understand and implement from scratch a mobile application that leverages both usability and context to create engaging mobile experiences
- use GitHub for managing mobile application development.

Official course record: [521046A](#)

521161S | Multi-Modal Data Fusion

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Jaakko Suutala

Content

Are you interested in AI, machine learning, and playing with data? Want to extend your knowledge and skills to process and combine information from multiple sources?

Discover the background theory, principles, and techniques behind integrating information from multiple sensors and data sources in the Multi-Modal Data Fusion course. This comprehensive course introduces a statistical framework, exploring concepts like data pre-processing, Bayesian inference, and machine learning approaches for data fusion. Through real-world examples spanning diverse applications, you'll learn how to apply advanced algorithms and models to solve complex challenges.

Whether you're an aspiring researcher or a professional in engineering, AI, machine learning, or data science, this course equips you with the tools to leverage data fusion for impactful solutions.

More detailed, this course will provide a comprehensive introduction to the concepts and ideas of multi-sensor and multi-modal data fusion. We will be concentrated on defining general statistical framework for multi-modal data processing. Using this framework, we will show concepts of common representation and data alignment, Bayesian inference and parameter estimation, sequential Bayesian inference, and machine learning and pattern recognition approaches to data fusion as well as specific models and algorithms in each aforementioned category. Furthermore, the course will illustrate many real-life examples taken from a diverse range of applications to show how they can be benefitted from data fusion approaches.

The course will discuss the following topics:

1. Introduction
2. Sensors and architectures
3. Common representation
4. Data alignment
5. Bayesian inference and parameter estimation
6. Sequential Bayesian inference
7. Bayesian decision theory and ensemble learning
8. Recent advances and deep learning

Learning outcomes

Upon completion of the course, the student will be able to:

1. understand the benefits and challenges of combining data of different natures and coming from different sources
2. explain the basic principles of combining multi-sensor data
3. recognize the common types of data fusion techniques
4. utilize the statistical and Bayesian inference framework in multi-modal data fusion
5. extend the basic principles of machine learning to multi-modal data fusion
6. implement the basic solutions towards the accomplishment of a given task requiring the integration and combination of multi-sensor and multi-modal data

Official course record: [5211615](#)

521288S | Multiprocessor Programming

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Miguel Bordallo Lopez

Content

Algorithm design, general purpose computing on graphics processing units, heterogeneous computing, OpenCL programming and optimization

Learning outcomes

Upon completion of the course, the student:

- has basic understanding of multiprocessor architectures and heterogeneous computing,
- has basic understanding on how to design and implement algorithms for heterogeneous platforms,
- understands the possible challenges and shortcomings related to the current heterogeneous systems,
- is able to use the OpenCL framework for designing, implementing and optimizing signal processing algorithms for heterogeneous platforms

[Official course record: 5212885](#)

521158S | Natural Language Processing and Text Mining

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Mourad Oussalah

Content

Foundation of text retrieval systems, Lexical ontologies, word sense disambiguation, Text categorization, Corpus-based inferences and Natural Language Processing tools

Learning outcomes

Upon completing the course, the student is expected to

- i) comprehend, design and implement basic (online) text retrieval and query systems;
- ii) account for linguistic aspects and perform word sense disambiguation;
- iii) perform basic (statistical) inferences using corpus;
- iv) manipulate (statistical) language modelling toolkits, online lexical databases and various natural language processing tools.

[Official course record: 521158S](#)

811606S | Next Generation Software Engineering

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Arif Khan

Content

* Software engineering trends (varies)* Writing, arguing and discussing about the trends

Learning outcomes

After successfully completing the course, a student will gain a comprehensive understanding of the latest advanced trends in software engineering and develop the ability to write research articles and gain hands-on experience based on these trends.

[Official course record: 811606S](#)

521453A | Operating Systems

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Ville Pitkänen

Content

In this course, you will learn the fundamentals of operating systems through lectures, exercises, and a project work. Video recordings of the lectures and all other course materials will be available on the course's Moodle page. The exercises are optional, automatically graded, and provide extra points for the exam. The project work is a mandatory part of the course and can also be completed remotely. Apart from the exam, the entire course can be completed remotely. The exam is conducted through the EXAM system, meaning you can take it at multiple higher education institutions in Finland, not just at the University of Oulu.

Content: Operating system structure and services, process management, process synchronization, deadlocks, memory management, virtual memory, file-systems.

Learning outcomes

After the course the student:

1. Is capable of explaining the basic structure and functioning of operating system.
2. Is able to point the problems related to process management and synchronization as well as is able to apply learned methods to solve basic problems.
3. Is capable of explaining the cause and effect related to deadlocks and is able to analyse them related to common circumstances in operating systems.
4. Is able to explain the basics of memory management, the use of virtual memory in modern operating systems as well as the structure of the most common file-systems.

[Official course record: 521453A](#)

AY521453A | Operating Systems (OPEN UNI)

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Juha Rönning

Content

Operating system structure and services, process management, process synchronization, deadlocks, memory management, virtual memory, file-systems

Learning outcomes

- is capable of explaining the basic structure and functioning of operating system
- is able to point the problems related to process management and synchronization as well as is able to apply learned methods to solve basic problems
- is capable of explaining the cause and effect related to deadlocks and is able to analyse them related to common circumstances in operating systems
- is able to explain the basics of memory management, the use of virtual memory in modern operating systems as well as the structure of the most common file-systems.

[Official course record: AY521453A](#)

810020Y | Orientation Studies

2 ECTS | Information Processing Science | General Studies | Finnish, English

Person in charge: Helena Tokkonen

Content

1. Common events and lectures, 2. Independent study, 3. Student tutoring, 4. PSP process, 5. Library and Oula-Finna database introduction, 6. Teacher tutoring. 7. University level orientation

Learning outcomes

After completing the course, the student will be able to:

- recognise the nature of university studies and responsibility for one's own studies,
- know how to plan one's own time and set goals,
- identify factors that affect learning and study ability
- recognize from the viewpoint of his/her university studies the actions and services of the most important units, organizations and societies and his/her action possibilities in them,
- recognize the characteristics of the university-level studies, own curriculum and the discipline of Information Processing Science from the viewpoint of his/her studies and their planning,
- discuss on the purpose of his/her studies and the upcoming study path,
- create and present his/her own Personal Study Plan (PSP),
- tell about his/her university and exploit its services, as well as
- be interaction with staff members of Information Processing Science degree program and other students as well as feels like being part of the student group.

Official course record: [810020Y](#)

IC00AQ41 | Orientation to Biomedical Engineering

5 ECTS | Biomedical Engineering (Computer Science and Engineering) | Basic Studies | Finnish

Person in charge: Kai Noponen

Content

- Degree program structure
- Study-related services, information systems and software
- Academic studying and responsibility
- Time management planning and monitoring
- Basic skills and software needed in studying biomedical engineering

Learning outcomes

Upon completion of the course, the student:

- Can identify factors that affect one's own learning and ability to study.
- Is aware of the nature of university studies and their responsibility for their own studies.
- Knows the content and structure of his / her degree program and has developed a personal study plan.
- Can plan and follow their own studies in both the short and long term.
- Can use tools needed in the studies of biomedical engineering.
- Can identify and describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities.
- Is able to identify key elements related to one's own well-being and self-management.
- Can identify load factors related to expert work and utilize self-compassion to support well-being.
- Is able to compare the differences and similarities between their own discipline and related sciences

Official course record: [IC00AQ41](#)

521002P | Orientation to Computer Science and Engineering

5 ECTS | Computer Science and Engineering | Basic Studies | Finnish

Person in charge: Paula Alavesä, Anja Keskinarkaus, Teemu Tokola

Content

- Degree program structure
- Study-related services, information systems and software
- Academic studying and responsibility
- Time management planning and monitoring
- Basic skills and software needed in studying computer engineering

Learning outcomes

Upon completion of the course, the student:

- Can identify factors that affect one's own learning and ability to study.
- Is aware of the nature of university studies and their responsibility for their own studies.
- Knows the content and structure of his / her degree program and has developed a personal study plan.
- Can plan and follow their own studies in both the short and long term.
- Can use tools needed in the studies of computer engineering

[Official course record: 521002P](#)

IC00AQ66 | Orientation to CSE

5 ECTS | Computer Science and Engineering | Basic Studies | English

Person in charge: Anja Keskinarkaus, Teemu Tokola, Paula Alavesä

Content

- Degree program structure
- Study-related services, information systems and software
- Academic studying and responsibility
- Time management planning and monitoring
- Basic skills and software needed in studying computer engineering
- General orientation materials of the University of Oulu.

Learning outcomes

Upon completion of the course, the student:

- Can identify factors that affect one's own learning and ability to study.
- Is aware of the nature of university studies and their responsibility for their own studies.
- Knows the content and structure of his / her degree program and has developed a personal study plan.
- Can plan and follow their own studies in both the short and long term.
- Can use tools needed in the studies of computer engineering

[Official course record: IC00AQ66](#)

811607S | Persuasive Systems Design

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Harri Oinas-Kukkonen, Sami Pohjolainen, Fedja Poikonen, Renata Savian Colvero de Oliveira

Content

This course consists of two parts:

Part 1 will address how information technology influences us in everyday life. It will explain what persuasion is and what persuasive systems are. The Persuasive Systems Design model is introduced and used as a lens to examine the world of persuasive systems and technology. The model reveals ways in which technologies influence our attitudes and behavior. The course will prepare for the process of designing, developing, evaluating, and researching persuasive systems.

Part 2 will focus on the practical application of the Persuasive Systems Design model. The PSD model provides a three-stepped process to understand the underlying assumptions behind such systems, analyze the persuasion context and related principles, and design the content and software functionality to be implemented into the system. This part will focus on students' own mock-up designs and evaluations of persuasive systems.

Themes and activities covered in the course:

1. Foundations of Persuasive Technology

- * Understanding the pervasive influence of information technology in daily life
- * Defining persuasion and persuasive systems
- * Exploring the ethical implications of technology-driven behavioral change

2. Persuasive Systems Design (PSD) Model

- * Studying the PSD model as a primary analytical framework
- * Applying the PSD model to real-world examples of persuasive technologies
- * Revealing the mechanisms by which technologies influence attitudes and behaviors

3. Theoretical Frameworks and Practical Applications

- * Examining social psychology's attitudinal theories in the context of technology adoption
- * Bridging the gap between theoretical predictions and practical system design
- * Analyzing emerging trends in persuasive information technology systems and services

4. Design and Evaluation of Persuasive Systems

- * Exploring various types of persuasive content and software functionalities
- * Investigating the underlying assumptions behind persuasive design elements
- * Learning methods for analyzing persuasion contexts
- * Applying principles of persuasive system design

5. Gamification in Persuasive Technology

- * Understanding the role of games and game-like experiences in persuasion
- * Exploring gamification techniques and their application in persuasive content
- * Designing and evaluating gamified persuasive systems

6. Research Methods in Persuasive Technology

- * Introduction to research methodologies specific to persuasive systems
- * Conducting user studies and evaluating the effectiveness of persuasive technologies
- * Analyzing and interpreting data from persuasive system implementations

Learning outcomes

After passing the course a student will be able to:

- * understand how information technologies influence our attitudes and behavior,
- * gain a good understanding of persuasive systems and technology,
- * analyze methods and techniques employed by persuasive systems,
- * possess a solid foundation on the Persuasive Systems Design model and how to use it,
- * apply such methods ethically as design guidelines for developing persuasive systems, and
- * understand the design of gamified persuasive systems.

Official course record: 8116075

AY00AN10 | Persuasive Systems Design

2 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Harri Oinas-Kukkonen, Sami Pohjolainen

Content

The course will address how information technology influences us in everyday life. It will explain what persuasion is and what persuasive systems are. The Persuasive Systems Design model is introduced and used as a lens to examine the world of persuasive systems and technology. The model reveals ways in which technologies influence our attitudes and behavior. The course will prepare for the process of designing, developing, evaluating, and researching persuasive systems.

Learning outcomes

After completing the course, you will be able to:

- * understand how information technology is used to influence us,
- * gain a good understanding of persuasive systems and technology,
- * possess a solid foundation on the Persuasive Systems Design model and how to use it, and
- * have a new powerful tool to increase your digital competence.

Official course record: AY00AN10

II00AN08 | Persuasive Systems Design

2 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Harri Oinas-Kukkonen,

Content

The course will address how information technology influences us in everyday life. It will explain what persuasion is and what are persuasive systems. The Persuasive Systems Design model is introduced and used as a lens to examine the world of persuasive systems and technology. The model reveals ways in which technologies influence our attitudes and behavior. The course will prepare for the process of designing, developing, evaluating, and researching persuasive systems.

Learning outcomes

After completing the course, a student will be able to:

- * understand how information technology is used to influence us,
- * gain a good understanding of persuasive systems and technology,
- * possess a solid foundation on the Persuasive Systems Design model and how to use it,
- * have a new powerful tool to increase your digital competence, and
- * progress to the follow-up course over the topic in which you can apply the achieved knowledge: **II00AN09 Persuasive Systems Design Workshop**

521019A | Practical training

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Christian Wieser

Content

Planning and preparation, introduction to work assignments related to students field of study, carrying out work assignments, documentation of own accomplishments, writing report and reflection.

Learning outcomes

- Student can apply knowledge and skills learned during university studies to complete work assignments in his/her own field.
- Student can evaluate and develop himself/herself as a learner and worker.
- Student can plan and evaluate his/her time management and working methods.
- Student is capable of working in systematic and goal-oriented manner in group as well as independently.
- Student can name important factors that direct the actions of work community and the employer.
- Student can name duties where he/she can work after graduating from university.

Official course record: 521019A

811371A | Preparatory Course for MSc Studies

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Arto Lanamäki

Content

The course consists of three parts: project management, scientific writing, and literature reviewing. In the project part we focus on the people, process and tools of projects in the information technology field. Course covers the basic principles of project management, planning, coordination and communication within the project as well as outside the project. Course presents the different outcomes of the project, related to internal and external communication – project plans, mid-report, final reports and other project specific outcomes, as well as internal reports, memos and non-written communication and coordination techniques in a project. In the scientific writing part, the course presents the basics of written referenced and scientific communication – how to use references, how to acknowledge work of others, how to format an article and what is plagiarism and how to avoid plagiarism. The literature reviewing part includes the basics of conducting different types of literature reviews, while understanding the different steps involved in a review process. All the three parts include considerations of generative AI use.

Learning outcomes

After completing the course, the student will be able to: * participate in courses requiring basic knowledge of project work, * apply the basic concepts of project work, act in different roles in projects and is able to describe the significance of the different project outcomes, such as project plan, mid-reports and final reports, * define the principles of project coordination and communication with the project interest groups, * understand the principles and nature of scientific writing, with ethical considerations, * understand the basics of scientific referencing, including the use APA7, * knowing what literature reviews are conducted, * knowing various possible use cases of generative AI in university education, and understanding their appropriateness.

Official course record: 811371A

521159P | Principles of Digital Fabrication

5 ECTS | Computer Science and Engineering | Basic Studies | English

Person in charge: Sohail Soomro, Ivan Sanchez Milara

Content

- Introduction to digital fabrication and Fab Labs.
- Introduction to safety in Fab Labs.
- Documenting and reporting a digital fabrication project.
- Designing and quick prototyping in a sustainable way.
- Introduction to 2D and 3D modeling.
- Basics on most common digital fabrication processes: laser cutting, vinyl cutting and 3D Printing.
- Introduction to electronics. Main electronics components. Building simple circuits.
- Introduction to embedded programming and physical computing.
- Simulation of circuits.
- Project management and skills integration in final project.

Learning outcomes

In this course, the students will learn the whole process of digital fabrication, typically available in FabLab. They will learn how to create an interactive 3D prototype, design mechanical parts for a prototype, create basic electronics, implement control logic for open hardware embedded board, and work in teams on a project.

Official course record: [521159P](#)

IC00AI83 | Privacy and Social Engineering

5 ECTS | Computer Science and Engineering | Intermediate Studies | English, Finnish

Person in charge: Kimmo Halunen

Content

Presentation of the concepts, regulation and technologies related to privacy. Presentation and use of the concepts, methods and technologies related to social engineering.

Learning outcomes

Upon completion of the course the student will be able to:

- explain the basic concepts related to privacy and recognises the national and international regulation related to the topic
- understand the basics of the technologies that are used to process information and can think about their effects on privacy
- understand the basic privacy features and problems of mobile operating systems, browsers and computers networks
- understand the basic concepts related to social engineering
- recognise social engineering methods when they are applied
- apply simple tools and technologies related to social engineering
- Understands the importance of social engineering in cybersecurity

Official course record: [IC00AI83](#)

811373A | Professional Software Engineering Processes and Human Factors

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Nirnaya Tripathi

Content

Module 1: Software development process models. Theory and cases. Module 2: Human factors in software development. Recognizing individual and team characteristics, and cultivating personal awareness and development pathways. Module 3: Software process improvement. Theory and cases.

Learning outcomes

After completing the course, the student will be able to

- Recognize and describe software development processes, models, and methods (Waterfall, Agile and Lean software development, Scrum, Kanban, DevOps) and AI in Software processes.
 - Evaluate and compare their applicability in different contexts.
 - Take human factors into account in planning and operating in professional software development.
 - Analyse their own strengths and improvement areas as software engineers and their role in a development team to see opportunities for development.
 - Recognize and describe different process assessment and improvement models and methods (CMMI, PDCA, ISO/IEC 33001, Six Sigma and Kaizen.)
 - Participate in systematic efforts for improvement in software development organizations.
- Applies discipline-appropriate analytical and critical thinking to software engineering processes by integrating human factors, cross-disciplinary interfaces, international collaboration, and effective evaluation and leadership of individual and team performance.

Official course record: 811373A

AY811373A | Professional Software Engineering Processes and Human Factors (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Nirnaya Tripathi

Content

Module 1: Software development process models. Theory and cases. Module 2: Human factors in software development. Recognizing individual and team characteristics, and cultivating personal awareness and development pathways. Module 3: Software process improvement. Theory and cases.

Learning outcomes

After completing the course the student will be able to:

- recognize and describe software development processes models,
- evaluate and compare their applicability in different contexts,
- take human factors into account in planning and operating in professional software development,
- analyze their own strengths and improvement areas as software engineers and their role in development team to see opportunities for development, as well as
- participate in systematic efforts for improvement in software development organizations.

Official course record: AY811373A

521260S | Programmable Web Project

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Mika Oja

Content

Web API architectures and technologies. Tools and frameworks for design, implementation, documenting and testing Web APIs.

Learning outcomes

Upon completion of the course, the student:

- knows different Web API architectures and technologies (e.g. REST, RPC and event-driven architectures).
- understands Web API design principles and knows how to implement Web APIs using existing Web frameworks.
- knows how to implement clients and other services that use a Web API
- knows how to make functional testing for Web APIs.
- knows how to document Web APIs with existing software tools.
- knows how to deploy APIs in traditional servers and/or cloud platforms
- applies teamwork and project management strategies to coordinate the design and development of Web APIs

Official course record: [5212605](#)

811104P | Programming 1

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Jouni Lappalainen

Content

1. Software design method (waterfall) 2. Problem solving 3. Stepwise refinement 4. Control structures 5. Modular programming, calling modules, communication between modules 6. Data types 7. Arrays 8. Pointers 9. Character strings 10. Data structures 11. Storing data.

Learning outcomes

After completion of this course, the student will be able to: * create simple working programs * identify and use the basic control structures of a program. * identify the concepts of modularity, table, storage of information. * apply the concepts of modular structure, tables and information storage techniques into a program. * find and fix errors in the program. * solve a computational problem by using abstraction and stepwise refinement * explain the concept of recursion. * operate with binary and hexadecimal number systems, as well as knows the presentation of numbers on a computer. * document the program.

Official course record: [811104P](#)

AY811104P | Programming 1 (OPEN UNI)

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Jouni Lappalainen

Content

1. Software design method (waterfall) 2. Problem solving 3. Stepwise refinement 4. Control structures 5. Modular programming, calling modules, communication between modules 6. Data types 7. Arrays 8. Pointers 9. Character strings 10. Data structures 11. Storing data.

Learning outcomes

After completion of this course, the student is able to:

- Create simple working programs
- Identify basic control structures and use them in the program
- Identify the concepts of modularity, table, storage of information, and use them in the program
- Find and fix errors in the program
- Solve a computational problem by using abstraction and stepwise refinement
- Explain the concept of recursion
- Operate with binary and hexadecimal number systems, as well as knows the presentation of numbers on a computer
- Document the program

Official course record: [AY811104P](#)

811322A | Programming 2

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Päivi Raulamo-Jurvanen

Content

Learn to program in Java. The course focuses on understanding and learning the fundamental concepts, the syntax and structure of Java programming - by programming in Java.

Core contents: The concepts of a class and an object, encapsulation, information hiding, composition, interface, inheritance, polymorphism, abstract class, exceptions, file processing, UML class diagram and code, generics, packages, arrays, collections, development tools, version control, documentation, unit testing.

Learning outcomes

After completion of this course, the student will be able to:

- * explain the principles of object paradigm (e.g., class, object, encapsulation, information hiding, composition, inheritance, polymorphism)
- * master the basic use of programming tools (such as compiler / Integrated Development Environment (IDE))
- * make use of the structures learned in the courses in a variety of ways
- * handle exceptions
- * process files
- * utilize collection classes and generics
- * implement Java classes according to the given instructions
- * test programs as well as analyze and interpret error situations to correct them
- * interpret the structure and functionality of classes from code
- * describe the basics of the UML class diagram and its connection to the implemented code
- * recognize the purpose of version control tools.

Official course record: 811322A

AY811322A | Programming 2 (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Päivi Raulamo-Jurvanen

Content

Learn to program in Java. The course focuses on understanding and learning the fundamental concepts, the syntax and structure of Java programming - by programming in Java.

Core contents: The concepts of a class and an object, encapsulation, information hiding, composition, interface, inheritance, polymorphism, abstract class, exceptions, file processing, UML class diagram and code, generics, packages, arrays, collections, development tools, version control, documentation, unit testing.

Learning outcomes

After completion of this course, the student will be able to:

- * explain the principles of object paradigm (e.g., class, object, encapsulation, information hiding, composition, inheritance, polymorphism)
- * master the basic use of programming tools (such as compiler / Integrated Development Environment (IDE))
- * make use of the structures learned in the courses in a variety of ways
- * handle exceptions
- * process files
- * utilize collection classes and generics
- * implement Java classes according to the given instructions
- * test programs as well as analyze and interpret error situations to correct them
- * interpret the structure and functionality of classes from code
- * describe the basics of the UML class diagram and its connection to the implemented code
- * recognize the purpose of version control tools.

Official course record: [AY811322A](#)

811367A | Programming 3

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Markus Kelanti

Content

Databases, database programming, data formats, the design, implementation, and testing of a server interface, the safety and security of a server, concurrency.

Learning outcomes

After completion of this course, the student will be able to:

- recognise the influence and requirements of the interface specification on the server development and is able to apply them in his/her own work,
- implement and document a good quality database and use it in an application,
- implement and document the server functionality of a client-server application and apply concurrency when appropriate,
- use existing programming interfaces and message passing protocols in a server application,
- test a server application and interpret code written by someone else, and
- use programming tools, such as a version control system, an IDE, and code analysis tools in the server development.

Official course record: [811367A](#)

811368A | Programming 4

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Jouni Lappalainen, Markus Kelanti

Content

User interface elements, foundations of user interface libraries, user interface design principles, user interface layout, the relationship between user interfaces and software architectures, web usability, web user interfaces, web programming.

Learning outcomes

"After completion of this course, the student will be able to:

- * recognise the influence and requirements of the design/implementation interface on the user interface development process and is able to apply them in his/her own work,
- * utilize UI libraries and frameworks in his/her application,
- * implement and document the client functionality of a client-server application,
- * take into account the internationalization and localization needs that may be imposed on the design and implementation of the application
- * test the application and test and interpret the code and the application structure with its effects to testing, maintenance and further development,
- * use programming tools, such as a version control system, an IDE, and code analysis tools, as well as
- * act as a member of a software development team."

Official course record: [811368A](#)

817609S | Project Seminar

3 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Arto Lanamäki

Content

Starting lecture, independent analysis and reporting of the expertise on the selected project topic and an expert seminar (2 full days) with the presentations of each topic.

Learning outcomes

After completing the course, the students will be able to: * demonstrate abilities to gain academic expertise in some challenging topic area of an ICT project, * search research articles and literature on a ICT topic (review), * apply research articles and other new knowledge like an academic expert in a selected topic of a project ("Research and Development Project" course), * analyse and report practical experiences gained during the project as experience-based new data on the topic to peer students, * evaluate the results of the project and reflect the practical experiences against previous literature and research on the topic, * disseminate the (increased) expertise in the topic in a credible way to peers both by a written report and orally, as well as * act as reflective, independent academic expert in ICT project.

Official course record: [817609S](#)

TE00AS44 | Real-time Embedded Systems

5 ECTS | Electrical and Information Engineering | Intermediate Studies | English, Finnish

Person in charge: Christian Schuss

Content

- Concepts and principles of real-time embedded systems
- Challenges of real-time embedded systems: E.g., time constraints, resource constraints, safety and security, etc.
- Energy harvesting and battery management
- Hardware and software debugging techniques and tools

Learning outcomes

After completing the course, the student

1. Knows and understands the key concepts and operating principles of real-time embedded systems.
2. Is familiar with hardware and software debugging of real-time embedded systems.
3. Has developed skills to address challenges in implementing real-time embedded systems for different types of applications.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

[Official course record: TE00AS44](#)

811391A | Requirements Engineering

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Leevi Rantala

Content

* Requirements traceability* Different stakeholder viewpoints and requirement categories* Requirements change* Problem structuring methods * Requirements engineering skills and techniques in iterative development environment* Requirements identification, elicitation, specification and documentation techniques* Requirements prioritization and validation techniques.

Learning outcomes

After completing the course, the student will be able to:* apply requirements engineering skills and techniques individually and in teams, and understands the requirements fundamentals,* choose and apply some of the requirements elicitation techniques,* choose and apply some of requirements specification and documentation techniques, as well as* apply appropriate requirements validation techniques, as well as learn new requirements engineering methods and techniques.

Regarding generic skills, after completing the course, the student will be able to:* apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge, * is able to cooperate in multidisciplinary and multiprofessional teams, * is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team, * is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly

[Official course record: 811391A](#)

AY811391A | Requirements Engineering (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | Finnish

Person in charge: Leevi Rantala

Content

The theory teaching is given in the pace of the main course for the BSc students.

Lectures with a course example are recorded and shared in Moodle after each teaching session Course Literature No specific course book, lecture materials and course example used as teaching material.

Learning outcomes

After completing the course, the student will be able to: * apply requirements engineering skills and techniques individually and in teams, and understands the requirements fundamentals, * choose and apply some of the requirements elicitation techniques, * choose and apply some of requirements specification and documentation techniques, as well as * apply appropriate requirements validation techniques, as well as learn new requirements engineering methods and techniques.

Regarding generic skills, after completing the course, the student will be able to: * apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge, * is able to cooperate in multidisciplinary and multiprofessional teams, * is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team, * is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly

Official course record: AY811391A

817612S | Research and Development Project

10 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Arto Lanamäki

Content

The topics for the course project can be anything from the ICT field. Starting lecture, where the steps of carrying out the course will be described together with other important information. Allocation of the project teams will immediately follow the starting lecture. The project work will take two periods (one semester).

Learning outcomes

After completing the course, the student will be able to: * demonstrate abilities to work as a professional expert on a challenging ICT project, * acquire and apply professional expertise in the topic of the project, * search up to date information on the topic of the project in order to build professional expertise on the topic and apply this in the project work, * demonstrate skills to conduct an ICT project in a professional way, * to act as independent professional member of an ICT project and have advanced professionalism in project work and management, * collectively produce, monitor and update the plan of the project (project with fixed time and human resources), * build professional working knowledge and skills focused in the topic the project (e.g. software development, user experience evaluation), * develop analytical and creative skills for successful completion of the project, * monitor and communicate the status (time & human resources used) of the project in real time within the project team (weekly/daily meetings), * use systematic means (e.g. ICT tools) to enable communication and transparency of the project work, * to communicate with the customer in a professional context, * manage a successful project review with the steering group/project team organization, * report and explain the status (progress, results and future estimations of the project) to the steering group to support the decision making and problem resolution concerning the project's future, * work as responsible project team member as an expert and/or project manager, * work as a project team member with people from different technical and/or cultural backgrounds, * produce a realistic outcome in relation to the project time and human resources (ok, good, excellent), as well as * reflect the relationship between the process model(s) selected for the project (waterfall, evolutionary, agile etc.) and the management practices followed in the project.

Official course record: 817612S

814341A | Research experience

2-5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Elina Annanperä

Content

During the course the student is engaged in research in Software Engineering and Information Systems.

Learning outcomes

After completing the course, the student will be able to:

- conduct research activities under supervision and
- act as part a research team.

[Official course record: 814341A](#)

813621S | Research Methods

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Arto Lanamäki

Content

Introduction to general scientific principles, research ethics, scientific research practices and quality of scientific publications, qualitative research, quantitative research, and design science research. Requirements and examples of Master's theses are presented. Research evaluation is discussed.

Learning outcomes

After completing the course, the student will able to:* explain the general principles of scientific research and the practices of scientific methodology,* generate research problems in information processing sciences,* identify and describe the main research approaches and methods in information systems and software engineering, and choose the appropriate approach and method for a research problem,* evaluate the methodological quality of a research publication, as well as* choose and apply the proper approach and method for his or her Master's thesis and find more information on the method from scientific literature.

[Official course record: 813621S](#)

816630S | Scientific paper writing

1-3 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Elina Annanperä

Content

The course supports other research courses, where an opportunity to writing a scientific research article is given.

Learning outcomes

After completing the course, the student will be able to: author a scientific paper under supervision.

[Official course record: 816630S](#)

IC00AJ63 | Security Engineering

5 ECTS | Computer Engineering | Advanced Studies | English

Person in charge: Kimmo Halunen

Content

The course presents the concepts and principles of designing and engineering secure complex systems.

Learning outcomes

Upon completion of the course the student will be able to:

- understand and analyse complex systems and their threat models
- make informed decisions on security when designing a new system
- analyse systems in order to find security weaknesses

[Official course record: IC00AJ63](#)

812354A | Servitisation, Co-Creation and Business Development

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Helena Tokkonen

Content

You have an idea for a software business, but do not know whether it would pay off to really start up such a business? For whom does the product provide the biggest value, and who might potentially buy such a product? How big is the market for such a product? These are some of the questions that you will learn to answer in this course when writing a business plan for a software product business idea.

The course takes the perspectives of both new businesses and established businesses and their development. Students develop a new software business idea and write a business plan in a team of several students based on the idea. In addition, students are introduced to the concepts of servitization and co-creation, with special focus on already established businesses.

Learning outcomes

After completing the course, the student will be able to:

- * develop software business in new businesses and established businesses,
- * conduct market analysis to estimate the market potential for the business,
- * apply the basics of financial calculation,
- * understand differences in business models,
- * understand the concept of servitisation,
- * understand the concept of co-creation, as well as
- * discuss about the benefits and trade-offs regarding the development of the business idea together with teammates.

[Official course record: 812354A](#)

AY812354A | Servitisation, Co-creation and Business Development (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Helena Tokkonen

Content

You have an idea for a software business, but do not know whether it would pay off to really start up such a business? For whom does the product provide the biggest value, and who might potentially buy such a product? How big is the market for such a product? These are some of the questions that you will learn to answer in this course when writing a business plan for a software product business idea.

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Learning outcomes

After completing the course, the student will be able to:

- * develop software business in new businesses and established businesses,
- * conduct market analysis to estimate the market potential for the business,
- * apply the basics of financial calculation,
- * understand differences in business models,
- * understand the concept of servitisation,
- * understand the concept of co-creation, as well as
- * discuss about the benefits and trade-offs regarding the development of the business idea together with teammates.

521279S | Signal Processing Systems

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Pekka Sangi

Content

Fixed-point and floating-point arithmetics, fixed-point filter implementation, quantized neural networks, CORDIC, DCT, FFT, polyphase decomposition, multirate signal processing, modulated filter banks, sectioning, adaptive filters and algorithms, Matlab and Simulink tools in DSP modelling.

Learning outcomes

Learning outcomes of the course are:

1. The student understands common real number formats used in digital signal processing.
2. The student can implement a fixed-point digital filter, and knows basics of quantized neural networks.
3. The student knows the CORDIC algorithm and can utilize it in the implementation of function and transform (e.g. DCT) computations.
4. The student knows the principles, which allow computationally efficient implementation of decimation and interpolation operations. Related to this, he can implement narrow-band digital filters.
5. The student can explain how a modulated filter bank works and knows its polyphase decomposition based implementation.
6. The student can implement convolution for long data sequences and filters. He also knows, how the same principles are used in the implementation of correlation.
7. The student can explain the general operational principles of adaptive filters and knows some of their applications. He knows operation of some common adaptive algorithms. He can study behaviour of adaptive filters with simulation.

Some exercise tasks of the course are done in the Matlab environment utilizing also its Simulink tool. The student learns how it can be used in the modelling of signal processing systems.

Official course record: 521279S

814336A | Small-Group Tutoring

1 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Olli Korhonen

Content

Group training, occasions, and meetings 15h, implementation and reporting of small group tutoring 15h. Planning small group tutoring up to 5h. In addition to the study credit, up to 35 hours for planning and implementing the tutoring is paid as monetary compensation.

Learning outcomes

After completing the course, the student will be able to:* create a tutoring plan for his/her small group,* tutor his/her small group,* put into effect the given tutor training and experience on small group tutoring as well as* take responsibility for his/her own tutoring work.

Official course record: 814336A

521044A | Social Computing

5 ECTS | Computer Science and Engineering | Intermediate Studies | English

Person in charge: Aku Visuri

Content

Basics of social computing, computer-mediated human communication, designing social software, analysing social computing systems, crowdsourcing.

Learning outcomes

By the end of the course, students:

- possess the skills for analysing, reverse-engineering, and implementing social applications that consist of individuals and computing devices in a variety of contexts.
- have advanced understanding of both the positive and negative real-world consequences of social aspects of computing online
- are able to explain human behaviour with social computing systems by using selected basic behavioural theories from sociology and psychology
- can design new features on social computing platforms according to human behaviour in social computing systems

Official course record: 521044A

817619S | Societal and Individual Impacts of Information Systems

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Rosanna Guadagno

Content

1. Introduction to the course and topics
2. Individual Differences and the Social Web
3. Influence, Persuasion, and Vitality on the Social Web
4. Romantic Relationships and the Social Web
5. Aggression on the Social Web
6. Societal Impacts of Information Systems on the Social Web

Learning outcomes

After completing the course the student will be able to:

- * understand and discuss the impact of the ICT in the society and changes that take place,
- * understand how information systems transform ways of communication and interaction,
- * form an overview of how human and societal traits and ICT co-exist, for example, through a series of paradoxes as well as
- * gain basic understanding of behaviour change, behaviour analysis and digital intervention design as regards technology.

Official course record: 817619S

815345A | Software Architectures

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Olli Korhonen

Content

Introduction to software architecture, Architecture characteristics and components, Architecture patterns and styles, Requirements and architecture, Architecture design and documentation, Architecture implementation, Architecture testing and evaluation, Agile architecting.

Learning outcomes

After passing the course, the student is able to: * describe the concepts and techniques of the software architecture design – especially in case of object-oriented design, * describe typical architecture solutions of main-stream modern and secure software solutions – for instance apps of smart devices and server-based systems, * identify and analyze the pros and cons of different software architectures from the viewpoints of software design & implementation, software execution, software quality and software maintainability, * use UML modeling techniques to describe different perspectives of a software architecture, * create different optional architectural solutions for a software based on its functional and non-functional requirements and evaluate the applicability of the optional architectures to the problem in question, * describe the role of architectural design in agile and iterative software development processes, * act in a constructive manner, and communicate clearly in group settings, as well as * use relevant digital and AI applications in an appropriate, and responsible way.

Official course record: 815345A

811372A | Software Development, Maintenance and Operations

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Nirnaya Tripathi

Content

1. Software Metrics & Measurement
 - Introduction to measurement theory and software metrics.
 - Importance and types of software metrics in development and maintenance.
2. Software Testing
 - Basics, types, and strategies of testing.
 - Test case design, automated vs. manual testing.
3. Software Quality
 - Concepts of software quality, assurance, and control.
 - Quality models (ISO, CMMI) and improvement techniques.
4. Software Maintenance & Evolution
 - Maintenance types, SPE Taxonomy, Lehman's Law.
 - Evolution of FOSS, team structure, and maintenance models.
5. Mining Software Repositories (MSR)
 - Data sources, collection, and preprocessing.
 - Analysis and visualization techniques.
6. Data-Driven Software Engineering
 - Data collection, analysis, and decision-making.
 - Predictive analytics in software engineering.

Learning outcomes

After completing the course, the student will be able to: * explain and utilize theories of software evolution, * utilize the processes, techniques, and tools for software deployment and operations, * utilize the processes, techniques, and tools for software maintenance, as well as * utilize the processes, techniques, and tools to understand better and maintain large code bases.

Official course record: 811372A

AY811372A | Software Development, Maintenance and Operations (OPEN UNI)

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Nirnaya Tripathi

Content

1. Software Metrics & Measurement

- Introduction to measurement theory and software metrics.
- Importance and types of software metrics in development and maintenance.

2. Software Testing

- Basics, types, and strategies of testing.
- Test case design, automated vs. manual testing.

3. Software Quality

- Concepts of software quality, assurance, and control.
- Quality models (ISO, CMMI) and improvement techniques.

4. Software Maintenance & Evolution

- Maintenance types, SPE Taxonomy, Lehman's Law.
- Evolution of FOSS, team structure, and maintenance models.

5. Mining Software Repositories (MSR)

- Data sources, collection, and preprocessing.
- Analysis and visualization techniques.

6. Data-Driven Software Engineering

- Data collection, analysis, and decision-making.
- Predictive analytics in software engineering.

Learning outcomes

After completing the course, the student will be able to: * explain and utilize theories of software evolution,* utilize the processes, techniques, and tools for software deployment and operations,* utilize the processes, techniques, and tools for software maintenance, as well as* utilize the processes, techniques, and tools to understand better and maintain large code bases.

New (2025):

The exam will consist of a group project assignment presented midway through the course, and the due date is one month after the end of the course.

[Official course record: AY811372A](#)

521457A | Software Engineering

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish, English

Person in charge: Pekka Pietikäinen

Content

The course gives an introduction to all aspects of software engineering: the process models, software design, quality, software project management, secure software development, and the tools used in these areas. The course can be completed independently without scheduling constraints.

The teaching consists of lecture recordings from the course 811103P Introduction to Software Engineering, which are complemented by extra lectures on secure software engineering and contemporary topics in Software Engineering. In addition, there are automatically assessed practical exercises, and an Examinarium exam that can be taken at a flexible time. Students aiming for a high grade can replace the exam with learning assignments, where course topics are reflected against the latest software engineering practices while also practicing scientific writing.

Principles of professional software development

- Software processes
- Agile software development
- Requirements engineering
- System modelling
- Architectural design
- Design and implementation
- Software testing
- Software evolution
- Secure software engineering
- Contemporary topics in software engineering

Learning outcomes

After completing the course, the student will be able to:

- describe the principles, define the key concepts and use professional terminology of software engineering,
- describe software engineering as a professional practice and a field of industry,
- describe and work following professional practices that are important for software engineers,
- describe contemporary software processes and choose appropriate ones for specific situations,
- describe and apply valid problem identification and structuring methods in software engineering,
- identify and apply some contemporary software engineering models, methods and tools, as well as
- describe the necessity of continuing learning and professional development.
- Is familiar with tools commonly used in Software Engineering

Official course record: 521457A

AY521457A | Software Engineering (OPEN UNI)

5 ECTS | Computer Science and Engineering | Intermediate Studies | Finnish

Person in charge: Pekka Pietikäinen

Content

Problematics of software development and the special features of real-time systems in this regard. Software development is viewed in regard to project management and actual implementation: 1. process models, 2. requirements specification, 3. project management basics: design, metrics, risk management, resource management, follow up, quality control, product control, 4. software testing methods and strategies, 5. introduction to object-oriented analysis and design. 6. Agile software development. 7. Secure software engineering

Learning outcomes

1. After finishing the course, the student knows the basic concepts of software engineering 2. The student also knows the different areas of project management, the phases of software development 3. The student can define goals and tasks for each phase of development 4. The student knows the principles of secure software development 5. The student knows the metrics used in software engineering and is able to apply them 6. The student is familiar with tools commonly used in software engineering.

815663S | Software Engineering Research

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Burak Turhan

Content

Guidelines for writing, critically analyzing, and presenting software engineering research papers, the role of empiricism in software engineering research, state of the art research topics in software engineering and how relevant research methods are customized/ applied to software engineering research, seminal and/or recent publications from the top conferences and journals in the field and talks by local and international experts to support learning.

Learning outcomes

After completing the course, the student will be able to:

- * Learning Objective 1: Understand the current research areas in software engineering and the most important software engineering research methods,
- * Learning Objective 2: Apply empirical research design and academic writing knowledge in software engineering with teamwork,
- * Learning Objective 3: Critically analyze scientific articles from the viewpoint of the content and research methods used in the article,
- * Learning Objective 4: Present academic research with teamwork,
- * Learning Objective 5: Actively participate in an academic discussion of research papers and research results with teamwork.

These learning objectives map to the following generic skills:

- * International and multicultural skills: the ability to work in international cooperation and take the international operating environment into account in their activities, and the ability to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns
- * Sustainability, responsibility and ethics skills: the ability to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field
- * Communication, interaction and digital skills: the ability to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks, and the ability to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

Official course record: 815663S

811604S | Software for Intelligent Systems and Artificial Intelligence (AI)

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Nirnaya Tripathi

Content

The course consists of three main modules. These are:

- * Basics of AI and techniques
- * AI and software development
- * Ethics of AI in the context of software development

Learning outcomes

After completing the course, the students will be able to: * reflect and critically assess the role of AI in software intensive systems, * reflect and discuss issues related to design of software intensive systems using AI, as well as * develop a project using the methods and theory learned throughout the course, * Understands and explains ideas clearly, makes ethical decisions with good reasoning, and uses AI and digital technologies safely and responsibly while considering their impact on work, research, and society.

[Official course record: 8116045](#)

811301A | Software Modeling and Design

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Pertti Karhapää

Content

Object oriented analysis and design, design patterns, the UML notation, modeling software utilizing UML diagrams: use case diagrams, class diagrams, communication diagrams, sequence diagrams, state machine diagrams.

Learning outcomes

After completing the course, the student will be able to: utilize concepts of software design (such as abstraction, modularization, cohesion and coupling), apply possibilities of UML to describe different views of software, produce descriptions using static and dynamic modelling, analyze class diagrams and implement those classes (accordingly), as well as apply "best practices" in software modelling, design and implementation.

[Official course record: 811301A](#)

811603S | Software Platforms and Ecosystems

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Woubshet Behutiye

Content

The course covers different aspects of software platforms and ecosystems, and presents use cases. Key contents:

- Introduction to software platforms and ecosystems
- Software platforms, two-sided networks, and network effects
- Software ecosystems
- Design and deployment of software platforms
- Software platforms – benefits and challenges
- Software platform use cases

Learning outcomes

After completing the course, the student will be able to:

- Define what software platforms and ecosystems are
- Understand how software platforms and ecosystems can be used for business
- Analyze the benefits and drawbacks of different platforms or ecosystems
- Understand aspects of operating, using, and making contributions to a particular software platform or Ecosystem

Additionally, students will be able to :

- apply creative thinking and problem-solving in their work to develop new knowledge and new procedures
- seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- promote constructive cooperation with people from different backgrounds, develop their language skills, and be able to challenge their own stereotypical thinking patterns

Official course record: [8116035](#)

521479S | Software Project

7 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Christian Wieser

Content

Phases of software engineering process: requirement gathering, analysis, design, implementation, testing,(maintenance). Project-work, starting a project, project management, working with external parties, project documentation. Project related implementation techniques and tools, software documentation.

Learning outcomes

After completing the course, students have demonstrated their capabilities to design, develop and test real-life software. Further, they have shown their proficiency in professionally documenting their work during the assignment.

Official course record: [521479S](#)

811306A | Software Quality and Testing

5 ECTS | Information Processing Science | Intermediate Studies | Finnish, English

Person in charge: Pertti Karhapää

Content

1. What is software Quality? Why Testing and Software quality are important 2. Testing as a process 3. Testing as a technique 4. Designing tests using testing techniques 5. Test coverage 6. Unit testing 7. Testautomation 8. Defect reporting

Learning outcomes

After passing the course, the student will be able to: * apply different views on software quality,* understand the role of quality assurance in software engineering, * describe and analyze defect information, types, lifecycles, * understand and describe dimensions of testing, and design testing processes, * create test cases and conduct testing with different techniques, * understand and apply different test-automation approaches, as well as, * learn new quality assurance techniques.

Official course record: [811306A](#)

811608S | Software-Defined Systems

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Ella Peltonen

Learning outcomes

"After completing the course, the student is able to:

- * describe the contemporary main concepts of the ""software-defined everything"" (SDx) perspective, such as software-defined networks, software-defined storage, software-defined data centers, software-defined computing,
- * identify relevant software platforms and tools for developing solutions under the software-defined perspective (cf. the previous main concepts),
- * present a service, system or product concept of her/his own interest transformed by the software-defined perspective, as well as
- * develop and present a small-scale software project in a group to demonstrate a relevant aspect of the software-defined perspective."

[Official course record: 8116085](#)

813632S | Special Course in Information Processing Science

5 ECTS | Information Processing Science | Advanced Studies | English

Learning outcomes

This unit will cover all the fundamental principles of digital system project analysis, design, development, and maintenance across all the stages/ or phases of system's development. The students will learn to understand, analyze, and apply the processes, methodologies and standards used in managing the full software development cycle, and understand how management and development practices affect overall software quality from the developer's perspective. This course will also help students to develop a critical understanding and applications of the tools, techniques and processes used to manage software-intensive digital projects. After completing the unit, the student can apply for the position of team lead or participate in a project as project manager.

After completing this course, students will be able to:

- * 1. Analyze and Select Appropriate System Development Approaches
- * 2. Conduct Structured Requirements Analysis and Systems Modelling
- * 3. Apply Risk, Threat, and Project Management Techniques
- * 4. Understand and Apply Digital Transformation Concepts
- * 5. Implement Configuration and Change Management Practices
- * 6. Integrate AI and LLMs into Software Architecture
- * 7. Demonstrate Proficiency in Cloud Infrastructure and Services.

[Official course record: 813632S](#)

811610S | Special Course in Information Processing Science , Dark Patterns: Understanding Manipulative and Deceptive Technology

5 ECTS | Information Processing Science | Advanced Studies | English

Person in charge: Rosanna Guadagno

Content

- Introduction to dark patterns
- The psychology behind online manipulation
- Case studies on dark patterns: online, games, and persuasive technology
- Generative AI and amplification of dark patterns
- Mitigating dark patterns and ethical design

Learning outcomes

After completing the course, the student will be able to:

1. Understand and critically analyze the psychological mechanisms that contribute to using dark patterns in online interactions.
2. Learn to evaluate real-world cases involving manipulative technology and its impact on individuals and society.
3. Recognize malicious patterns in ICT utilization: both intentional and unintentional.
4. Understand the impact of generative AI on amplifying manipulative practices in digital environments.
5. Learn to apply ethical principles to identify dark patterns and suggest strategies for mitigating their effects in technology design.

[Official course record: 8116105](#)

813633S | Special Course in Information Processing Science 3

5 ECTS | Information Processing Science | Advanced Studies | English

Content

Varying contents related to the Information Processing Science.

Learning outcomes

The learning outcomes of the course vary depending on the content.

[Official course record: 813633S](#)

813634S | Special Course in Information Processing Science 4

5 ECTS | Information Processing Science | Advanced Studies | English

Content

Varying contents related to the Information Processing Science.

Learning outcomes

The learning outcomes of the course vary depending on the content.

[Official course record: 813634S](#)

521249S | Special Course in Information Technology 1 - An introduction to computer vision methods for biomedical images

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Anja Keskinarkaus

Content

Biomedical image processing is a very broad field; it covers biomedical signal gathering, image forming, picture processing, and image display to medical diagnosis based on features extracted from images. This course presents the basic information to understand medical image processing. Topics include image enhancement, image modalities, image segmentation and image registration. Moreover, examples are given and detailed case studies are gone through. ImageJ is an image processing program widely used for medical image analysis. An introduction to ImageJ is given in the lectures. ImageJ exercises are related to selected lectures and detailed task descriptions are handed out during the course. Course final work is returned at the end of the course. Details of the assignment are provided in the lectures.

Learning outcomes

Understanding of Biomedical signal gathering, image forming, picture processing, and image display in medical image processing. Utilization of the learned topics in practice in the exercises.

[Official course record: 5212495](#)

521243S | Special Course in Information Technology 11 - Mathematical foundations of methods in machine learning

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Vadim Weinstein

Content

We will cover a selection of topics among the following:

- Mathematics of backpropagation
- Universal Approximation Theorems: Classical & Deep
- General theory of supervised learning (PAC learning, No free lunch theorem)
- Independent component analysis (ICA)
- Hopfield networks & Boltzmann machines
- Reinforcement learning (Bellman's inequality)

The topics will be selected based on the student's preferences.

Learning outcomes

NOT ORGANISED 2026-27

Get an understanding of mathematics underlying machine learning methods. The emphasis is on mathematical concepts rather than on technical know-how, although we cannot avoid it completely. If you want to have the skills to develop machine learning methods (and not only to apply the existing ones), this course is for you. Understanding the mathematical basis can also help to choose the appropriate methods in applications.

[Official course record: 521243S](#)

521244S | Special Course in Information Technology 12 - Modern Cryptography

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Juha Partala,

Content

The basic concepts of modern cryptography and provable security.

Learning outcomes

Depending on the interest, the course will be organized in 2027-2028.

By the end of this course, a student will be able to:

1. Explain the foundations of provable security: articulate the differences between computational, statistical, and information-theoretic security; formalize notions such as indistinguishability, one-wayness, and pseudorandomness.
2. Model cryptographic protocols rigorously: construct and analyze proofs (hybrid arguments, reduction techniques) for encryption schemes, digital signatures, and key-exchange protocols.
3. Differentiate between the standard model and the random oracle model: justify when a protocol is provably secure under the Random Oracle Model (ROM), and evaluate the implications of using ROM in practice.
4. Reduce security claims to hard problems: prove that a given construction (e.g., Diffie-Hellman) is secure assuming standard hardness assumptions (e.g. Decisional Diffie-Hellman assumption).
5. Analyze primitives: analyze block ciphers, hash functions, MACs, and stream ciphers with provable security guarantees.
6. Critically evaluate proofs for completeness and soundness: identify gaps in proofs and suggest corrections or improvements.
7. Understand the limits of provable security: discuss trade-offs between efficiency, security level, and practicality.
8. Communicate complex proofs effectively: write clear, rigorous, and reproducible security proofs in academic style.

Official course record: [521244S](#)

IC00AH93 | Special Course in Information Technology 18 - Introduction to Optimal Control and Reinforcement Learning

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Kalle Timperi

Content

Optimal control problem formulation. Dynamic programming: value and policy iteration, deterministic and stochastic formulations. Linear quadratic regulator. Model Predictive Control. Approximation in the value space. Temporal differences. Q-Learning.

Learning outcomes

Upon completion of the course the students will be able to:

1. Deeply understand the fundamentals of control theoretic and reinforcement learning based approaches to optimal control problems.
2. Design optimal control methods based on mathematical models or available data.
3. Apply the material to problems related to autonomous systems.
4. Understand the links between theory and practice.

Official course record: [IC00AH93](#)

521251S | Special Course in Information Technology 3 - Data Mining Project

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Pekka Siirtola

Content

Course provides scientific skills to carry out a small-scale data mining project, including the different steps of the data mining process.

Learning outcomes

Upon completion of the course, the student will be able to:

- design and execute a small-scale data mining project
- design a research plan and formulate research questions
- select pre-processing methods appropriate for a given data setselect appropriate data mining and data analysis methods based on the data and the research questions
- apply the selected methods to a real-world data set
- interpret and evaluate the results of the analysis
- present the results of the project and report them scientifically

Official course record: [521251S](#)

521252S | Special Course in Information Technology 4 - International Crisis Management (CriM)

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Christian Wieser

Content

Each lecture and workshop has specific contents depending on current threat-levels and development objectives regarding different cyberattacks. The lectures and workshops are international and acknowledged experts in their area of work provide valuable feedback and ideas for future development for both applications for cybersecurity and students expertise themselves.

Learning outcomes

CriM comprises of multiple distinct lectures and workshops that each have specific learning outcomes regarding threats and development objectives of cybersecurity at the current time.

Official course record: [521252S](#)

521255S | Special Course in Information Technology 7 - Data-Driven Decision Making for Smart Citizen and Businesses

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Panagiotis Kostakos

Content

The course is organised into the following 8 thematic units:

Unit 11.1 Course overview, philosophy and management: The smart-everything technology stack.1.2

Overview of the CUTLER project and its objectives.1.3 How to complete the exercises

Unit 22.1 Webinar – Data import on Elasticsearch and data visualisation in Kibana, Centre for Research & Technology, Hellas, Greece2.2 Tutorial – Setting up the virtual environments for Python.2.2 Tutorial – Setting up the virtual environments for R.2.3 Tutorial – Setting up monitoring tools: Kibana, Elasticsearch, Grafana, Prometheus, and Apache NiFi.

Unit 33.1 Webinar – Crawling big data from heterogeneous data sources, University of Oulu, Finland.3.2

Tutorial – Integrating Python with monitoring tools.3.3 Tutorial – Integrating R with monitoring tools.

Unit 44.1 Webinar – Modelling decision making in municipalities – the CUTLER approach, EuroSoc#DIGITAL

gGmbH, Germany.4.2 Webinar – Creating dashboards to support evidence-based policy making using the CUTLER platform, SAMPAS A.S., Turkey.4.3 Tutorial – Modelling decision-making using the Camunda BPM tool.

Unit 55.1 Webinar – Modelling the environmental impact of policy making, DRAXIS ENVIRONMENTAL SA, Greece.5.2 Tutorial – Sensing and visualisation of Environmental Data.

Unit 66.1 Webinar – Modelling the economic impact of policy making, Democritus University of Thrace, Greece.6.2 Tutorial – Sensing and visualisation of Economic Data.

Unit 77.1 Webinar – Modelling the social impact of policy making, University of Stuttgart, Germany.7.2 Tutorial – Sensing and visualisation of Social Data.

Unit 88.1 Webinar – Handling legal and ethical issues for big data use in public administration, KU Leuven, Belgium.8.2 Tutorial – Using Machine Learning Fairness libraries in Python.8.3 Tutorial – Using Machine Learning Fairness libraries in R.

Software: Python, R, Oracle VM VirtualBox, Anaconda, Elasticsearch, Kibana, Camunda, Apache NiFi, GitHub Desktop.Hosting: Github, Github pages, Google sites.

Learning outcomes

NOTE! THIS COURSE IS NO LONGER ORGANISED 2024 -->

After completing this course, the student will:

- Know how to install and configure Elasticsearch and Kibana on a physical or virtual machine.
- Know how to import data from several external APIs into Elasticsearch using different techniques.
- Create search queries using the Elasticsearch DSL.
- Build a basic search engine with Elasticsearch to search full-text and structured data
- Perform powerful realtime analytics using aggregations.
- Produce realtime visualizations of data in Elasticsearch using Kibana.
- Create and export interactive Dashboards using Kibana.
- Integrate Elasticsearch with other systems using Python and R.
- Analyse multifaceted business requirements and translate these requirements into detailed functional specifications.
- Recognize the strengths and weaknesses of evidence-based decision making for smart cities and businesses.
- Appraise the value of Machine Learning fairness in data-driven decision making within the scope of the General Data Protection Regulation (GDPR).

Official course record: 521255S

521256S | Special Course in Information Technology 8 - AI Ethics, Privacy and Legislation

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Lauri Tuovinen

Content

1. Introduction to AI ethics
2. Controversial AI applications
3. AI and data
4. AI as decision-maker
5. AI and society
6. AI and legislation
7. Ethics guides for development and use of AI
8. Considering ethics requirements in AI application design

Learning outcomes

Upon completion of the course, the student will:

- * Be aware of the ethical and legislative aspects and conditions that need to be taken into account in the design and deployment of AI applications
- * Understand the ethical special characteristics of AI applications, compared to information technology applications in general
- * Be able to examine existing and hypothetical AI applications from an ethical viewpoint and identify potential issues in their development and usage
- * Be able to weigh the benefits of AI applications against their drawbacks also in a wider, societal context
- * Be able to apply ethical principles in AI application design

Official course record: [521256S](#)

OH00AR02 | Statistics and data science in Python

5 ECTS | Epidemiology and Biomedical Data Science, Computer Science and Engineering | Advanced Studies | English

Person in charge: Tuomas Frondelius

Content

The course will have five sub-modules:

- * Basics of Python
- * Python scientific stack
- * Basics of statistics in Python
- * ANOVA and Linear models
- * Mixed models & survival analysis

Learning outcomes

After completion of this course, students can

- * Utilize Python programming to process and organize data into data structures for subsequent analyses.
- * Apply Python to conduct exploratory data analysis of biomedical datasets.
- * Describe the principles of statistical testing, select them, and implement programmatically.
- * Apply linear statistical models for inferential statistics in a multi-variate data setting.

Official course record: [OH00AR02](#)

811178P | Technology Innovation and Business

5 ECTS | Information Processing Science | Basic Studies | Finnish

Person in charge: Marianne Kinnula

Content

This course provides an overview of technology innovation and business from the perspectives of value co-creation, business logic and sustainable innovations.

Learning outcomes

After completing the course, a student will be able to analyse technology innovations from value creation perspective; describe the business logic in software/technology industry, such as common business models and the reasoning behind their use; and consider sustainability of technology innovations

Official course record: 811178P

IL00BE05 | The Maturity Test for Bachelor's Degree, Biomedical Engineering

0 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Antti Isosalo

Content

Relevant to the topic of the thesis.

Learning outcomes

According to the Government Decree on University Degrees (794/2004), to be awarded a lower university degree, the student write a maturity essay which demonstrates familiarity with in the topic of the thesis and skills in the use of Finnish or Swedish. When a student has been educated in a language other than Finnish or Swedish or a student has been educated abroad, the university shall determine separately the language of the maturity essay.

Official course record: IL00BE05

IL00BE06 | The Maturity Test for Master's Degree, Biomedical Engineering

0 ECTS | Biomedical Engineering (Computer Science and Engineering) | Intermediate Studies | Finnish

Person in charge: Antti Isosalo

Content

The aim of the maturity test is to confirm the student's familiarity of the thesis area as well as their command of the domestic language of their school education.

Learning outcomes

After the maturity test, the student has demonstrated that their language skills meet the requirements of the work life.

Official course record: IL00BE06

IC00AM75 | Tietotekniikan tutkimustyö (Research Work in Computer Science and Engineering)

8 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Timo Ojala

Content

The student conducts independently a small-scale research work under the supervision of a senior researcher. Topics for research works can be requested from professors and senior researchers. The research work is reported in form of a scientific publication and an oral presentation.

Learning outcomes

Upon completing the course, the student is able to:

1. conduct independent research as a responsible member of a research group;
2. conduct a literature survey;
3. apply theoretical knowledge in solving a practical problem;
4. design, implement and evaluate a prototype;
5. collect and analyze research data;
6. report research results in form of a scientific publication and an oral presentation.

Official course record: [IC00AM75](#)

521156S | Towards Data Mining

3-5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Henna Tiensuu

Content

Learn essential data preprocessing skills for AI and machine learning. This course covers data gathering, handling missing values and outliers, privacy considerations, signal merging, database utilization, and data normalization. Learn to ensure result generalizability with techniques like train-test-validate, cross-validation, and leave-one-out methods.

Learning outcomes

After completing this course, student can recognize data types and perform required pre-processing steps before further analysis:

- Student can design and implement a data collection process,
- Student can combine data from different sources,
- Student can normalize and transform data, and handle missing or incorrect values,
- Student can ensure generalizability of the results.

Official course record: [521156S](#)

521148S | Ubiquitous Computing Fundamentals

5 ECTS | Computer Science and Engineering | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: [521148S](#)

521154S | UBISS - International UBI Summer School

5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Timo Ojala

Content

Each workshop has specific contents.

Learning outcomes

Summer school comprises of multiple parallel workshops that each have specific learning outcomes.

Official course record: [521154S](#)

812671S | User Experience (UX) and Usability Evaluation

5 ECTS | Information Processing Science | Advanced Studies | English

Content

Basic terms and types of UX and usability evaluation, usability and UX test process, usability and UX test tasks and scenarios, usability and UX evaluation methods and metrics, test subjects, following through a usability and UX tests, analysing usability and UX test material, reporting the findings from usability and UX tests.

Learning outcomes

After completing the course, the student will be able to:

- * design and follow through a UX/usability evaluation process,
- * design test scenarios and tasks,
- * select and apply suitable evaluation methods and metrics,
- * select participants,
- * plan and follow through the evaluation in laboratory or in the field, as well as
- * analyse and report the findings from the evaluations.

Generic skills exercised and advanced in the course through reading, project work assignments, discussions:

Analytical, critical and creative thinking skills (x) A person with a master's degree...

(x) is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

(x) is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures

(x) is able to analyse arguments and argue appropriately

Well-being and self-development skills (x) A person with a master's degree...

(x) knows how to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner

(x) knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being

International and multicultural skills (x) A person with a master's degree...

(x) is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

Sustainability, responsibility and ethics skills (x) A person with a master's degree...

(x) is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

Multidisciplinary and Interdisciplinary skills (x) A person with a master's degree...

(x) is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines

(x) is able to promote multidisciplinary cooperation and lead multidisciplinary and multiprofessional teams

Communication, interaction and digital skills (x) A person with a master's degree...

(x) is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

(x) is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

(x) is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society

Official course record: 8126715

812355A | User Experience (UX) Design and Management

5 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Leena Arhippainen

Content

Central concepts (user experience, interaction design, design thinking, service design), human interaction with digital products, systems, and services, various user experience design, interaction design, service design and design thinking methods, management, organizational, social, cultural and political aspects and challenges of user experience design.

Learning outcomes

After completing the course, the student will be able to: * describe the significance and is able conceptualize user experience and human interaction with digital products, systems, and services, * describe the central concepts, factors shaping and potential problems associated with user experience and human interaction with digital products, systems, and services, * describe various interaction design, user experience design, service design and design thinking methods and use some of them in a practical design case of a novel digital product, system or service as well as * describe various kinds of management, organizational, social, cultural and political aspects and challenges of user experience design.

[Official course record: 812355A](#)

521291S | VR Systems and Humans

1-5 ECTS | Computer Science and Engineering | Advanced Studies | English

Person in charge: Anna LaValle

Content

Overview of human physiology, neuroscience, and human perception in relation to VR. Depth and scale perception. Perception of screen resolution, perception of motion. Perceptually optimal parameters for frame rate, latency, and drift in VR systems. Perceptual training. Comfort and VR sickness. Psychophysical experiments. Design of human subjects experiments.

Learning outcomes

Upon completion of the course, the student will:

- Gain knowledge in human physiology and human perception in relation to VR.
- Understand common perceptual flaws of modern VR systems related to resolution, latency, frame rates, tracking, lens aberrations, drift, and jitter.
- Be able to critically assess a given VR system or experience and recommend improvements.
- Formulate a hypothesis about a VR experience, implement the experience in Unity, and evaluate it through user testing to assess the hypothesis.

[Official course record: 521291S](#)

814601S | Work Experience in ICT responsibilities

3-5 ECTS | Information Processing Science | Advanced Studies | Finnish

Person in charge: Tonja Molin, Heidi Hartikainen

Content

Working from two to four months in professional ICT responsibilities that require university level studies.

Learning outcomes

After completing the course, the student will be able to:

- * master certain part of professional ICT work in enterprises or public organisations,
- * analyse and reflect on the work experience with Information Processing Science studies and
- * write an informative report on his/her work experience.

[Official course record: 8146015](#)

II00AU21 | Youth, democracy and technology: participatory approaches for critical consciousness

1-2 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Eva Durall Gazulla, Marianne Kinnula

Content

This course teaches different participatory methods from fields like design, technology, research, arts, and education. These methods are used in critical citizenship education to help students understand the world better, recognize conflicts and systemic issues, and work towards justice. The course covers important ideas and discussions about how youth, democracy, and technology are connected. It includes real-life examples from recent research and innovation, showing how arts and technology can be combined. Additionally, the course provides materials to help educators in various settings.

Learning outcomes

By completing the course, the student will:

- Develop a basic understanding of critical debates about the course key concepts focused on youth, democracy and technology, and its interrelations
- Acquire practical knowledge on how to use participatory techniques, combining arts and technology to cultivate critical consciousness
- Critically reflect on the role of the technology to promote critical consciousness, by examining real cases

[Official course record: II00AU21](#)

AY00AY97 | Youth, democracy and technology: participatory approaches for critical consciousness (OPEN UNI)

1-2 ECTS | Information Processing Science | Intermediate Studies | English

Person in charge: Eva Durall Gazulla, Marianne Kinnula

Content

This course teaches different participatory methods from fields like design, technology, research, arts, and education. These methods are used in critical citizenship education to help students understand the world better, recognize conflicts and systemic issues, and work towards justice. The course covers important ideas and discussions about how youth, democracy, and technology are connected. It includes real-life examples from recent research and innovation, showing how arts and technology can be combined. Additionally, the course provides materials to help educators in various settings.

Learning outcomes

By completing the course, the student will:

- Develop a basic understanding of critical debates about the course key concepts focused on youth, democracy and technology, and its interrelations
- Acquire practical knowledge on how to use participatory techniques, combining arts and technology to cultivate critical consciousness
- Critically reflect on the role of the technology to promote critical consciousness, by examining real cases

[Official course record: AY00AY97](#)

Earth & geography

790342A | Advanced course in GIS

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Harri Antikainen, Maija Toivanen

Content

The major themes of the course include network analysis, raster analysis, 3D analysis and visualization, and spatial statistical analysis for examining spatial relationships and detecting clusters. In addition, students are introduced to the basics of GIS automation. The lectures provide background for these themes. Geodata related to both physical and human geography are used in the exercises, with an emphasis on the diversity of applications.

Learning outcomes

The course aims to strengthen students' knowledge of GIS by introducing some of the most important analytical methods in geoinformatics. After completing the course, students are able to apply network analysis to determine optimal routes and locations, understand the properties of the raster data model and its use in spatial analysis, use 3D methods and LiDAR data, select appropriate spatial statistical methods for examining spatial relationships and clustering, and understand the principles of GIS automation.

[Official course record: 790342A](#)

773633S | Advanced Course of Surficial Geology in Ore Exploration

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Pertti Sarala

Content

To describe and explain broadly and analytically the modes of element occurrence in surficial sediments (mainly in glaciated terrain), their analysis methods and the use of heavy/indicator minerals and advanced surficial geochemical techniques in ore exploration with an emphasis of conventional and modern approach.

Learning outcomes

Upon completion of the course, the student knows and understand:

Mode of the element occurrence in surficial sediments

Research methods of the element occurrences

Analytical techniques: chemical and mineralogical

Mineral fractions and different concentration techniques

Heavy minerals and indicator minerals in ore exploration

Advanced surficial geochemical and biogeochemical sampling and analysis methods

[Official course record: 773633S](#)

790607S | Advanced literature of Geography

1-5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola, Jan Hjort, Jarkko Saarinen, Satu Kivelä, Harri Antikainen

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in geography.

Learning outcomes

The student will deepen his/her knowledge through literature. More exact learning outcomes is based on method of implementation of the course (agreed with professor).

Official course record: 7906075

795603S | Advanced studies in Geography taken abroad

0-60 ECTS | Geography | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: 795603S

773643S | Advanced technical properties of sediments

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Tiina Eskola

Content

Permeability, shear strength of soils, consolidation settlement

Learning outcomes

Upon completion of the course, the student:

- can identify and implement, in accordance with relevant standards, the fundamental methods used to analyze the physical and geotechnical properties of sediments
- critically analyzes measurement results, evaluates their reliability, and draws well-founded conclusions
- prepares written reports and adheres to ethical principles in both measurement work and the reporting of results
- plans and schedules their work, makes appropriate use of supervision, and works safely in the laboratory

Official course record: 773643S

772682S | Applied Field Techniques in Economic Geology

5 ECTS | Geology and Mineralogy | Advanced Studies | English, Finnish

Person in charge: Pertti Sarala

Content

This multidisciplinary course focus on (i) sampling and survey techniques commonly used in generative greenfield exploration campaigns in the glaciated terrains under cover, (ii) basic field techniques in bedrock mapping/observations with surface boulder hunting, (iii) understanding of geochemistry and the use of surficial deposits in ore exploration, and (iv) basic geophysical field measurement techniques. The importance of understanding the regional geological framework is a major theme during the course. The dispersion mechanisms of elements in different glacial environments are described. The use of geophysical survey methods and the fine fraction and heavy minerals of surficial deposits in mineral exploration are included in the course contents.

Learning outcomes

Students will be able to describe and classify the different dispersion processes of the ore boulders, chemical elements and indicator minerals in different glacial environments. They are able to choose the most appropriate sampling and analysis methods to carry out an early ('greenfield') exploration program. They will learn to collect and handle different sample materials, to choose correct handling/assay methods, and appreciate the importance of diligent data collection, data analysis and follow-up desktop work. Students will learn to synthesise and apply knowledge from discipline-based courses to identify and creatively solve problems that require decision making in the field. Learnt skills are easily adaptable to scientific field studies.

790325A | Applied literature of Geography

1-5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta, Juha Ridanpää, Kaj Zimmerbauer

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in geography.

Learning outcomes

The student will deepen his/her knowledge through literature. More exact learning outcomes is based on method of implementation of the course.

Official course record: 790325A

771309A | Bachelor of Science thesis and seminar

8 ECTS | Geosciences | Intermediate Studies | Finnish

Person in charge: Tiina Eskola

Content

The course focuses on the selection of a bachelor's thesis topic and the preparation of a research plan. It covers the content and structure of the bachelor's thesis, research integrity, academic writing, and the fundamentals of information retrieval. The course includes an oral seminar presentation of the thesis as well as peer review of other students' presentations.

Learning outcomes

A bachelor's thesis is a written research report in which a student demonstrates that he or she has the knowledge and skills required for a bachelor's degree. After completing the course, the student will be able to design and carry out a bachelor's thesis based on scientific literature and research methods; apply analytical thinking by structuring the research problem and examining the concepts and theories related to it; develop critical thinking skills by evaluating the reliability of sources; communicate scientifically by writing a coherent thesis that meets academic standards and by presenting the work orally in a seminar; work constructively in a group by giving and receiving feedback and participating in discussion; develop well-being and self-management skills by managing time, setting goals, and reflecting on their own learning process; and take sustainability, responsibility, and ethical perspectives into account in choosing a research topic, using sources, interpreting results, and forming arguments.

Official course record: 771309A

771117P | Basic course in mineralogy

5 ECTS | Geology and Mineralogy, Geosciences | Basic Studies | Finnish

Person in charge: Tiina Eskola, Tapio Soukka

Content

Course is intended to geoscience students + students of other disciplines who are interested in mineralogy.

Learning outcomes

Student will understand basics of mineralogical classification and crystallography. Student will be able to determine crystal systems and identify different symmetry elements along with miller indices of crystal surfaces. Students is capable of identifying minerals based on their macroscopic characteristics.

Generic skills learned during this course include: Working and interacting in groups, managing/scheduling of studying, use of digital learning tools during studies.

Official course record: [771117P](#)

773344A | Basics of glacial geology

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Juha Lunkka

Content

A review to history of glacial research and its methods; theories of how glaciers are generated and factors that affect them; present-day glaciers and their research; how snow turns into ice; movement of ice; structures of glaciers; glacier types; facts and theories about the geological activities in glaciers and how glacial sediments, landforms and erosional features are formed; glaciofluvial, glaciolacustrine and glaciomarine sedimentation, glacial deposits in pre-pleistocene formations, causes of ice ages.

Learning outcomes

Upon completion of the course, students should have acquired basic knowledge of glaciogenic sediment types and of morphological landforms and can present theories of how glaciers are formed.

Official course record: [773344A](#)

772700S | Bedrock and Ore Geology of Fennoscandia

5 ECTS | Geology and Mineralogy, Geosciences | Advanced Studies | English

Person in charge: Shenghong Yang

Content

The main geological units of the Finland, Sweden and Norway bedrock as part of the evolution of the Fennoscandian Shield. Magmatism, sedimentology and metamorphism and geochronology of the Fennoscandian bedrock. Factors that control temporal and spatial distribution of ores, with particular focus on Finnish, Swedish and Norwegian ore deposits.

Learning outcomes

Upon completion of this course:

The student will understand the geological evolution history and related key metallogeny of Fennoscandia which is one of the most potential area in Europe for mineral exploration.

The student will have chance to know the current progress of mineral exploration in terms of new method development and the new results of the industry.

The students will have chance to learn general skills on how to integrate multiple disciplines together, as mineral exploration normally need close collaboration between geology, geophysics and geochemistry.

In addition, sustainable mineral exploration concept will be introduced in the course as part of general skills.

In a final group presentation, student will have chance to collaborate with classmate with international background, and/or culture.

NG00AI96 | Challenges of global change: a geographical perspective

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta, Fredrika Jakola-Ylilauri

Content

Global challenges and understanding them from the regional geography perspective. You will also get familiar with Gapminder project.

Learning outcomes

After the course, a student has gained a holistic picture of the phenomena and processes related to global change, such as population growth, land cover change and globalization. Also, students are awakened how these phenomena are discussed in different contexts (e.g. in media). In addition, you will learn beneficial general programs and/or skills to present information, e.g., in the form of poster and Power Point presentation.

Official course record: NG00AI96

772703S | Changing arctic climate and environment

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Juha Lunkka,

Content

Introduction to the principles of the Earth system science in respect to Arctic environments and climate. Introduction to the methods used to study the mechanisms of the past environmental and climate changes.

Learning outcomes

Upon completion of the course students should be able to identify and interpret natural mechanisms that operate in the Arctic climate and environmental change.

Official course record: 772703S

790328A | Current themes in geography teaching

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Sanna Varanka

Content

The course focuses on assessment in geography education. Particular attention is given to the geography matriculation examination, including its structure, assessment criteria, and requirements, as well as to assessment practices in basic education and educational assessment more generally. The course introduces the revised Bloom's taxonomy and examines its application in geography teaching, learning, and assessment. Students also gain familiarity with the digital tools required in the digital matriculation examination and with the principles of designing, administering, and evaluating digital examinations from a teacher's perspective. In addition, the course supports systematic reflection on the development of professional teacher identity in relation to the themes addressed in the course through the completion of a reflective learning diary.

Learning outcomes

The student becomes acquainted with the current theme of geography which may vary. In the academic year 2026-2027 the theme is assessment in (lower and upper secondary) school geography.

The student:

- Becomes acquainted with the special features of geography assessment
- Becomes familiar with the revised version of Bloom's taxonomy and know how to apply it when planning learning objectives and assessment
- Knows the grounds of digital Matriculation Examination and its structure, contents and requirements
- Can design, administer and evaluate digital examinations (Abitti)
- Becomes acquainted with the digital tools in geography teaching and recognizes the possibilities of those tools as part of their own teaching
- Analyzes and reflects assessment as part of one's own growth as a teacher

Official course record: [790328A](#)

NG00BB96 | Current themes in Human Geography

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Satu Kivelä

Content

The course consists of lectures and reading circles. The lectures provide a versatile introduction to the current themes of human geographic research conducted at the Geography Research Unit. Based on the lectures, the student writes independently a learning diary. Reading circles take place in small groups in which different methodologies and their application in human geographic research are discussed. The student prepares independently for reading circles by studying the given reading and doing related preliminary assignments.

Learning outcomes

After completing the course, the student

- understands and can interpret cultural reality from the perspective of geography
- knows the Geography Research Unit's current human geographic research themes and related scientific practices
- can identify and compare different methodologies and is able to interpret their scientific application from the human geographic perspective

Official course record: [NG00BB96](#)

790319A | Development Towards Geography Subject Teacher Expertise

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Sanna Varanka

Content

During the practical training period, the student becomes acquainted with the work of the subject teacher and studies the objectives and contents of the teaching that can be found from the lower or/and upper secondary school curriculums. During the course the student ponders the importance of the discipline of geography from the teacher's point of view through the scientific literature. The student identifies his/hers own possible strengths and needs for development as a geography subject teacher. A final report in which student ponders his/hers own future as a geography teacher from the discipline of the geography point of view is drawn up during the course.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe and explain the contents and the objectives of the geography curriculum in lower or/and upper secondary schools
- understands teacher's action in the classroom situations from the point of view of teaching of geography
- analyzes and interprets the significance of the discipline as the foundation of the school geography
- applies and interprets one's own experiences gained from the practical training period in his/hers own development towards subject teacher expertise
- identifies and evaluates his/hers own abilities and needs for development as a teacher
- learns to find and choose didactic literature suitable for the work of a geography subject teacher
- becomes acquainted with the scientific writing and use of references by preparing a final report.

Official course record: 790319A

NG00AV28 | Diversity in nature at landscape scale

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta

Content

Lectures focus on topical research topics in Physical Geography, with special emphasis on biogeography and macroecology of freshwaters. GIS is in the hearth of practices.

Learning outcomes

After this course, the student is able to define and interpret the phenomena of physical nature.

Official course record: NG00AV28

790330A | Economy, society and politics

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Kaj Zimmerbauer

Content

The lectures will go through the key theoretical approaches and key concepts of regional political economy. The lectures examine current issues of regional and urban development and their politics. The themes include, e.g., regional competitiveness, role of the nation-state, the politics of economy, globalization/de-globalization etc.

The lecture material includes additional reading material (articles, strategies etc. The student will write an essay on a topic of the course, participate in exercises and conduct a seminar presentation. In the exercises, students deepen the content of lectures through both theoretical and practical examples.

Learning outcomes

The course examines the theories and concepts that influence the assumptions and practices of regional development and regional policy. The course will provide knowledge and understanding of the core issues of regional political economy, and the related societal debate. After completing the course, the student identifies the key concepts of regional political economy and can apply them to regional development and regional policy issues.

Official course record: 790330A

773346A | Environmental Geology

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Raisa Alatarvas

Content [Finnish source]

Kurssilla käsiteltäviä asioita ovat mm. geologinen ympäristöhoito, geologiset haittailmiöt, ihmistoiminnan ja geologisten luonnonvarojen hyödyntämisen ympäristövaikutukset, YVA-menettely ja PIMA-arviointi.

Learning outcomes [Finnish source]

Opiskelija tunnistaa ympäristögeologian peruskäsitteet ja osaa käyttää niitä luonnollisten geologisten prosessien sekä ihmistoiminnasta aiheutuvien ympäristövaikutusten arvioinnissa.

Geneeriset tavoitteet: Kestävyys- ja vastuullisuus- ja eettisyystaidot, Analyttisen ja kriittisen ajattelun taidot.

Official course record: 773346A

NG00AV27 | Ethics in science, scientific writing and knowledge in geography

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta, Kaj Zimmerbauer, Eeva-Kaisa Prokkola

Content

How, for what and for whom is science carried out? What distinguishes scientific knowledge from other kinds of knowledge, such as everyday knowledge? How can science be carried out responsibly? In this introductory course, we explore these issues from the perspectives of scientific and geographical knowledge, scientific writing, and research ethics.

Core contents:

- nature of scientific knowledge
- knowledge interests of geography and science in general
- structure of a research paper
- principles of scientific writing
- research ethics and good research practices
- ethics of studying and processing of misconduct in studies

Learning outcomes

Upon completion of the course, students are able to

- describe the process of empirical research
- describe the different points of departure of qualitative and quantitative research
- describe the characteristics of a scientifically reliable source
- apply the writing instructions and citation style of the Geography Degree Programme in their own written work
- identify the principles of good research practices

Official course record: NG00AV27

NG00AU70 | Exchange Studies

0-30 ECTS | Geography | Intermediate Studies |

Content

The content of studies varies according to the studies completed.

Learning outcomes

Studies completed in abroad complement students skill's and studies taken in Finland.

Official course record: NG00AU70

772640S | Excursion

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Shenghong Yang

Content

Introduction to Finnish or foreign geological field targets. Excursions typically last a few meeting lectures to introduce the plan of field trip, followed by a one week visits to field outcrops, as well as discussion of exposed structures and rocks. There is normally a discussion meeting after the trip.

Learning outcomes

The objective is to widen the student's field experience in ore geology. Through visiting important mineral deposits in different tectonic setting, and field work practice, students will learn the regional ore geology, and related mineral exploration in Finland.

Some general skills will be included in the course, such as sustainability, responsibility and ethics skills, as sustainable mining concept is important in the mineral industry and it is a good opportunity to learn how these concepts are implemented in practice.

Meanwhile, other general skills, including well-being and self-development skills and communication, interaction skills will be included.

[Official course record: 772640S](#)

790324A | Field course in Physical Geography

10 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta

Content

Bedrock, soil, vegetation, water, air - by testing various natural elements and making field research the aim is to learn how these things are combined together.

Learning outcomes

After the field course, the student is able "to read" the nature and use common field methods in Physical Geography.

[Official course record: 790324A](#)

NG00AV30 | Field course of Arctic nature

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Jan Hjort, Helena Tukiainen, Tuija Maliniemi

Content

This course focuses on the special characteristic of Physical Geography in northern Fennoscandia. The aim is to combine the theoretical knowledge gained from the lectures and literature with the observations completed in the field to deepen the understanding of studied processes. The course prepares the student for the preparation of MSc thesis. This course focuses on the geomorphological and biogeographical phenomena in the context of global change. Study themes include periglacial processes, palsas, mires, treeline ecotone and oro-arctic vegetation, primary production, and geodiversity.

Learning outcomes

The objective is that the student understands the key processes of northern environments by combining field observations with the theoretical knowledge gained from the literature.

791610S | Field of specialization exam

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola, Jan Hjort, Jarkko Saarinen, Harri Antikainen, Juha Ridanpää

Content

Written exam on readings that are related to the Master thesis.

Learning outcomes

After the exam of this course, the student can define, interpret and evaluate thoughtfully about his/her field of specialisation and its research traditions, contemporary themes of research and future prospects.

Recommended or required readings will deepen students' geographical knowledge in his/her special field ("home module").

Official course record: 791610S

NG00AV29 | Geographical knowledge, governance and participation in regional development

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola

Content

The course deepens the student's knowledge and skills in regional development and regional policy. The course examines the concepts of social and political geography and their application in the field of regional development and politics. The students examine the current phenomena and dynamics of the development of urban areas and rural areas by utilizing the theoretical and conceptual frameworks provided by the lectures. The seminar work includes familiarization with regional development projects.

Learning outcomes

After completing the course, the student will be able to: examine regional development and regional policy by utilizing the approaches and concepts of social and political geography. Evaluate and review national and European Union regional development mechanisms and regional policy from the perspective of different regions and cities and from the perspective of different actors. Evaluate and interpret regional development documents and regional policy programs critically and conceptually. To evaluate and apply the starting points for the planning of key regional development programs and regional development projects.

Official course record: NG00AV29

790340A | Geographies of global development

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Juha Ridanpää

Content

The course familiarizes students to the theories that aim to explain differences in uneven development. Under development, and its social, cultural and economic aspects will be studied from national, regional and local level. This course also quires to political programs and strategies that are aimed to stables equalizes uneven development.

Learning outcomes

This course gives knowledge of global development problems from geographical point of view. After the course the student can explain what development indicates and what kind of social and economic phenomena will explain both development and under development. He/she is also able to compare different actions that are aimed to diminish the uneven development based on different theories and strategies.

Official course record: [790340A](#)

772351A | Geological mapping

5 ECTS | Geology and Mineralogy | Intermediate Studies | Finnish

Person in charge: Tiina Eskola, Tapio Soukka

Content

Principles of geological mapping, fieldwork methods, observation, data collection, and the preparation of a geological map, as well as the interpretation of geological information. The course develops the ability to critically evaluate geological data.

Learning outcomes

Upon completion of the course, the student:

- is familiar with the key methods and principles of bedrock and Quaternary mapping
- understands the fundamentals of interpreting rock types, geological structures, and sediments
- conducts systematic geological field observations and documents them appropriately
- prepares a geological map
- critically evaluates collected field data and identifies uncertainties
- works safely and responsibly in the field

Official course record: [772351A](#)

772694S | Geometallurgy and Mineral Processing

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Jussi-Pekka Liipo

Content

The course will introduce main parts of the Geometallurgy: 1) ore geology, 2) process mineralogy and 3) minerals processing. The focus is in process mineralogy, mineral processing and in assimilating the geometallurgical concept. Exercises, assignments and seminars concentrate on practical aspects of Geometallurgy needed in mining industry.

Learning outcomes

Upon completion of the course students should be able to: 1) Describe the principles of different areas of Geometallurgy (ore geology, process mineralogy, minerals processing, modeling and simulation) and how they are linked in a geometallurgical concept. 2) Use different research and analytical methods of importance for Geometallurgy and interpret the results. 3) Evaluate, analyze and interpret the geometallurgical data in a quantitative way. 4) Design a geometallurgical sampling, analysis and research campaign. 5) Design a geometallurgical program.

The course also develops interaction and communication skills, the use of digital tools, and the ability to critically and analytically evaluate the results obtained in the exercises as well as the topics discussed in the seminars

Official course record: [772694S](#)

772675S | Geophysics in economic geology

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Elena Kozlovskaya, Kari Moisio

Content

The course provides an introduction to basic geophysical techniques (e.g. seismic, potential fields, electric, electromagnetic and radiometric) that are used in economic geology, with stress upon exploration of ore mineral deposits and mining. The geophysical methods are considered as a part of exploration project, in which different geophysical techniques are used to obtain information about different parts of a mineral system. The concept of a mineral system is introduced in the Introduction lecture.

It discusses connection between physical properties of rocks and minerals and geophysical anomalies of different nature and scale. It provides an introduction to major types of geophysical observables (fields) and to geophysical instrumentation used in exploration geophysics (airborne, ground-based and borehole). It discusses spatial and temporal resolution, depth penetration and precision of these geophysical techniques. It gives to the student an understanding what geophysical techniques are used at different stages of ore exploration, including province-scale and regional-scale geophysical surveys aiming at targeting mineral systems and detailed surveys aiming at imaging the selected target. It explains how to combine (integrate) various geophysical techniques for optimal 2-D and 3-D mapping of geological targets like metallic and non-metallic ore bodies, faults, fractured zones, overburden etc.

Learning outcomes

Purpose of the course:

- 1) To give students an understanding of the physical principles of geophysical methods so that they will appreciate the strengths and limitations of the methods.
- 2) To give students an understanding of practical aspects of using geophysical data in mineral exploration and mining:
 - Physical properties of rocks and minerals and their influence on geophysical observables
 - Geophysical surveying as a part of exploration project
 - Geophysical equipment: a review
 - Geophysical survey planning

The course is based on the mineral systems concept

The following generic skills are developed:

Digitalization: understanding of application of various digital geophysical data in exploration projects;
Sustainability and responsibility: application of non-invasive and environmentally friendly geophysical techniques in mineral exploration;

The course also helps in development of critical thinking, identification and development of one's own expertise. and
interaction and communication.

[Official course record: 772675S](#)

792617S | GIS Methods in Research

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Harri Antikainen, Heta-Maria Korkala

Content

The course covers several themes in geoinformatics, encompassing both traditional and cutting-edge research relevant to physical and human geography. These themes include geographic accessibility analysis, geospatial modeling, space-time analysis, suitability analysis, and deep learning and artificial intelligence. The course may also include additional topics. The lectures provide an overview of the theory and methods behind each theme. The exercises also develop other practical skills relevant to working with GIS data. Visiting lecturers present their experience of working in contemporary GIS-related roles.

Learning outcomes

The course provides both broader and more in-depth knowledge of different GIS methods. After completing the course, students have enhanced their skills in geographic accessibility analysis, are familiar with geospatial modeling methods, can apply techniques for time-space analysis, are able to perform clustering and suitability analyses, and understand the potential of deep learning and artificial intelligence in GIS-based workflows.

Official course record: [7926175](#)

790101P | GIS-basics and Cartography

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Harri Antikainen, Heta-Maria Korkala, Aleksi Räsänen

Content

The principal themes of the course include the core concepts of GIS and cartography, the structure of geospatial data, and the basic principles of cartographic visualization and statistical graphics. A particular focus is placed on the properties of thematic maps and their use for different purposes. The lectures provide a foundation in the principles and theory of geospatial data and cartography. In computer lab exercises, students gain hands-on experience working with geospatial data. Exercises are primarily conducted using ArcGIS Pro, but students also become familiar with QGIS, an open-source GIS software.

Learning outcomes

The course provides an introduction to the theory of Geographic Information Systems (GIS) and cartography, as well as their applications. After completing the course, students understand different formats of geospatial data and their purposes, can produce thematic maps according to sound cartographic principles, recognize the principles of coordinate systems, are able to create geospatial data through digitizing, gain basic experience with GIS-based analyses such as spatial interpolation, and know how to use statistical graphics and story maps to visualize data and research results. In addition, students will master the basic functionality of the ArcGIS Pro software and gain introductory experience with QGIS.

Official course record: [790101P](#)

NG00AJ45 | Global sustainable development

5 ECTS | Geography | Advanced Studies |

Person in charge: Satu Kivelä

Content

The course provides an introduction to sustainable development with the focus on the Global South. The course introduces theories, key concepts, and practical insights for development challenges, such as poverty and inequality, environmental change and sustainability, migration and mobility, and marginalization, rights and participation.

Learning outcomes

After taking the course, the student can identify different sustainable development discourses and understands development challenges particularly in the context of Global South.

791601S | History and philosophy of geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Juha Ridanpää

Content

During the course, students examine how the theoretical and methodological foundations of geographical research have changed across different historical periods. Each lecture has its own theme, through which the discipline of geography is explored chronologically, from antiquity to contemporary geographical research. Lecture themes include, among others, ancient geography, the institutionalization of geography, the political nature of geography, defining geography as a discipline, the quantitative revolution, the cultural turn, critical social research, and the relationship between physical geography and human geography.

Learning outcomes

The course deepens the student's knowledge of the historical development of geography as an academic discipline and its relationships with various philosophical questions. After completing the course, the student will have a comprehensive understanding of the history of geography, and in particular of how the methodological foundations of geographical research have varied across different periods.

Official course record: 791601S

790347A | Human geography in everyday life and school

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Sanna Varanka

Content

The course expands the geographical content of subject teaching through the themes of human geography. The student prepares an essay based on the given instructions and literature.

Learning outcomes

Student recognizes and is able to interpret the connections of content of geography teaching to everyday life and research.

Official course record: 790347A

NG00AV26 | Human geography methods in practice

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Juha Ridanpää, Satu Kivelä, Fredrika Jakola-Ylilauri

Content

In the course, the use and application of various qualitative and quantitative methods in human geographic research are practised. Students can choose themes and materials typical of different fields of specialisation in human geography.

Learning outcomes

After completing the course, the student is able to use and apply in practice key human geographic methods of material collection and analysis, taking into account the different phases of the research process. The student is able to assess the applicability and strength of various methods in relation to different types of material.

Official course record: NG00AV26

773331A | Hydrogeology

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Raisa Alatarvas

Content

Hydrological cycle, especially phases of earth water and ground water, origin of ground water and its occurrence in Finnish soil and bedrock and in other sediment, karst and volcanic formations; examples from Finland and elsewhere; ground water on climatic peripheries; flow of ground water and well hydraulics; ground water research, geological geophysical methods; stable and radioactive isotopes; principles of hydrochemistry; quality of ground water; deep ground water research; mineral waters and thermal waters; artificial ground waters; contaminating of ground water and its p

Learning outcomes

Upon the completion of course, the student: 1) knows the basic facts and research methods used in hydrogeology, 2) can define different aquifer types and their relationship to superficial deposits and bedrock-types, 3) can explain the basic principles that govern ground water flow.

[Official course record: 773331A](#)

771115P | Introduction to bedrock geology of Finland and ore geology

5 ECTS | Geology and Mineralogy | Basic Studies | Finnish

Person in charge: Tapio Soukka

Content

Lithostratigraphical units, the Archaean and Palaeoproterozoic bedrock of Finland and younger rock formations. Mineral resources, their classification and origin, exploration methods.

Learning outcomes

Students can describe and recognise the main geological unit of the Finnish bedrock and name them based on their stratigraphic position and age relations. They can connect the major geological units to the main stages of the plate tectonic evolution. Students are familiar with most common ore types and industrial minerals occurring in the bedrock and the principal processes leading to their formation and how they are explored.

[Official course record: 771115P](#)

771113P | Introduction to Geology I

5 ECTS | Geology and Mineralogy, Geosciences | Basic Studies | Finnish

Person in charge: Tapio Soukka

Content

Evolution of the Earth as part of the solar system, structure and composition of the Earth. Classification of igneous rocks, magmatism, origin and crystallisation of magmas, volcanism, metamorphism and formation of metamorphic rocks, plate tectonics and deformation structures.

Learning outcomes

Students have an understanding of the basic concepts of the Earth, from its composition and internal structure to the geological processes that have led to its evolution. They can tell how endogenic processes in the mantle and crust produce magmas and how magmas produce different igneous rock types upon emplacement below and on the Earth's surface. Students are able to recognise and classify common igneous rocks based on their mineral composition and are familiar with common metamorphic rocks and know the metamorphic facies concepts. They can relate deformation and metamorphism of the rocks to plate tectonic processes.

Official course record: [771113P](#)

771114P | Introduction to Geology II

5 ECTS | Surficial Geology | Basic Studies | Finnish

Person in charge: Tiina Eskola

Content

Basic concepts of surficial physical geology, weathering, erosion, sedimentation, and sediment types, soils and geological processes forming sedimentary deposits.

Learning outcomes

Upon completion of the course, the student understands the fundamental principles of exogenic processes shaping soils and the Earth's surface (weathering, erosion, transport, and deposition) and their cause-effect relationships, is familiar with the basic concepts of stratigraphy and sedimentology and their relevance to the interpretation of geological phenomena, and understands the significance of geological processes across different timescales as part of the Earth's climate and environmental system. In addition, the student is able to analyze and interpret geological data, use English-language learning materials, communicate geological phenomena using appropriate terminology, and understand the relevance of geological knowledge from the perspectives of sustainability, responsible use of natural resources, and interdisciplinary environmental research.

Official course record: [771114P](#)

NG00AJ20 | Introduction to GIS programming

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Harri Antikainen

Content

The student will become acquainted with the basics of Python programming and the ArcPy package included in ArcGIS Pro, enabling them to perform geoprocessing tasks programmatically. The course covers conditional and loop structures, different data types, reading and writing GIS data programmatically, and using GIS functionality through ArcPy.

Learning outcomes

After completing the course, the student will be familiar with the basics of GIS programming and capable of writing simple Python scripts in the ArcGIS Pro environment that include GIS functionality. In particular, the student will understand the main features of the ArcPy package, know how to implement conditional and loop structures, read and write GIS data programmatically, process both vector and raster data, and use ArcGIS Pro's analytical functions within a Python script.

Official course record: [NG00AJ20](#)

772335A | Introduction to ore mineralogy

5 ECTS | Geology and Mineralogy | Intermediate Studies | English

Person in charge: Shenghong Yang

Content

Division and structure of ore minerals, composition and texture, phase diagrams and their applications.

Typical and important minerals including native elements, sulfide, oxide, sulfosalt, silicate and carbonate minerals.

Ore microscope and how it is used, microscopic properties of ore minerals. Identification and description of ore minerals and ore mineral assemblages.

Learning outcomes

Upon completion of this course:

The student will obtain basic knowledge on ore minerals and their mode of occurrence,

Crystal structure and its link to physical and chemical properties.

Learn to recognise the most common ore minerals and textures under ore microscope.

The course trains analytical, critical and creative thinking in connection with practical mineral identification processes and with the help of a learning diary.

These skills are developed in particular with the help of a thin notebook, in which the student documents the optical features of minerals and the properties used for their identification. In addition, the student reflects on the things learned during the course, the biggest challenges and successes associated with them, and reviews possible areas for development in their own work in the learning diary.

General skills including sustainable development concept will be introduced as some minerals with potential environmental impact should be considered.

[Official course record: 772335A](#)

771116P | Introduction to Quaternary deposits of Finland and their resources

5 ECTS | Surficial Geology | Basic Studies | Finnish

Person in charge: Tiina Eskola

Content

Main features and raw material resources of the Finnish Quaternary deposits and their origin.

Learning outcomes

Upon completion of the course, the student understands the origin and structure of Finnish Quaternary deposits and the significance of Quaternary geological processes in shaping the present-day landscape. The student is able to apply basic principles of stratigraphy to the identification and classification of soil types and geomorphological formations in Finland and understands the importance of soil geological knowledge in the assessment of raw material resources.

[Official course record: 771116P](#)

790141P | Introduction to Regional Development and Regional Policy

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola

Content

The course focuses on regional development and regional policy through a variety of concepts and empirical examples. Students will learn key concept and theories of regional development and regional policy, the basic features and mechanisms of regional structures, including urban and rural development. In addition, students will learn about the levels of governance and planning related to regional development and regional policy, as well as related resources and decision-making.

Learning outcomes

The student is able to apply the most essential concepts of regional development and regional policy. He/she can tell the main issues, dynamics and historical progress of regional development, regional policy and regional planning of Finland and its relationship to contemporary development of European Union. The student is able to critically evaluate regional development and policies in terms of sustainable development and resilience.

[Official course record: 790141P](#)

790104P | Introduction to systematic Human Geography

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Satu Kivelä

Content

The course introduces to the development of human geography and its key concepts and perspectives, and examines how they are connected to various historical and current cultural, social, societal and political phenomena. The course consists of lectures and practices. Themes discussed in lectures include societal problems, political issues, urbanisation, the economy, globalisation, population, ethnicity and popular culture. In the practice section, written work is prepared in small groups with the help of research literature to delve into one of the human geographic phenomenon discussed in lectures.

Learning outcomes

After completing the course, the student is able to

- understand the history of the development of human geography as well as the key systematic research fields and related contemporary themes and core issues
- identify and interpret key phenomena in human geography and explain the factors affecting them
- recognize the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognizes stereotypical ways of thinking

[Official course record: 790104P](#)

790152P | Introduction to the discipline of Geography

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Jan Hjort, Juha Ridanpää

Content

Lectures will give a general overview of Geography as an independent discipline. It will be completed by considering history, concepts and research aspects of Geography.

Learning outcomes

With this course the students can analyse the history of Geography and contents of its different fields, concepts and research aspects. In addition, the student:

- is able to compare the differences and similarities between their own field of study and related disciplines,
- is able to be open to the perspectives of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field,
- is able to work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields.

790102P | Introduction to the systematic Physical Geography

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Jan Hjort, Helena Tukiainen

Content

The course focuses on geomorphology (geosphere), climatology (atmosphere), hydrogeography (hydrosphere), and biogeography (biosphere). The students will learn how nature works and how to resolve multiple environmental questions. Exercises are focused on the compilation and technical use of relevant material.

Learning outcomes

This introductory course provides an overview of the main fields of Physical Geography and their contemporary research approaches. By the end of the course, students will be able to identify and understand the key phenomena of the geosphere (geomorphology), hydrosphere (hydrogeography), biosphere (biogeography), and atmosphere (climatology), and to draw conclusions about the factors influencing these phenomena. The practical exercises aim to develop students' ability to apply basic research methods used in Physical Geography.

Official course record: 790102P

790160P | Introduction to Tourism Geography

5 ECTS | Geography | Basic Studies | Finnish

Person in charge: Jarkko Saarinen

Content

Tourism phenomenon, key concepts of tourism geography, spatial characteristics of tourism, its development aspects, resilience and sustainability (SDGs).

Learning outcomes

Student becomes familiar with the tourism phenomenon, the key concepts of tourism and tourism geography, and its regional and development characteristics and impacts. After the course the student can interpret and define tourism phenomenon, the key concepts of tourism geography, spatial characteristics of tourism, pull factors, sustainability issues, and the current and future development of tourism from various perspectives.

Official course record: 790160P

NG00BA70 | Joint events of the Geography degree programme

0 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Sanna Varanka

Content

All common events of the Geography Degree Programme have been compiled under this course code so that students and staff can be informed about the event schedules right at the beginning of the academic year. Such occasions include, for example, the 'mantsa coffee' events intended for staff-student interaction, as well as the subject teacher info. This is not an actual course, but a time management tool, so the course will not be graded, and no credits will be given.

Learning outcomes

By participating in joint events, you will receive information about current issues in the degree programme, gain a better understanding of internship and employment opportunities, have the chance to influence the development of the curriculum and experience a sense of community during coffee breaks with teachers and students.

[Official course record: NG00BA70](#)

772666S | Master's thesis

30 ECTS | Geosciences | Advanced Studies | Finnish, English

Person in charge: Tiina Eskola

Content

Master's thesis (30 cr) in geosciences is a literature work prepared on a research topic separately agreed with the advisors. The work in general includes experimental research part.

Learning outcomes

After completing the master's degree, the student is able to search, compare, interpret and organize published, scientific information in the field of geosciences, based on the theoretics of their research topic. The student can apply research methods used in one of the different fields of geosciences, and is familiar with the topic of the thesis and is able to think, evaluate results, analyze, draw conclusions and communicate scientifically, and can report on the research topic using the scientific expressions and terminology typical to geosciences.

[Official course record: 772666S](#)

770390A | Maturity Test

0 ECTS | Geosciences | Intermediate Studies | Finnish

Person in charge: Tiina Eskola

Content

The maturity test is an essay-type examination related to the topic of the bachelor's thesis and is written in Finnish or Swedish, the student's language of prior school education. The purpose of the maturity test is to demonstrate the student's excellent language proficiency and familiarity with the subject of the thesis. Further information on writing the maturity test is available on the Opiskelijalle website.

Learning outcomes

The student can independently produce scientific text using his/her mother tongue or English. The maturity test shows familiarity with the subjects of the Bachelor's thesis.

[Official course record: 770390A](#)

770690S | Maturity Test

0 ECTS | Geosciences | Advanced Studies | Finnish, English

Person in charge: Tiina Eskola

Content

To demonstrate their familiarity with the topic of their Master's thesis, students must take a mandatory written Maturity Test related to the topic (770690S, 0 cr). The maturity test also demonstrates the ability to write a scientific text.

The abstract written for the Master's thesis and uploaded to Laturi is accepted as a Maturity Test. The Test is evaluated by the professor of the study field (study option / major) in question, or the supervisor of the Master's thesis. In addition to the English summary, students who have received their school education in Finnish or Swedish must enclose the abstract in Finnish or Swedish too, if the Master's thesis is written in English.*

If students' proficiency in Finnish or Swedish has not already been demonstrated for their bachelor's degree, the master's degree Maturity Test is written and evaluated as described in connection with the bachelor's degree Maturity Test. In the bachelor's degree, the student demonstrates not only familiarity with the topic of their master's thesis, but also proficiency in Finnish or Swedish (the language of their school education).

Learning outcomes

After completing the Maturity Test the student can describe the research subject of their Master's thesis consistently and clearly, using the scientific expressions and terminology typical to geosciences.

[Official course record: 770690S](#)

790399A | Maturity test

0 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Satu Kivelä, Janne Alahuhta

Content

After the completion of the Bachelor's thesis, the student prepares a writing on the topic of the thesis. Maturity test is a written exam of 450-600 words. Maturity test is a study attainment required by the Decree on University Degrees, by which the student demonstrates his/her native language skills and familiarity with the field of the thesis.

Learning outcomes

General writing based on student's Bachelor's thesis.

[Official course record: 790399A](#)

791699S | Maturity test

0 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola, Jan Hjort, Jarkko Saarinen, Harri Antikainen, Juha Ridanpää

Content

Summary of a thesis that is approved by the supervisor and added to the thesis before uploading the thesis to Laturi.

[Official course record: 791699S](#)

772697S | Microscopic study of rocks

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Fangfang Guo

Content

Classification of major rock types, their textures and their study with petrographic microscope, mineral geochemistry

Learning outcomes

Upon completion of the course, students will demonstrate analytical, critical and creative thinking by interpreting mineralogical, textural and geochemical data. They will develop self-management and responsibility through independent and team-based research planning, laboratory work and data interpretation. The course enhances international, multidisciplinary and communication skills, as students collaborate in diverse teams, integrate mineralogy, petrology and geochemistry, follow responsible laboratory practices, and communicate results effectively using modern digital and analytical tools.

[Official course record: 7726975](#)

493606S | Mine Geology

5 ECTS | Mining Engineering and Mineral Processing, Geosciences | Advanced Studies | English

Person in charge: Fangfang Guo

Content

The course covers mineral exploration and mining-related workflows, combining hands-on field experience in mineral exploration and mining companies with a solid theoretical foundation. Lectures address exploration methods, regional mineral potential modelling, drilling, logging, sampling, QA/QC, mineral resource estimation and classification, as well as ESG-related issues. The course concludes with a practical drill core logging exercise and training in the basic use of 3D geological modelling software (4h).

Learning outcomes

Upon completion of the course, students will demonstrate analytical, critical and creative thinking by evaluating and applying mine geology and mineral exploration workflows, including geological exploration, drilling, logging, sampling, QA/QC, and 3D geological modelling. They will develop multidisciplinary and communication skills through practical training, mini-presentations, and essay writing. The course also strengthens sustainability, ethical awareness, and digital skills, enabling students to assess the societal and environmental impacts of mining and to use modern modelling tools

[Official course record: 493606S](#)

790346A | Nature conservation: a geographic perspective

5 ECTS | Geography | Intermediate Studies | Finnish, English

Person in charge: Helena Tukiainen

Content

What is biodiversity? What about geodiversity? How are they related to nature conservation? And how is nature conservation connected to climate change? This course introduces you to nature conservation from a geographical perspective, providing answers to these questions. The diverse assignments in the online course will prepare you to understand and solve complex environmental issues.

Learning outcomes

In this course, students will deepen their geographical thinking and knowledge by exploring nature conservation through key geographical research themes. After the course, the students can define and apply key terminology related to nature conservation and the diversity of nature. In addition, they know the different approaches that nature conservation might have, and are able to make conclusions on the factors affecting nature conservation.

[Official course record: 790346A](#)

772702S | On-site and surface geochemical techniques

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Pertti Sarala

Content

The course introduces the most commonly used on-site analyzers and their applications in geochemical and mineralogical research.

Course includes radiation safety learning which is required for the use of XRF-analysers.

Learning outcomes

On this course the students will learn about the different basic principles and applications of on-site and surface analysis methods in geochemistry. These methods include geochemical and mineralogical manual and portable analysis methods.

[Official course record: 772702S](#)

NG00AI74 | Open GIS and geospatial data collection

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Harri Antikainen, Heta-Maria Korkala

Content

The course consists of several themes and technologies related to open geospatial data. Students become familiar with producing geospatial data and designing a PPGIS survey. In addition, the course exercises provide hands-on experience in using QGIS and some of its available plugins, as well as the basics of web mapping.

Learning outcomes

The course focuses on open geospatial data and different ways of collecting, creating, and using such data. After completing the course, students recognize the most important open geospatial interfaces and standards, know how to gather, create, and manage geospatial data using PPGIS (Public Participation GIS) and VGI (Volunteered Geographic Information), and are familiar with key technologies for producing web-based maps. Students also master the basics of QGIS, are able to create new geodata on a community-driven mapping platform, can design a PPGIS survey, and are able to implement a simple web map.

[Official course record: NG00AI74](#)

772348A | Optical Mineralogy

5 ECTS | Geology and Mineralogy | Intermediate Studies | Finnish

Person in charge: Atte Taivalkoski

Content

The course is intended for students of geosciences and materials science and aims to provide an understanding of the principles of light behavior in different materials, as well as the ability to apply this knowledge to the study of rock, mineral, and other solid-material specimens, specifically thin sections, using a polarizing microscope.

Learning outcomes

In the Optical Mineralogy course, students learn to identify and distinguish minerals independently by examining thin sections under a polarizing microscope. The course introduces the optical properties of minerals and the application of optical observations in mineral and rock studies.

The course emphasizes the development of analytical, critical, and creative thinking through practical mineral identification processes. A central mode of assessment is a mineral description report, in which students document the optical characteristics of minerals and the properties used to identify them. Learning is supported by a learning diary, in which students reflect on the topics learned during the course, identify challenges and successes encountered in their work, and evaluate their own learning process and areas for further development.

[Official course record: 772348A](#)

772386A | Ore Geology and Society

5 ECTS | Geology and Mineralogy | Intermediate Studies | English

Person in charge: Fangfang Guo

Content

The ore-forming processes, classification schemes for ore deposit, global distribution of mineral resources, discussion of economic, social and other constraints on exploration and mining.

Learning outcomes

This course develops analytical, critical, and creative thinking by reviewing different ore deposit types and the geological, economic, and societal factors influencing mining. It strengthens multidisciplinary skills by integrating geological, economic, environmental, and social perspectives. Students also develop sustainability and ethical competencies, fostering responsible decision-making and increased awareness of the social and environmental issues associated with mining.

[Official course record: 772386A](#)

772701S | Ore-forming Processes

10 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Shenghong Yang, Fangfang Guo

Content

During the course, global distribution, tectonic settings and key characteristics of different mineral deposit types are discussed. The recent advance in understanding the ore deposits, controversial and challenges will be addressed as well. In addition, representative examples of a range of mineral deposits are investigated under polarization- and reflective microscope.

Learning outcomes

Upon completion of the course, the student will be able to:

After completing the course, the student will understand the ore forming processes of different types of mineral deposits including magmatic, hydrothermal and sedimentary ore deposits, following the mineral systems approach concept that ore deposits occur in the context of a large geological system.

The student will be able to have critical thinking that ore deposit models are in many cases controversial and open minded concept would be recommended. On the other hand, observations from large continental scale to microscale are essential to understand the ore forming processes.

In addition, these processes formed the fundamental knowledge for guiding more efficient mineral exploration. As advanced course, the current state of the art understanding of the ore deposits, the challenges and opportunities, new research methodologies and new trend in a global scale will be introduced.

The student will have chance to have group work in a final presentation, to collaborate with classmate with international background, and/or culture.

[Official course record: 772701S](#)

790050Y | Orientation

2 ECTS | Geography | General Studies | Finnish

Person in charge: Sanna Varanka, Outi Kivelä

Content

Issues related to the beginning of the studies. Small group sessions with older Geography students, advising, meetings, tutor-teaching, planning own studies. The Orientation course also includes the University of Oulu's general orientation materials.

Learning outcomes

The aim of the course is to introduce new students to the university, academic studies, the studies of his/her degree programme in the Faculty of Science. With this first course the students starts to integrate to the study system and field of Geography. Students are planning their own study paths. Student also learns skills related to well-being and self-development.

[Official course record: 790050Y](#)

770001Y | Orientation course for new students

1 ECTS | Geosciences | General Studies | Finnish

Person in charge: Jukka-Pekka Ranta, Tiina Eskola

Content

Students are guided to the study system of the university and given information on the contents and goals of the BSc Degree Programme of Geosciences.

Learning outcomes

Students are familiar with the university environment and practical issues of their geosciences studies and are able find appropriate of advice if needed.

[Official course record: 770001Y](#)

790612S | Personal study plan

0 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Sanna Varanka, Outi Kivelä

Content

Studies at the degree programme of Master studies, choosing the field of specialization and tutor teacher, master's thesis process, support and guidance.

Learning outcomes

After completing the course:

- the student has a clear and approved personal study plan (HOPS) for completing the degree
- the student understands what a master's thesis (pro gradu) is and what the thesis process involves
- the student knows how to promote their well-being, develop their self-leadership skills and build their professional identity, and maintain their own competence in a goal-oriented manner
- the student knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being.

Official course record: [7906125](#)

772308A | Petrology

10 ECTS | Geology and Mineralogy | Intermediate Studies | English

Person in charge: Fangfang Guo

Content

Genesis of magmatic-, metamorphic and sedimentary rocks; Mineralogy and textures of magmatic-, metamorphic and sedimentary rocks (under microscope)

Learning outcomes

Upon completion of the course, students will be able to identify and describe the mineralogical, textural, and genetic characteristics of magmatic, sedimentary, and metamorphic rocks. They will apply analytical, critical, and creative thinking to interpret rock-forming processes and evaluate classification schemes and petrogenetic features using microscopic observations for rock identification. Through independent laboratory work, students will develop self-management and multidisciplinary skills by integrating knowledge from basic mineralogy and optical mineralogy.

Official course record: [772308A](#)

793607J | Ph.D. thesis in geography

0 ECTS | Geography | Post-graduate Studies | Finnish

No description supplied in the collected record.

Official course record: [793607J](#)

791635A | Physical Geography of Fennoscandia

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta

Content

Physical geography of the Fennoscandia in the context of five themes: evolution and history of landscape, climate history, land cover and land use, human pressure and future of the area.

Learning outcomes

Course familiarizes students to the geography of the Fennoscandia. After the course student is able to define the special characters of the physical geography of Fennoscandia. In addition, you will learn beneficial general programs and/or skills to present information, e.g., in the form of poster and Power Point presentation.

791621S | Political geography

5 ECTS | Geography | Advanced Studies | English

Person in charge: Hidefumi Nishiyama

Content

This course is an introduction to political geography. Established as a subdiscipline of human geography in late nineteenth century Europe, political geography has evolved over the past century and continues to evolve in the twenty-first century. With the diversification of its theories and methods, there has been a wide variety of topics researched in the field. The course presents a brief history of the subdiscipline and explores some of the key research themes and areas, including gender, popular culture, borders and migration, war and militarism, colonialism and imperialism, and decolonisation.

Learning outcomes

After completion of the course, students should expect to have an informed and critical understanding of political geography. They shall be able to define some of the key theories and concepts and apply them to analyse and discuss real-world issues.

Official course record: 791621S

771304A | Practical training

4-5 ECTS | Geosciences | Intermediate Studies | Finnish

Person in charge: Tiina Eskola, Pertti Sarala

Content

Working in the an geosciences field company, research institute, etc. Students will look for the training positions themselves.

Learning outcomes

After completing the course, the student is able to:

- apply the theoretical knowledge they have learned in practical working life,
- identify and solve problems in their work environment,
- act in accordance with laws, regulations and guidelines and the ethical principles of the field;
- to evaluate the development of one's own expertise in the tasks of a geologist

Official course record: 771304A

791616S | Practical training

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Kaj Zimmerbauer

Content

Internship consists of working in a position appropriate for a geographer for a minimum of two months. Besides working in public or private sector, the student will prepare an internship plan and will evaluate their learning and working experience in the the form a reflective learning diary/ internship report.

Learning outcomes

The aim of the internship/practical training is to get the student to become more familiar with the working life as a geographer. After internship, the student should be better equipped to evaluate, define and develop their working life skills and expertise as a geographer, and to plan for their future working life.

Competence objectives (Interdisciplinarity and interdisciplinary skills):

- is able to apply the methods of their own discipline and recognize the strengths and limitations of the methods of other disciplines
- is able to search for and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- is able to promote multidisciplinary cooperation and lead multidisciplinary and professional groups.

Official course record: [791616S](#)

791619S | Pro gradu thesis (Master Thesis)

30 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola, Jan Hjort, Juha Ridanpää, Jarkko Saarinen, Harri Antikainen

Content

The Thesis will deal with the subject that is approved by professor or other supervisor. The student will take part to Seminar (I, II, III) in Master Thesis (791631S).

Learning outcomes

Indicates that the student is able to carry out demanding and independent academic research work. Thesis shows that the student can write a Thesis which is based on material that he/she has studied and on basic concepts and phenomena of his/her field of specialization. In the Thesis the student can use the most central research methods, and can classify, analyse and evaluate his/her knowledge in relation to the tradition of the research field. The Thesis shows that the student can make accurate conclusions about the studied phenomena and he/she reflects those in relation to research tradition. Thesis is based on latest aspects of the field and also develops new research subjects and questions. In addition, the student:

- is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- is able to analyse arguments and argue appropriately

Official course record: [791619S](#)

NG00BB97 | Project work

1-5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Sanna Varanka

Content

This course contains project work related to geography studies that can be included in the degree but is not credited under other geography courses. Such work may include, for example, working in a geography research group or elsewhere, running science clubs, or carrying out various development tasks.

Learning outcomes

Applying the knowledge and skills learned during geography studies to practice.

Official course record: [NG00BB97](#)

790326A | Qualitative research methods

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Juha Ridanpää

Content

The course focuses on the basic concepts related to the qualitative research process and goes through the different perspectives through which geographical phenomena can be approached by means of qualitative research. The lectures cover qualitative research trends and the qualitative research process, as well as issues related to data protection. The course includes the writing of exercise report in which through the analysis of international research articles, it will be focused on how different qualitative methods can be applied in different research questions in the field of geography.

Learning outcomes

The course provides information on how to conduct qualitative research. After completing the course, the student will understand how qualitative research methods are used in geography. The student will also be able to compare the different stages of the research process and explain the basic principles related to the qualitative analysis of data.

[Official course record: 790326A](#)

772696S | Quantitative Evaluation of Minerals in Sediments and Rocks

5 ECTS | Geology and Mineralogy | Advanced Studies | English

Person in charge: Kari Strand, Jukka-Pekka Ranta

Content

The topics that are introduced in the course are: what is a quantitative mineral evaluation, what materials can be studied and for what purposes, analytical equipments needed, examples of research results and own learning exercise.

Learning outcomes

Upon completion of the course, the student will be able to do quantitative mineral evaluations for sediments and rocks. Optical microscopy, electron microprobe (EMPA), scanning electron microscopy (SEM), QEMSCAN and ML studies of specific samples are learned to identify useful minerals e.g. ore indicator minerals and quantify their relative abundances especially when looking for base metals or critical metals and minerals. Automated mineralogy systems are introduced to let you obtain data about your samples, such as mineralogical composition, mineral grain's composition, rock minerals distribution, minerals elements distribution and includes in minerals. Developed generic skills are analytical, critical and creative thinking and develop of one's own expertise.

[Official course record: 772696S](#)

791639S | Quantitative research methods in Geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Sanna Varanka, Helena Tukiainen

Content

Different phases of the quantitative research methods and databases. The use SPSS-program.

Learning outcomes

After this course students are able to interpret and analyse the possibilities and limitations of numeric data. Students can apply the most common quantitative methods in his/her own studies. After the course students are able to utilize SPSS-program in their other studies and recognize the different stages of the research process.

Official course record: [7916395](#)

773630S | Quaternary geology of Fennoscandia

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Pertti Sarala

Content

After the course students can describe and explain Quaternary history of Fennoscandia including main glacial phases and Late Pleistocene glacial-interglacial cycles, main marginal and morphological deposition areas, key sites of the Quaternary stratigraphy, development of the Baltic Sea and marine coastlines and Holocene sedimentary deposits.

Learning outcomes

Upon completion of the course, the student knows and understands:

- Main glacial-interglacial phases during Quaternary in Fennoscandia
- Key stratigraphy sections in Nordic countries
- Main marginal deposits and their regional existence
- Main glaciogenic morphology areas and their indication to glaciers' development
- Age and stages of the last deglaciation
- The development of Baltic Sea and Holocene sedimentary deposits

Official course record: [773630S](#)

773300A | Quaternary Stratigraphy

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Pertti Sarala

Content

During the course students learn main concepts and research methods of the Quaternary stratigraphy. Furthermore, students learn main changes of climate and environment in global and Finnish scale during Quaternary.

Learning outcomes

Upon completion of the course, the student knows and understand:

identification of stratigraphical units in vertical deposition context, lateral stratigraphical correlation (horizontal), chronostratigraphy including dating methods, age estimation and depositional timing; classical glacial stages; Quaternary geological stages in Finland

Official course record: [773300A](#)

790331A | Regional development and planning in northern Europe

5 ECTS | Geography | Intermediate Studies | Finnish, English

Person in charge: Kaj Zimmerbauer

Content

Course will address the theories, concepts and models of regional development and planning as discussed in the literature. Their relation to planning practices and regional policy is also studied.

Learning outcomes

After completing the course a student is able to:

- understand the basic theories, concepts and models in regional development and planning
- apply the theories, concepts and models, recognize them in scientific articles and can discuss about them
- recognize the challenges and specialties in regional development and planning in northern Europe.

Official course record: [790331A](#)

NO00AF34 | Remote sensing in geosciences

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Pertti Sarala

Content

Introduction to the principles of remote sensing techniques. Geomorphological mapping using Digital elevation models (DEMs). In practicals students produce surficial geological and glaciodynamic maps based on DEM interpretation of landforms. Self-made exercises in Moodle.

Learning outcomes

Upon completion of the course students should be able to identify and interpret glacial and non-glacial landforms from Digital Elevation Models (such as LiDAR).

Official course record: [NO00AF34](#)

791636S | Remote sensing in Physical Geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Jan Hjort, Olli Karjalainen

Content

Course gives an overview of remote sensing in theory and practice in physical geography. The course consists of lectures, a reading group, and exercises. In the lectures and the reading group, students become familiar with the theory, data, and applications of remote sensing, as well as the interpretation and analysis of satellite imagery. The exercises focus on the digital processing and interpretation of satellite images from the perspectives of physical geography.

Learning outcomes

The student is able to use remote sensing techniques in the production of research data, in the analysis of physical geographical phenomena, and in solving research problems. In addition, the objective is that the student understands the main principles of remote sensing and its most important geographical applications. The course deepens the student's knowledge of remote sensing-related work in physical geography.

Official course record: [791636S](#)

NG00AV25 | Research in cultural geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Juha Ridanpää

Content

The course focuses on key fieldwork methods used in cultural geography research. During the course, students complete an assignment that includes a background study related to their own research theme and a literature review. Research data for the assignment are collected using various fieldwork methods, and the data are then processed and analyzed. The plans for the assignments are presented midway through the course, and the final assignments are presented in a seminar at the end of the course.

Learning outcomes

After completing the course, the student will be able to use the basic methods for acquiring and using data employed in cultural geography research, as well as evaluate the suitability of different fieldwork methods in various research settings. The student will also be able to assess the advantages and limitations of methods developed for data collection.

[Official course record: NG00AV25](#)

793612J | Research plan seminar

1 ECTS | Geography | Post-graduate Studies | Finnish, English

Person in charge: Pääohjaajat

Content

Presenting the research plan and/or phase.

Learning outcomes

The Geography Doctoral Programme organises PhD seminars for doctoral researchers who are expected to actively participate the seminars by presenting their research plans and phase. In addition, research groups can have their own seminars and workshops, in which doctoral researchers can present their research plans and research phase as a part of this coursework.

[Official course record: 793612J](#)

NG00AV33 | Resilience and regenerative tourism futures

10 ECTS | Geography | Advanced Studies | English

Person in charge: Alberto Amore, Jarkko Saarinen

Content

1. Socio-ecological resilience in tourism transformations
2. Towards a regenerative turn beyond mainstream sustainable tourism discourse.
3. Socio-ecological resilience and regenerative tourism
4. The governance of regenerative tourism transformations

Learning outcomes

The learner will learn the key aspects of resilience and regenerative tourism in the context of contemporary tourism development and in relation to mainstream sustainable tourism discourse. Where required, discussion will link resilience and regenerative tourism arguments in relation to international sustainable development frameworks (i.e., the SDGs, in particular SDG7, SDG8, SDG9, SDG11, SDG12, SDG13 and SDG17). The learner will familiarise and gain a critical understanding of the challenges with resilience amid environmental change, and the challenging transition from mainstream net-zero sustainable tourism and net-positive regenerative tourism. The learner will be introduced to conceptual and empirical insights and learn about the shift in current tourism research and practice.

Upon completing the course, the learner will: understand and define the central concepts, theories, and approaches discussed in the course, and can situate them within the broader fields of tourism studies and tourism geography; contextualize and apply the course content to international tourism settings and critically assess different perspectives related to sustainability, resilience, and regenerative turn; be able to communicate the course themes clearly in oral, visual, and written forms; demonstrate effective teamwork skills in collaborative tasks and assignments.

- recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them
- is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field
- is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments.

Official course record: [NG00AV33](#)

773655S | Sedimentology

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Kari Strand

Content

The topics that are introduced in the course are: sedimentary environments their processes and products, basin analysis and sequence stratigraphy.

Learning outcomes

Upon completion of the course, the student will be able to explain how different sediment bedforms and sedimentary associations are related to different sedimentary environments. The student will also be able link individual observations to various sedimentary processes and their products, understand facies analysis method and explain the fundamental concepts used in sequence stratigraphy and able to make chronostratigraphic constructions. Developed generic skills are analytical, critical and creative thinking and develop of one's own expertise.

Official course record: [773655S](#)

790351A | Seminar and Thesis of BSc (Bachelor of Science)

10 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Janne Alahuhta, Satu Kivelä

Content

A BSc thesis is a written work that demonstrates familiarity with the theme of the thesis and the ability to scientific writing, the use of research literature and critical evaluation of literature based on good scientific practice. The student becomes familiar with the topic of his/her own choice and adopts the act of scientific research in theory and practice.

Learning outcomes

After the course the student is able to

- produce independently a scientific thesis and knows the basics of scientific research work
- use and apply the most essential theoretical standpoints of geographical research
- identify and apply relevant scientific literature
- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- identify and describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities
- critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problem

Official course record: [790351A](#)

791631S | Seminar in master's thesis

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Eeva-Kaisa Prokkola, Jan Hjort, Juha Ridanpää, Harri Antikainen, Jarkko Saarinen

Content

There are three types of seminars to carry out. Seminar I, which takes place in the beginning of the seminar-of last study year, is based on research questions, hypothesis, data, methods, preliminary structure of thesis etc. In Seminar II, the student will present the structure of the thesis, theoretical background and the guidelines the empirical field work. In Seminar III the final version of the Master Thesis will be presented. Co-student will act as an opponent. Working as an opponent is obligatory at least once per seminar period.

Learning outcomes

Along with participating in seminars, the student can compare different view points of research and he/she can adapt his/her own Master thesis for wider picture of Geography. In the seminars, the student takes part to the geographical discussions and he/she can argue the results of his/her study. In addition, the student:

- is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks
- is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team
- is able to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society.

Official course record: [791631S](#)

NG00AV31 | Spatial analysis and modelling in physical geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Jan Hjort, Olli Karjalainen

Content

A special course that focuses on regression-based spatial modelling in Physical Geography. The course offers methodological knowledge for the preparation of MSc and doctoral thesis.

Learning outcomes

The objective is that the student can critically apply statistically-based spatial modelling methods to solve study problems in Physical Geography, understands the principles of the modelling techniques and acknowledges the importance of theory in scientific research.

Official course record: [NG00AV31](#)

773656S | Special field techniques in sedimentology

5 ECTS | Surficial Geology | Advanced Studies | English

Person in charge: Pertti Sarala

Content

Field course comprises planning and implementation of geological methods to collect geological data (sedimentological, geomorphological and geophysical data) from a preselected field area.

Learning outcomes

Upon completion of the course the student will be able to use a range of field techniques required in Quaternary Geology research projects (e.g., aerial image, sedimentological, drilling, ground penetrating techniques).

[Official course record: 773656S](#)

771305A | Special Issues in Geology

1-5 ECTS | Geosciences | Intermediate Studies | Finnish

Content

The themes of this course are variable. This time the theme is collecting a rock and mineral collection.

The course is an optional 3 credit course where the student collects independently a rock and mineral collection for themselves.

The collection must contain at least 12 rock and 15 mineral samples. The samples are cataloged and a report is written about them. The samples are collected from the field, in Finland. All samples must be collected by the student themselves (not purchased from the internet).

The prerequisite for the course is that the student has completed at least the following mandatory courses in the Bachelor's Degree in Geosciences: Basic course in Mineralogy, Introduction to Geology I and II, and Introduction to Bedrock Geology of Finland and Ore Geology.

The course will be assessed on a Pass/Fail scale.

[Official course record: 771305A](#)

790603S | Special research course in Geoinformatics

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Harri Antikainen

Content

This course serves the specialization of the student.

Learning outcomes

The student will deepen and develop his/her knowledge in geoinformatics and geography through literature or empirical study. Actual learning outcomes are dependent on the method of implementation of the course, as agreed with the person responsible for the course.

[Official course record: 790603S](#)

790604S | Special research course in Human Geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Juha Ridanpää

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in his/her field of specialization.

Learning outcomes

The student will deepen and develop his/her geographical knowledge through literature or through empirical study. More exact learning outcomes is based on method of implementation of the course (agreed with professor).

Official course record: [7906045](#)

790605S | Special research course in Physical Geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Jan Hjort

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in Physical Geography.

Learning outcomes

After completing the course, the student will, through their chosen mode of completion, develop and deepen their expertise in Physical Geography, for example through literature or empirical data. More exact learning outcomes is based on method of implementation of the course (agreed with professor).

Official course record: [790605S](#)

790602S | Special research course in Regional Development and Regional Policy

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Kaj Zimmerbauer

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in his/her field of specialization.

Learning outcomes

The student will deepen and develop his/her geographical knowledge through literature or through empirical study. More exact learning outcomes is based on method of implementation of the course (to be agreed with the responsible teacher).

Official course record: [790602S](#)

790606S | Special research course in Tourism Geography

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Jarkko Saarinen, Siamak Seyfi

Content

This course serves the specialization of the student. After the course, the student has deepened his/her knowledge and experience in his/her field of specialization.

Learning outcomes

The student will deepen and develop his/her geographical knowledge through literature or through empirical study. More exact learning outcomes is based on method of implementation of the course (agreed with professor).

Official course record: 790606S

790305A | Special themes in Human Geography

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Satu Kivelä

Content

The course consists of lectures and reading circles. The lectures provide an introduction to selected human geographic special themes. Reading circles are organised in small groups in which different methodologies and philosophies of science as well as their manifestation in human geographic research are discussed based on reading material.

Learning outcomes

The aim of the course is to arouse the student's interest in self-motivated geographical interpretation and understanding of cultural reality.

After completing the course the student

- knows the current human geographic research themes and practices at the Geography Research Unit
- is able to identify and compare different methodologies and to interpret their scientific application from the human geographic perspective

Official course record: 790305A

790350A | Special themes in Regional Development and Regional Policy

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Fredrika Jakola-Ylilauri

Content

The course explores the key aspects of urban development and planning from the perspective of social sustainability, inclusion and participation. Key questions of justice and equality in socially sustainable urban development are examined from the viewpoints of various actors and groups of people. The emphasis of the course is on urban development and planning in the context of Finland.

Learning outcomes

Upon completion of the course, the student will have knowledge of the starting points of urban development and planning from the perspective of social sustainability, inclusion and participation. Students are able to critically examine different aspects of social sustainability and their relationship to urban development. Students will be able to apply the key concepts of social sustainability in examining urban development and planning.

Official course record: 790350A

772316A | Structural geology

5 ECTS | Geology and Mineralogy | Intermediate Studies | Finnish

Person in charge: Jukka-Pekka Ranta, Tiina Eskola

Content

Development of structural geology and principles of the stress and strain theory, microscopic structural elements, fractures and fault structures, folding and fold structures, multiphase deformation and interference structures.

Generic skills learned during the course: Managing and scheduling own learning and studying; utilizing digital learning tools; applying theory into practice; working and communication in groups

Learning outcomes

The student is able to analyze and describe deformation structures of the bedrock, and based on the result, he/she can evaluate the mechanisms of deformation and characteristics of the deformation processes.

[Official course record: 772316A](#)

NG00AV58 | Student tutoring

2 ECTS | Geography | General Studies | Finnish

Person in charge: Sanna Varanka, Outi Kivelä

Content

The tutor student guides a group of new students during the orientation course introducing them to the university, academic learning environment, the Research Unit, curriculum, and other students with the help of small group meetings and presentations.

Learning outcomes

Tutoring develops students' skills to guide, make and present presentations, work in a group, and organize tasks. It also advances planning, arrangement, and guidance abilities as well as responsibility.

[Official course record: NG00AV58](#)

773322A | Surficial geology in ore exploration

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Pertti Sarala

Content

Student learn main stages of surficial geological ore exploration process and the methods used. In addition, main concepts of boulder hunting and geochemical dispersion in the glaciated terrains are studied.

Learning outcomes

Upon completion of the course, the student knows and understands:
main stages of surficial geological ore exploration process including basic knowledge of the use of glacial morphologies, ore boulders and till geochemistry in mineral exploration in the glaciated terrains, elements' concentrations and the effect of their variability in different sediments and sampling, sample processing and analytical methods

[Official course record: 773322A](#)

790329A | Sustainability and environmental change

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Helena Tukiainen

Content

In the course, key concepts and phenomena of sustainability, sustainable development, and environmental change are examined with a geographical perspective. These include the greenhouse effect, the consequences of climate change, and the United Nations' global action program for sustainable development, known as Agenda2030. The course introduces all the Sustainable Development Goals (SDGs) of Agenda2030, with a particular focus on Goal 12 (Responsible Consumption and Production), Goal 13 (Climate Action), and Goal 15 (Life on Land). The course also covers themes related to sustainability in geographical research through various research examples.

Learning outcomes

Upon completing the course, the student is able to explain what sustainability and sustainable development mean and what their key challenges are. They understand the central concepts and phenomena related to sustainability, sustainable development, and environmental change, and are able to evaluate the significance of environmental changes from a geographical perspective. In addition, the student is able to search for scientific source material on a chosen topic and to write scientific, reflective texts in the form of an essay and a learning diary.

The course familiarizes students with the Sustainability, Responsibility, and Ethics Skills included in the University of Oulu's set of common generic skills: the student (1) identifies the dimensions of sustainability (social, ecological, economic, cultural) and evaluate their own actions in relation to them, (2) identifies the UN Sustainable Development Goals (SDGs), and (3) knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.

[Official course record: 790329A](#)

AY790329A | Sustainable development and environmental change (OPEN UNI)

2 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Helena Tukiainen

Content

In the course, key concepts and phenomena of sustainability, sustainable development, and environmental change are examined with a geographical perspective. These include the greenhouse effect, the consequences of climate change, and the United Nations' global action program for sustainable development, known as Agenda2030. The course introduces all the Sustainable Development Goals (SDGs) of Agenda2030, with a particular focus on Goal 12 (Responsible Consumption and Production), Goal 13 (Climate Action), and Goal 15 (Life on Land).

Learning outcomes

Upon completing the course, the student is able to explain what sustainability and sustainable development mean and what their key challenges are. They understand the central concepts and phenomena related to sustainability, sustainable development, and environmental change, and are able to evaluate the significance of environmental changes from a geographical perspective. In addition, the student is able to search for scientific source material on a chosen topic and to write scientific, reflective texts in the form of an essay.

The course familiarizes students with the Sustainability, Responsibility, and Ethics Skills included in the University of Oulu's set of common generic skills: the student (1) identifies the dimensions of sustainability (social, ecological, economic, cultural) and evaluate their own actions in relation to them, (2) identifies the UN Sustainable Development Goals (SDGs), and (3) knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.

[Official course record: AY790329A](#)

NG00AV47 | Sustainable tourism development in the Arctic environments

10 ECTS | Geography | Advanced Studies | English

Person in charge: Jarkko Saarinen, Bailey Adie, Roosa Ridanpää

Content

The course will address tourism in the circumpolar north from a societal perspective. It will present different views on the phenomenon and its dimensions, resources and implications for nature, places and cultures involved. The place of Arctic tourism in times of globalization and emergent global issues like climate changes will be explored, together with the relevant governance aspects.

Learning outcomes

To familiarize students with theory and knowledge related to sustainable tourism development in the Arctic environments.

In the course students will

- Gain knowledge of the phenomena of Arctic tourism; the place of sustainable Arctic tourism within globalization and climate change; and the socio-cultural dimensions of Arctic tourism.
- Acquire skills that will enable them to critically evaluate why the phenomena of Arctic tourism should be studied; identify the implications of Arctic tourism for indigenous cultures; evaluate the implications of Arctic tourism as related to local communities and resources; and critically examine governance aspects of Arctic tourism
- Get the general competence of synthesizing academic reading materials read; participating in master's level discussion of course materials; and developing research and writing skills to a Master's level.
- learn to work in international cooperation and take the international operating environment into account in their activities.
- learn to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.

[Official course record: NG00AV47](#)

NG00AV32 | Sustainable tourism dynamics in environmental and cultural change

10 ECTS | Geography | Advanced Studies | English

Person in charge: Siamak Seyfi, Jarkko Saarinen

Content

1. Environmental uncertainty, tourism vulnerability and resilience to environmental change
2. Tourism and environmental change: mitigation practices and environmental sustainability
3. Sociocultural change, tourism vulnerability and adaptation
4. Tourism, socio-cultural change, and social sustainability

Learning outcomes

Following completion of the course the learner will be able to: know the definitions, origins and evolution of sustainable development and its relation to tourism. The course will provide the learner an understanding of , environmental uncertainty and tourism vulnerabilities, tourism and environmental change, mitigation practices and environmental sustainability in tourism, sociocultural change, and tourism and adaptation.

[Official course record: NG00AV32](#)

773347A | Technical Properties of Sediments I

5 ECTS | Surficial Geology | Intermediate Studies | Finnish

Person in charge: Tiina Eskola

Content

Drilling methods and sediment sampling, compositional and structural properties of different soil and sediments.

Learning outcomes

Upon completion of the course, students will be able to identify and implement the main methods used to investigate the compositional and structural properties of soil and sediments.

Upon completion of the course, the student:

- can identify and implement, in accordance with relevant standards, the main methods used to investigate the compositional and structural properties of soil and sediments
- critically analyzes measurement results, evaluates their reliability, and draws well-founded conclusions
- prepares written reports and adheres to ethical principles in both measurement work and the reporting of results
- plans and schedules their work, makes appropriate use of supervision, and works safely in the laboratory

Official course record: [773347A](#)

NG00BB05 | Theory and practice of urban and regional planning

5 ECTS | Geography | Advanced Studies | Finnish

Person in charge: Kaj Zimmerbauer

Content

Objectives of urban and regional development. Development methods. Practical development and its organization (urban development, land use planning, regional development etc). Planning processes (participation, used methods, etc.). The course includes working life cooperation.

Learning outcomes

After completing the course, the student will have an understanding of the central theoretical approaches on urban and regional planning as well as of practical planning systems and processes. The student will also understand the historical development of urban and regional planning and the various objectives of planning that have changed over time. After completing the course, the student will have a good understanding of how regional planning (including land use planning) is organized and how it works. The course will also review the goals and challenges of urban and regional development at a general level through urban strategies, for instance.

Official course record: [NG00BB05](#)

790613S | Tourism Geography field research and excursion course

10 ECTS | Geography | Advanced Studies | English

Person in charge: Jarkko Saarinen, Siamak Seyfi

Content

Key phases and different forms of empirical research methods, data collection and analysis in tourism geography; excursion visits with information preparation; practicing selected fieldwork methods and/or understanding their benefits and limitations in different geographical and research contexts; and reporting orally and/or in written forms.

The course involves both theoretical and practical training or the emphasis can be only on theory or practice.

Learning outcomes

Following completion of the course the learner will be able to: understand a research process and especially the role and key elements and approaches in empirical research in tourism geography; demonstrate a practical understanding and skills of fieldwork methods; explain the role of different field methods; prepare regional and place descriptions and data analysis; and demonstrate competencies in oral and/or written presentations, and ability to critically evaluate research process and outcomes.

[Official course record: 7906135](#)

790320A | Tourism planning and development

5 ECTS | Geography | Intermediate Studies | Finnish

Person in charge: Jarkko Saarinen

Content

Central concepts and theories of tourism development and tourism planning, economic impacts at regional level, and basic aspects of the tourism policy and regional tourism strategies.

Learning outcomes

After this course, the student

- understands the relationship between tourism planning and regional development and
- is familiar with the most central models of tourism planning and development and
- understands the starting points of tourism policies at local, national, and European level, and the current trends influencing tourism policies

[Official course record: 790320A](#)

790161A | Tourism, development and sustainability

5 ECTS | Geography | Intermediate Studies | English

Person in charge: Jarkko Saarinen, Roosa Ridanpää

Content

The course focuses on the needs and premises of sustainable development in tourism with emphasis on tourism development in Global South. The course examines the conceptual and practical dimensions of sustainable tourism, its relationship with sustainable development in general and the applicability and problems associated with it.

The course's basic concepts include the following: tourism and sustainable development, sustainable tourism, resilience and adaptation, tourism impacts, and sustainability needs at different scales (local-global) and socio-ecological environments, the roles of different actors (stakeholders) in sustainable tourism, tourism development plans and policies, methods to measure sustainability in tourism and tourism development, the role of (responsible) tourist as a consumer.

These concepts will be discussed both theoretically and in practice, highlighting their relevance and applicability in the Global South utilizing case examples. Some topical issues relating with the main theme sustainable tourism, such as pro-poor tourism, regenerative tourism and climate change will be covered in the Global South contexts. In addition, the student chooses one relevant topic to which she/he familiarizes.

Learning outcomes

After the course, the student understands and can apply the principles of sustainable development in tourism in different contexts;

- Student understands the importance of sustainable development in tourism in different contexts and from different viewpoints; e.g. spatial, environmental, social (communities and other stakeholders), the industry. .
- Student acknowledges the utilization of tourism for diverse development purposes and has basic understanding about its potentiality and challenges, especially in the Global South developmental contexts.
- The student can analyse and compare the impacts and meaning of different tourism activities to sustainable development.
- The student is able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds.

The course involves the following Sustainable Development Goals (SDGs), especially: SDG1, SDG5, SDG8, SDG9, SDG12 and SDG13.

[Official course record: 790161A](#)

NG00AQ20 | Urban and regional resilience: concepts and theories

5 ECTS | Geography | Advanced Studies | English

Person in charge: Eeva-Kaisa Prokkola

Content

The course extends the student's knowledge of urban and regional resilience and skills in working with theories and concepts. Through scientific readings and learning assignments, the student examines the key concept and theories of urban and regional resilience, and their application in geography, within context of urban and regional development and politics.

The learning activities are designed so that they first familiarize the student with different resilience theories and then the student can deepen his/her understanding about a specific research field and theoretical framework. Possible fields of research include but are not limited to; evolutionary economic geography, shrinking regions, urban planning, green urban resilience, cross-border resilience, resilience politics, and resilience as governance.

The emphasis of the course is on developing students' theoretical understanding and knowledge as well as the ability to interpret social and spatial processes through different theories and concepts.

Learning outcomes

After completing the course, the student will:

- Know the key concepts and theories of urban and regional resilience and is familiar with their scientific backgrounds.
- Be able to evaluate the theories and concept of urban and regional resilience critically in relation to different processes and phenomena of regional development and politics.
- Be able to apply and use concepts and theories of urban and regional resilience consistently and accurately in scientific writing and argumentation.

[Official course record: NG00AQ20](#)

771691S | Work Practise

5 ECTS | Geology and Mineralogy, Geosciences | Advanced Studies | Finnish, English

Person in charge: Pertti Sarala

Content

Working in the an geosciences field company, research institute, etc. Students will look for the training positions themselves.

Learning outcomes

Learning outcomes

After completing the course, the student is able to:

- apply the theoretical knowledge they have learned in practical working life,
- identify and solve problems in their work environment,
- act in accordance with laws, regulations and guidelines and the ethical principles of the field;
- to evaluate the development of one's own expertise in the tasks of a geologist

Official course record: [7716915](#)

Education & psychology

KE00AM78 | 21st Century Teachers: International Seminar on Emerging Themes in Education

3 ECTS | Education | Other Studies | English

Person in charge: Megumi Iwata

Content

The concepts of the cross-cutting themes in education, which include:

- * Education for Sustainable Development (ESD)
- * Democratic education and fostering active citizenship
- * Gender sensitivity in teaching and learning
- * Teaching in multilingual and diverse classrooms, and
- * Digitalisation of learning spaces

Emerging key topics of each cross-cutting theme.

Teacher competence regarding the cross-cutting themes.

Learning outcomes

This course explores 5 current themes of utmost importance in education:

- * Education for Sustainable Development (ESD)
- * Democratic education and fostering active citizenship
- * Gender sensitivity in teaching and learning
- * Teaching in multilingual and diverse classrooms, and
- * Digitalisation of learning spaces

Upon completion of the course, the students will be able to

- * Understand those issues and see their relevance for education
- * Outline the concepts of the cross-cutting themes
- * Explain the emerging key aspects of each cross-cutting themes
- * Describe teacher's competence and role in regard to the cross-cutting themes
- * Discuss social, global, ethical and educational questions related to the cross-cutting themes

NOTE: The study credits obtained by completing this course can be used towards the Sustainability Minor.

Official course record: [KE00AM78](#)

408045S | Abstract / Maturity Test

0 ECTS | Education | Advanced Studies | Finnish

Person in charge: Hannu Heikkinen

No description supplied in the collected record.

Official course record: [408045S](#)

KE00BD07 | Abstract / Maturity Test of Psychology Master's Thesis

0 ECTS | Psychology | Advanced Studies | Finnish, English

Person in charge: Mirka Hintsanen

No description supplied in the collected record.

[Official course record: KE00BD07](#)

413031S | Advanced course in qualitative research

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Anu Kajamaa

Content

- the meaning of different paradigms and research traditions/strategies in the planning and implementation of qualitative research
- different reading methods in the analysis and interpretation of qualitative research data
- proving credibility in qualitative research
- research reporting in qualitative research
- ethical issues in qualitative research

Learning outcomes

Having completed the course, the student

- knows different kinds of qualitative research strategies
- knows how to describe and interpret qualitative data analysis methods used in education and psychology and their background
- knows how to analyse and interpret typical educational and psychological research data
- knows how to assess the credibility, reliability and ethicality of her/his own research and research done by others

[Official course record: 413031S](#)

413030S | Advanced course in quantitative research

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Jouni Peltonen

Content

- statistical testing
- classic multivariate methods
- modelling by means of linear structural equations
- publishing the results of statistical methods of analysis in a research report

Learning outcomes

Having completed the course, the student

- knows how to analyse and interpret typical educational and psychological quantitative research data by using research methods designed for the examination of one-, two- or more dimensional distributions
- knows how to describe the basic ideas of research data analysis based on structural equation modelling and how to interpret models created by others
- knows how to assess the credibility, reliability and ethical aspects of her/his own research and research done by others

[Official course record: 413030S](#)

KE00AL04 | Advanced Practice 1

2 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- Planning and execution of teaching
- Learning materials and environments
- Cooperation between school and homes
- Ethics and responsibilities in teacher's work

Learning outcomes

Having completed the course, the student knows how to:

- plan and implement teaching independently
- use and produce learning materials and utilize learning environments appropriately
- explain about the importance of cooperation between school and homes
- explain the ethical nature and the meaning of responsibility in the teacher's work.

[Official course record: KE00AL04](#)

KE00AL05 | Advanced Practice 2

3 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- Assessment
- Interaction and diversity in education
- Co-teaching
- Responsibility of the subject teacher's work

Learning outcomes

Having completed the course, the student knows how to:

- develop their pedagogical and subject didactic activities based on the feedback they receive
- employ their knowledge of assessment and plan and implement the assessment of tasks
- apply questions related to interaction and diversity as well as co-teaching in education
- take independent responsibility for the subject teacher's work.

[Official course record: KE00AL05](#)

KE00AS18 | Advanced theme course in Psychology A

5 ECTS | Psychology | Advanced Studies | Finnish, English

Person in charge: Mirka Hintsanen

Content

The student deepens their knowledge related to a specified area of psychology.

Learning outcomes

After the course the student can

describe, assess, interpret and analyze the theories and research results of the given field of psychology.

[Official course record: KE00AS18](#)

KE00BB72 | Advanced theme course in Psychology B

5 ECTS | Psychology | Advanced Studies |

Content

The student deepens their knowledge related to a specified area of psychology.

Learning outcomes

After the course the student can

describe, assess, interpret and analyze the theories and research results of the given field of psychology.

[Official course record: KE00BB72](#)

KE00AM81 | Advanced theme course in Psychology C

2-5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Mirka Hintsanen

Content

The student deepens their knowledge related to a specified area of psychology.

Learning outcomes

After the course the student can

describe, assess, interpret and analyze the theories and research results of the given field of psychology.

[Official course record: KE00AM81](#)

KE00AU86 | Advanced Training in Special Education

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Riikka Sirkko

Content

- special educational settings (basic education, secondary education, third sector, disability organizations)
- teamwork, professional and interprofessional co-operation, as well as co-operation with parents
- inclusive education
- various pedagogical innovations and interventions
- well-being at work

Learning outcomes

After completing the practice, the student is able to

- reflect on various special pedagogical fields of activity and work as an expert in special pedagogy
- utilize special pedagogical scientific knowledge and apply it in inclusive teaching and other practices
- To plan, implement and independently evaluate practices and learning support based on special pedagogical principles and interprofessional cooperation
- look for the most important partner networks you need in your work
- act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting and promote community and interaction to support well-being
- work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds

[Official course record: KE00AU86](#)

402371P | Applications of Physical Education I

5 ECTS | Physical Education | Basic Studies | Finnish

Person in charge: Ari Rahikkala

Content

- * running, throwing, jumping outdoors. The course is concluded with "team decathlon".
- * ballgames including striking games and invasion games
- * independent work includes familiarizing in 5 different games
- * planning and implementation of exercises of orienteering in a peer group
- * an overnight hiking tour

Learning outcomes

Having completed the course the student is able to

- * apply manipulative skills and perceptual motor skills indoors and outdoors
 - * knows how to plan and apply tasks including running, jumping and throwing
 - * apply different teaching methods in ballgames
 - * identify the classification of games
 - * knows how to use map and compass in orienteering
 - * plan, implement and evaluate orienteering exercises
 - * use everyman's rights and principles of eco-friendly trekking on an overnight hiking tour
- *identify the UN Sustainable Development Goals (SDGs), "sustainable movement"
- *work goal-orientedly in a team, negotiate, delegate tasks, and resolve conflicts constructively.
- *take other students and teachers into account and treat them with respect. The student is also able to respect other living and non-living entities.

Official course record: [402371P](#)

402372P | Applications of Physical Education II

5 ECTS | Physical Education | Basic Studies | Finnish

Person in charge: Laura Rahikkala

Content

The learning environment is a sports hall where students practice body control and bodily expression as well as locomotor, balance, equipment-handling, and perceptual-motor skills as follows:

- apparatus gymnastics 14 hours
- gymnastics and music-based movement 26 hours

The content includes:

- basic movements and movement progressions in apparatus gymnastics
- assisting techniques and supportive equipment used to facilitate apparatus gymnastics
- basic school gymnastics movements with and without equipment, combining movements into sequences
- music- and expression-based movement as part of school dance, including various dance forms
- rhythmic, musical structure, and the use of music in teaching school gymnastics and school dance

Learning outcomes

After completing the course, the student:

- is able to plan, implement, and assess instruction in school gymnastics and music-based movement within the context of physical education
- uses diverse teaching methods and formats appropriate for different learners and teaching situations
- applies acquired knowledge and skills when supporting peers and pupils, and demonstrates the ability to implement safe practices, particularly in apparatus gymnastics
- demonstrates body control, locomotor, balance, and equipment-handling skills in an indoor gym environment, and is able to combine movements into coherent sequences
- integrates music effectively into teaching and is able to guide movement in relation to musical elements
- supports and facilitates bodily expression as a meaningful component of physical education and learner development
- understands the role of body awareness in physical education and is able to incorporate body-awareness practices into instruction
- understands and applies the principles of body positivity, body peace, and safe-space creation in teaching situations
- develops and models emotional and interaction skills that promote healthy communication and learning environments for both themselves and their pupils
- recognizes the significance of body awareness for personal well-being and can reflect on its relevance to their professional practice

Official course record: [402372P](#)

402373P | Applications of Physical Education III

5 ECTS | Physical Education | Basic Studies | Finnish

Person in charge: Ari Rahikkala

Content

- * swimming, diving, depth diving, water rescue
- * skating skills forward and backward, circle skating, stopping, jumping, playing
- * adapted PE on-line tasks OR familiarize with some adapted PE group and with some illness or handicap
- * heart rate monitors in adapted physical education

Learning outcomes

The student is able to:

- * plan, implement and assess teaching in water and on ice
- * apply locomotor skills, manipulative skills and perceptual motor skills especially in water and on ice
- * rescue someone from water
- * apply the support of learning from the aspect of P.E.

*work goal-orientedly in a team, negotiate, delegate tasks, and resolve conflicts constructively.

*take other students and teachers into account and treat them with respect.

Official course record: [402373P](#)

402374P | Applications of Physical Education IV

5 ECTS | Physical Education | Basic Studies | Finnish

Person in charge: Ari Rahikkala

Content

- * ballgames; net-wallgames & target games
- * main skiing techniques of classic and skating styles in cross-country skiing and alpine skiing

Learning outcomes

The student is able to:

- * plan, implement and assess teaching of skiing
 - * apply especially balance and locomotor skills on snow
 - * apply different teaching methods in ballgames
- *work goal-orientedly in a team, negotiate, delegate tasks, and resolve conflicts constructively.
*take other students and teachers into account and treat them with respect.

Official course record: 402374P

KE00BC81 | Applying Digital Technologies in Teaching and Learning

10 ECTS | Education | Basic Studies | English

Person in charge: Thi Huynh

Content

- Digital information literacies & Digital competences
- Ethical Issues in Emerging educational technologies
- Learners' characteristics
- Fundamental theories for digital instructional design
- Designing graphics, materials, and online environments
- Computational tools, like block based programming tools, concept map builders, flowcharts & simulations
- Maker Education & Digital Fabrication tools and technologies, eg. 2D cutting and 3D printing

Learning outcomes

Upon completion of this course, students will be able to:

- Understand the fundamental theories in educational technology and the principles of edutech design.
- Identify key tools and practices in technology-enhanced learning, Computational thinking, and artificial intelligence.
- Assess their own digital competencies and develop them further.
- Evaluate and critically compare applications, devices, and other educational technologies as tools for scaffolding learning and supporting teaching or other professional activities.
- Design and fabricate artifacts within the contexts of Maker education and digital fabrication.
- Integrate technologies into work and learning in the digital world.

Official course record: KE00BC81

442427A | Art Pedagogy in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Jaana Keränen

Content

- an introduction to the pedagogy of art education
- play and art
- artistic working and experience
- experimentalism, embodiment, sensation
- being an arts educator in early childhood education
- music instrument studies

Learning outcomes

After completing the course, student is able to

- plan for, implement and evaluate experiential and child-oriented Art pedagogy in early childhood education
- describe the conclusion of the artistic process and to identify the part of the artistic making and experiencing the child's growth and well-being
- recognize and describe being in art educator as part of the role of early childhood educators, as well as to develop it as part of their professional identity
- can make music according to their own skill level, singing and playing
- can describe their competence, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning

[Official course record: 442427A](#)

406064A | Arts and Crafts Education I: Visual Arts and Physical Education

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Matti Lukkari

Content

Visual arts

A starting point in visual art is identity and narration.

Contents in the visual arts

- In the visual arts course the student develops her/his visual, didactic and pedagogical thinking by applying various traditions of visual expression
- Visual arts is viewed and various techniques of visual expression are applied in this course from the perspectives of visual culture and the worlds of art.
- The course includes the following contents: drawing and painting, visual design, chromatics and animation.

The study module in physical education comprises the following contents:

- social justification of physical education
- most recent studies in the field of sport and physical education
- indoor skills of physical exercise and tool handling
- exercises with tool handling and making observations/finding solutions in a gym

Learning outcomes

Having completed the course, the student knows how to:

- recognize essential pedagogical methods teaching the visual arts and physical education
- apply skills of working, data acquisition, interpretation and evaluation typical of visual arts
- use various materials and techniques in art making
- consider didactic and pedagogical methods in visual arts and PE
- The students identifies the objectives (physical, social and mental capacity to function) and contents of physical education in schools
- apply creative and critical thinking in designing and facilitating pedagogically purposeful art education processes, and to justify their choices clearly through reflective communication and collaborative practice.
- utilize expressive and experiential methods of visual art to promote the well-being of individuals and communities.

[Official course record: 406064A](#)

406065A | Arts and Crafts Education II: Handicrafts and Music

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Paula Rönkkö

Content

The study module in Handicrafts comprises the following contents:

- the most common materials (eg wood, cotton, wool and electricity) required in the crafts of primary education
- use of hand tools, machinery and equipment
- work safety
- the content of the national handicraft curriculum

The study module in music comprises the following contents:

- concepts and notations in music
- musical collaboration, interaction and creativity
- basic techniques and pedagogical uses of instruments used in schools

Learning outcomes

Having completed the course, the student is able to:

- describe the steps of an entire craft process
- make decisions and apply ethically sustainable choices related to artisanal expression, design and technology
- guide pupils to understand concepts of music making use of various working methods in music
- consider the contents of the national music curriculum
- is able to apply analytical and creative thinking skills in their work

Official course record: 406065A

406066A | Arts and Crafts Education III: Music and Physical Education

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Paula Rönkkö

Content

The study module in physical education comprises the following contents:

- the curriculum and the process of teaching physical education: physical education = education for exercise and education by means of exercise
- observation and solution making skills in nature
- apparatus handling and exercises with observation and solution making skills outdoors

The study module in music comprises the following contents:

- proper voice control and expression is practiced through singing, talking and playful exercises, with an introduction to the pedagogy of teaching songs
- basic techniques and various pedagogical uses of instruments used in schools
- an introduction to notation
- development of the understanding of a child's musical and bodily expression and concepts making use of various working methods in music

Learning outcomes

Having completed the course, the student

- is familiar with various teaching methods and core points in teaching basic motor skills in physical education and knows how to apply them in different learning environments
- is able to plan for teaching in music and physical education in grades 0-6.
- is able to guide a child in natural voice control and singing and to develop the skill of playing body, rhythm, melody and chord instruments as a member of a music playing group
- is able to use concepts and notations of music in the context of listening to and playing music.
- is able to apply skills in well-being and self-development in their work

Official course record: 406066A

406067A | Arts and Crafts Education IV: Handicrafts and Music

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Juha-Matti Turpeinen

Content

The study module in Handicraft comprises the following contents:

- use and teaching of handicraft tools, machine tools and equipment for primary school handicrafts
- work safety
- planning, implementing and evaluating handicraft education; and product design basics
- National curriculum basics

The study module in music comprises the following contents:

- various functional working methods in listening education
- basic techniques and pedagogical uses of instruments used in schools
- collaborative learning assignment

Learning outcomes

Having completed the course, the student:

- Understands the importance of a holistic design process and is able to apply it in one's own work
- Use a variety of materials, tools, and techniques in a purposeful and expedient manner in their own work.
- is able to examine different methods of teaching handicraft
- is able to apply craft-specific knowledge acquisition, working, manufacturing and evaluation methods
- is able to implement creative musical activities, in which a basis is established through various musical working methods for consistently accumulating experiences and knowledge of music

Generic skills

Music: can apply analytical and creative thinking skills in their work

Handicraft:

In the course, the student independently identifies critical and creative thinking skills and can apply them to the assessment of knowledge in the subject area and problem solving.

The student's goal is to independently identify the key factors of their own well-being and self-management, manage the handling of the workload of expert work and be able to develop their own competence and support group learning.

In the course, the student independently identifies the challenges of cultural diversity and stereotypes in the subject area.

The student identifies the dimensions of sustainability in the subject area of the course and is able to act ethically, equally and with respect for different people and environments.

Based on their observations, the student can compare the perspectives of scientific disciplines, identify interdisciplinary opportunities and act constructively in multidisciplinary teams.

The student can communicate clearly, act constructively in a group and use digital applications in the field responsibly.

[Official course record: 406067A](#)

406068A | Arts and Crafts Education V: Visual Arts and Physical Education

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Laura Rahikkala

Content

A common starting point in this course is to develop and apply pedagogical thinking in visual arts and physical education.

Visual arts:

In the course a student develops her/his visual and pedagogical thinking. Also a student ponder her/his personal conception of art and applies various means of visual expression in his/her work.

- visual cultures
- ceramics, building and school graphics
- contemporary art
- final project in visual arts
- creating a unit plan in art

Physical education

- planning and implementation of a teaching episode in physical education
- getting to know the SchoolWell and the School on the Move ideology
- Principles of Move! -national monitoring system
- assessment of the pupil's learning and work in physical education
- balancing, body control and tool handling in the gym and outdoors (on snow/ice)

Learning outcomes

Having completed the course, the student is able to:

- plan for teaching in visual arts and PE in grades 0-6.
- apply and analyze various pedagogical methods in visual arts and PE
- apply various techniques and materials in his or her work
- analyze the objectives and contents of the basic education curriculum and apply them when planning and evaluating art teaching.
- understands multicultural and global phenomena in visual arts and is able to guide pupils in examining and producing images in a culturally sensitive manner, taking into account diverse visual traditions, backgrounds, and perspectives.
-

Official course record: [406068A](#)

KE00AS92 | Assessment of adults

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Piia Hyytinen

Content

- Practices and principles of client work in the implementation of psychological and neuropsychological assessment of adults
- Psychological assessment methods suitable for the assessment of adults and their appropriate use and interpretation
- Principles of writing an assessment report and practicing writing a report
- Application of theoretical and scientific knowledge in practical client work
- The course includes practicing client work.

Learning outcomes

The student can

- describe the psychological and neuropsychological assessment process of adults and knows the specifics related to them
- choose and apply standardized assessment methods
- evaluate and interpret information obtained through multiple assessment methods
- communicate in writing the results and conclusions of the assessment including assessment report and summary
- orally communicate the results of the assessment and its conclusions to the clients as well as to multiprofessional colleagues
- prepare assessment-based recommendations for possible follow-up measures such as need for further examinations, treatment and rehabilitation

The course supports the development of the following generic skills:

Additionally the student can...

- reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- identify similarities and differences between their own discipline and related fields, approach other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

[Official course record: KE00AS92](#)

406061A | Bachelor's Level School Experience

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

The theme for this study module is teaching and learning. Themes connected with these are discussed in the practice period and in Pedagogical Seminar II.

The students are working in the school and classroom community in cooperation with other students and supervising teachers. The practice introduces them to different learners and learning problems.

The Bachelor's Level School Experience offers the student a supervised opportunity for practising the basic skills, planning, implementation and assessment of teaching. The student is acquainted with both collaborative and independent planning of both lessons and larger blocks of studies, flexible and situationally conditioned implementation of his/her own teaching, and critical assessment.

The student plans and implements teaching based on the basic education curriculum in collaboration with the supervising teacher and other students. The teaching practice is based on the objectives and contents mentioned in the subject-specific curriculum. The areas of transversal competence mentioned in the curriculum are taken into account in the planning and implementation of teaching.

Learning outcomes

Having completed the course, the student knows how to:

- set learning objectives for him/herself and evaluate their fulfilment.
- plan for and implement target-oriented teaching based on the curriculum and get practice in giving teaching episodes, lessons and courses.
- identify the essential stages of a teaching/learning process and knows how to use various teaching methods in an appropriate manner.
- evaluate a student's teaching/learning process.
- implement and take responsibility for cooperation with various school staff
- identify essential features of the school culture.
- give and receive a variety of feedback, which is based on research knowledge.
- analyze, report and evaluate his/her own and others' activities as a teacher.

Official course record: [406061A](#)

407045A | Bachelor's Thesis

10 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Tapio Tenhu

Content

- presentation of research plan
- carrying out the research
- writing a research report
- evaluating a study
- writing a maturity test
- analytical and critical examination of research

Learning outcomes

Having completed the course, the student

- knows how to define a research problem
- knows how to compose a research plan on the topic of his or her thesis
- identify the key skills of analytical, critical and creative thinking related to research and be able to observe them in their own activities
- identify and describe the importance of analytical, critical, ethical and creative thinking in scientific activities
- is able to critically evaluate knowledge in their field and apply it to solving research problems
- knows how to use literature on his or her own research topic to provide a theoretical scrutiny of the topic
- is familiar with the basics of scientific writing and knows how to apply them to write his or her thesis
- knows how to compose a Bachelor's degree
- knows how to act as an opponent to the Bachelor's thesis written by another student

Official course record: [407045A](#)

412081A | Bachelor's Thesis in Psychology

10 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Kiema-Junes, Pauli Sitomaniemi, Nina Kullberg, Sofia Pihlaja, Piia Hyytinen

Content

The bachelor's thesis is a scientific dissertation. The student writes a bachelor's thesis on a topic of their choice. In his / her work, the student answers a research question he / she has set on the basis of previous research.

In contact teaching related to the bachelor's thesis, the basics of dissertation preparation are guided. In contact teaching, e.g. the choice of topic, the structural and formal aspects of the dissertation, the use of scientific language, scientific writing as a process, and any challenges related to the process, as well as good scientific practice. Contact teaching includes both lecturing and seminar work.

The thesis will be primarily written as systematic literature review, but if agreed, the thesis can include small empirical study.

Learning outcomes

- The student is able to write critical scientific writing and discussion.
- The student understands the stages of conducting and reporting research (research question, theoretical and empirical background of the research, acquisition and analysis of material, reporting of results, reflection and conclusions).
- The student understands basic principles of systematic literature review and is able to conduct systematic review
- The student is able to work constructively in community, developing his / her own and other students' scientific thinking.
- The student becomes acquainted with scientific and professional sources of information in his / her field and is able to search for information from them in a planned manner.
- The student is able to evaluate and use information sources as part of the thesis.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: 412081A

407041A | Basic Course in Qualitative Research

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Suvi Pihkala

Content

- the main stages and process of qualitative research
- scientific information retrieval
- different approaches to qualitative research
- theories and concepts in qualitative research
- methods of collecting and analyzing research material in qualitative research
- research ethics

Learning outcomes

Having completed the course, the student understands the main stages of the research process, and student knows how to:

- identify the various philosophical foundations of qualitative research
- define the basic traits in the approaches and methods of qualitative research
- identify methods of retrieving scientific information, generating research data and analyzing it
- apply this knowledge in planning a qualitative research
- evaluate and interpret critically qualitative studies

[Official course record: 407041A](#)

407040A | Basic Course in Quantitative Research

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Jouni Peltonen

Content

- starting-points of quantitative research and the main stages of the research process
- reliability of quantitative research
- representation of a one- and two-dimensional empirical distribution
- basics of statistical reasoning
- estimation
- statistical testings

Learning outcomes

Having completed the course, the student knows how to

- describe and analyze the foundations of quantitative research in the philosophy of science, its characteristics, and the main stages in the progress of a research process
- plan and implement the main stages of a simple quantitative study
- evaluate and interpret quantitative studies conducted by others

[Official course record: 407040A](#)

402106P | Basic Course in Special Education

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Marika Loukusa

Content

- Some history of special education
- Ideologies, values and principles underlying special education
- Views of the essence, dissimilarity and diversity of man
- Special education and close sciences
- Support for learning and school attendance, as well as care, teaching and rehabilitation at general level
- Familiarization with the field, target groups and practices of special education

Learning outcomes

After completing the course, the student is able:

- to describe the past trends in the Finnish special education
- to identify and analyze special pedagogical common values and different forms of disability
- to recognize the different forms of educational support, related regulations and laws, and pedagogical documents
- to view special education in practice
- recognize the dimensions of sustainability (social, ecological, economic, cultural)
- recognize the differences and similarities between their own field of study and related fields

AY402106P | Basic Course in Special Education (OPEN UNI)

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Marika Loukusa

Content

- * Some history of special education
- * Ideologies, values and principles underlying special education
- * Views of the essence, dissimilarity and diversity of man
- * Special education and close sciences
- * Support for learning and school attendance, as well as care, teaching and rehabilitation at general level
- * Familiarization with the field, target groups and practices of special education

Learning outcomes

After completing the course, the student is able to

- * describe past trends of special education
- * describe and analyze key special pedagogical values
- * describe different models of disability
- * recognize the tiers of pedagogical support and related legislation and pedagogical documents
- * look at special pedagogical activities in practice
- * recognize the dimensions of sustainability (social, ecological, economic, cultural)
- * recognize the differences and similarities between their own field of study and related fields

[Official course record: AY402106P](#)

050121A | Basic Practice

5 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- Subject teacher's pedagogical thinking and actions
- General and subject-specific contents of the curriculum
- Encountering learners
- School culture

Learning outcomes

Having completed the study module, the student knows how to

- describe the importance of the subject teacher's pedagogical thinking and actions in educational and teaching situations
- use the general and subject-specific contents of the curriculum in lessons
- develop their interactional skills to meet diverse learners in teaching and learning situations
- recognise the teacher's role in guiding learners to become active actors and build a picture of the school's activities, the subject teacher's work and the school as a working community.

[Official course record: 050121A](#)

406071A | Basics of Art Teaching 1

3 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | English

Person in charge: Matti Lukkari

Content

Contents in the visual arts

- In the visual arts course the student develops her/his visual, didactic and pedagogical thinking by applying various traditions of visual expression
- Visual arts is viewed and various techniques of visual expression are applied in this course from the perspectives of visual culture and the worlds of art.
- The course includes the following contents: drawing and painting, visual design, chromatics and animation.

Learning outcomes

Having completed the course, the student knows how to:

1. recognize essential pedagogical methods teaching the visual arts
2. apply skills of working, data acquisition, interpretation and evaluation typical of visual arts
3. use various materials and techniques in art making
4. consider didactic and pedagogical methods in visual arts
5. apply creative and critical thinking in designing and facilitating pedagogically purposeful art education processes, and to justify their choices clearly through reflective communication and collaborative practice.
6. utilize expressive and experiential methods of visual art to promote the well-being of individuals and communities.

[Official course record: 406071A](#)

406072A | Basics of Art Teaching 2

3 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | English

Person in charge: Matti Lukkari

Content

A common starting point in this course is to develop and apply pedagogical thinking in visual arts.

In the course a student develops her/his visual and pedagogical thinking. Also a student ponder her/his personal conception of art and applies various means of visual expression in his/her work.

- visual cultures
- ceramics, building and school graphics
- contemporary art
- final project in visual arts
- creating a course plan in art

Learning outcomes

Having completed the course, the student is able to:

1. plan for teaching in visual arts in grades 0-6.
2. apply and analyze various pedagogical methods in visual arts.
3. apply various techniques and materials in his or her work
4. analyze the objectives and contents of the basic education curriculum and apply them when planning and evaluating art teaching

[Official course record: 406072A](#)

412183A | Basics of collaborative learning

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Kristiina Mänty

Content

The theoretical foundations of collaborative learning
Definitions of collaborative learning
Individual- and group-level processes in collaborative learning
Collaboration contexts and their research
Collaboration skills
Social interaction that supports learning

Learning outcomes

After completing the course, the student will be able to

identify different definitions of the concept of collaborative learning,
name theoretical perspectives on collaborative learning,
describe collaborative learning processes and the factors that influence their success,
describe phenomena related to multidisciplinary collaborative work, as well as collaborative competencies and their development from a working-life perspective,
apply theoretical knowledge of collaborative learning to practical learning and workplace interaction situations.

The course supports the development of the following generic skills defined by the University of Oulu: communication, interaction, and digital skills, as well as multidisciplinary and interdisciplinary skills.
After completing the course, the student will be able to:

work in multidisciplinary and multi-professional teams and appreciate expertise from different fields
communicate clearly in group settings, listen actively to others, provide constructive feedback, and resolve conflicts in a constructive manner

[Official course record: 412183A](#)

KE00AZ68 | Basics of eco- and environmental psychology

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Nina Kullberg

Content

The course covers e.g. restorative and non-restorative environments, environmental behaviour, mental health impacts of the climate and environmental crisis, climate anxiety, and nature-based interventions.

Learning outcomes

The student can:

- * explain and define basic concepts, central theories and methods in eco- and environmental psychology.
- * recognize and determine ways in which psychologists may apply eco- and environmental psychology knowledge in their work.
- * identify and evaluate psychological questions specific to the context of the climate and environmental crisis.
- * examine their own well-being and self-leadership, identify stressors related to expert work, and make use of self-compassion

[Official course record: KE00AZ68](#)

416004A | Basics of educational administration

2 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Jouni Peltonen

Content

The course aims to give the students the necessary legal proficiency for work as a public servant or in school administration. In addition, the students will gain an understanding of their own rights and obligations and learn how to recognize situations when further information and/or help is necessary. During the course, the students will be introduced with the administration system and public services in terms of set duties and opportunities as defined in legal regulations and norms.

Learning outcomes

Upon completion of the study module, the students

- know the laws and statutes governing educational administration as well as their contents
- know how to apply educational administration legislation into practice at their own level of education
- know how to use the Finlex software

Official course record: 416004A

412070P | Basics of Psychological Research

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

- Psychology as a field of science, and a general idea of research in the field of psychology
- Traditions of psychological science, theory and principles of science
- Basic concepts of psychological research, research designs, the research process, methods and ethics of research
- Basics of scientific psychological thinking

Learning outcomes

The student can:

- describe psychology as a field of science, the scientific traditions of psychology, the theory of psychology as a science, and its position in the field of sciences.
- explain and use the basic concepts related to psychological research.
- explain (i.e. understand) the basis of psychological scientific thinking and the principles of science.
- evaluate psychological scientific research and the methods and procedures used in it on a basic level.
- describe the significance of methodological knowledge in the work of a psychology professional.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

Official course record: 412070P

AY412070P | Basics of psychological research (OPEN UNI)

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

- Psychology as a field of science, and a general idea of research in the field of psychology
- Traditions of psychological science, theory and principles of science
- Basic concepts of psychological research, research designs, the research process, methods and ethics of research
- Basics of scientific psychological thinking

Learning outcomes

The student knows how to:

- describe psychology as a field of science, the scientific traditions of psychology, the theory of psychology as a science, and its position in the field of sciences.
- explain and use the basic concepts related to psychological research.
- explain (i.e. understand) the basis of psychological scientific thinking and the principles of science.
- how to evaluate psychological scientific research and the methods and procedures used in it on a basic level.
- describe the significance of methodological knowledge in the work of a psychology professional. work of specialist in psychology.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

Official course record: AY412070P

KE00AG54 | Basics of Supervised Teaching Practice

5 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Maria Peltola

Content

- * Ohjausosaamisen monipuoliset käsitteet ja käytänteet varhaiskasvatuksen opettajankoulutuksessa
- * Reflektiivisyys sensitiivisen ohjausosaamisen perustana
- * Vertaisoppiminen ohjausosaamisessa
- * Ohjausosaaminen moniammatillisessa tiimityössä
- * Ohjaukseen liittyvien kontekstien, tilojen, paikkojen sekä materiaalien merkitykset ohjausprosessissa
- * Relationalisen ja yhteisöllisen asiantuntijuuden rakentuminen
- * Ohjausmyönteisen toimintakulttuurin johtaminen

Learning outcomes

Upon completion of the course, the student:

- * ymmärtää ohjausosaamiseen liittyvän keskeisen käsitteistön
- * saa valmiuksia tutkimusperustaisen ja reflektiivisen ohjauskäytänteiden suunnitteluun,
- * kehittämiseen ja arviointiin varhaiskasvatuksen opettajankoulutuksessa
- * syventää ohjausosaamistaan sensitiivisestä vuorovaikutuksesta
- * saa valmiuksia ohjausosaamisen kehittävään arviointiin ja kannustavaan palautteen antoon
- * ymmärtää vertaisoppimisen luonteen ja merkityksen ohjausosaamisessa
- * ymmärtää pedagogisen johtamisen roolin myönteisen toimintakulttuurin ja ohjausosaamisen tukena

920005J | Basics of University Pedagogy for Doctoral Researchers

2 ECTS | Education | Post-graduate Studies | English, Finnish

Person in charge: Sonja Lutovac, Mervi Heikkinen

Content

- * Reflective practice, teacher's professional identity and professional development
- * Planning teaching, constructive alignment and student-centered teaching
- * Teaching and assessment methods
- * Supervision as a part of teacher's work
- * Research-teaching nexus
- * Managing student feedback

Learning outcomes

The objective of the course is to support the development of participants' teacher identity, reinforce their interest in teaching and particularly in the student-centered teaching.

Upon the completion of the course, the participants will be able to:

- * plan their teaching according to the principles of aligned and student-centered teaching when setting the learning outcomes, defining the content, choosing teaching methods and assessing learning
- * employ reflection as a tool to develop their own work, and identify and analyze the strengths and areas needing development with respect to their teaching activities
- * self- and peer-assess, and make use of feedback received

Official course record: [920005J](#)

KE00AU66 | Basics of university pedagogy I

5 ECTS | Pedagogical Studies for Teachers | Basic Studies | Finnish, English

Person in charge: Merja Maikkola, Mervi Heikkinen

Content

- teacher's professional identity
- reflection and portfolio supporting one's own work and professional development
- personal teaching philosophy, and key teaching and learning concepts and theories
- planning teaching, constructive alignment and student-centered teaching

Learning outcomes

Upon the completion of the course, the participant will be able to:

- identify and analyze the strengths and areas needing development with respect to themselves as teachers and their teaching
- employ reflection as a tool to develop their own work
- plan their teaching according to the principles of aligned and student-centered teaching when setting the learning outcomes, also the ones related to generic skills, defining the content, choosing the teaching methods and assessing learning
- analyze one's own teaching philosophy in relation to learning and teaching theories
- use portfolio as a tool for one's own professional development as a teacher

Official course record: [KE00AU66](#)

KE00AU67 | Basics of university pedagogy II

5 ECTS | Pedagogical Studies for Teachers | Basic Studies | Finnish, English

Person in charge: Merja Maikkola, Mervi Heikkinen

Content

- laws and regulations defining university as a teaching and learning environment from the viewpoint of teacher's work
- different pedagogical models and methods
- digital pedagogy
- research-based teaching
- guidance of learning and research supervision
- working life skills and connections
- assessment and feedback of learning
- well-being

Learning outcomes

Upon the completion of the course, the participant will be able to:

- use the principles of research-based teaching, different teaching methods, learning environments, digital pedagogies, and working-life skills and connections in the planning, implementation and assessment in a way that supports student learning
- plan the processes of guidance and supervision in a student-centered and context-based way
- plan and implement the assessment of students' learning, execute self- and peer-assessment, and make use of feedback
- analyze the strengths and areas needing development with respect to themselves as teachers and their teaching while supporting student and teacher wellbeing

Official course record: [KE00AU67](#)

412155S | Building competences in the working life

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Anu Kajamaa

Content

The course deals with the conceptual and practical frameworks of competence, moving from the concept of individual skill to distributed expertise and the dynamic capability of the organization. In addition, we will get to know different working life development methods and future needs.

Learning outcomes

The student knows competence development through the concepts of skill, expertise and dynamic capability, and gets to know working life development methods and the future competences needed in the working life.

Official course record: [412155S](#)

442191A | Childhood as a Societal and Cultural Phenomenon

5 ECTS | Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Jaana Juutinen

Content

- Theoretical, methodological and ethical questions in childhood research
- Childhoods in different times and cultures
- Perspectives to children's well-being

Learning outcomes

After completing the course, the student is able:

- to recognise the key concepts of childhood studies and methodological and ethical challenges
- to analyze childhood as a societally and culturally constructed phenomenon
- to analyze her/his conception of childhood
- interpret the elements of children's wellbeing from the perspectives of individual, community and society
- to make analytical conclusions and critically review the material

[Official course record: 442191A](#)

442457A | Children examining environment

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- didactics of early childhood education and preschool mathematics and natural sciences
- pre-mathematical skills, number sense and the development of spatial thinking
- child-oriented research
- environmental education in early childhood education
- STEAM approach

Learning outcomes

knows how to

- plan, implement and evaluate mathematics pedagogy in early childhood education
- identify and be able to explain the key perspectives of science education plan investigative work in early childhood education
- describe the importance of environmental education in early childhood education

[Official course record: 442457A](#)

412115S | Clinical assessment in children and adolescents

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonen, Sofia Pihlaja

Content

- Practices and principles of client work in the implementation of psychological and neuropsychological assessment of children and young people.
- Psychological assessment methods suitable for the assessment of children and young people, as well as their age-appropriate use and interpretation.
- Principles of writing a statement and practicing writing.
- Ethical principles related to the psychologist's client work and working with children and young people, including working with guardians and other social networks.
- Application of theoretical and researched knowledge in practical customer work.
- Practicing client work

Learning outcomes

The student can:

- describe the psychological and neuropsychological assessment process of children and young people and know their special features
- choose and use standardized assessment methods suitable for the development stage
- evaluate and interpret information obtained using different methods
- communicate the results of the assessment in writing, including writing a statement and summary
- verbally communicate assessment results and conclusions drawn from them to clients and their family members and members of the multiprofessional team
- on a general level, describe the goals and contents of rehabilitation and the rehabilitation system

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: 4121155](#)

KE00AZ32 | Clinical Neuropsychology

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Sofia Pihlaja

Content

- * Key empirically validated concepts and approaches in clinical neuropsychology
- * Identification and classification of neuropsychological disorders
- * Basic research and applications related to clinical neuropsychology

Learning outcomes

Student can

- * describe the key empirically validated concepts in clinical neuropsychology
- * apply the knowledge of clinical neuropsychology to classification, evaluation and differential diagnosis of neuropsychological phenomena, disorders and diseases in different age groups
- * describe research topics and methods related to clinical neuropsychology

[Official course record: KE00AZ32](#)

KE00AZ59 | Clinical psychology II: Psychological disorders

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Fatemeh Seifi

Content

The course examines major mental disorders and the psychological processes associated with them. Students become familiar with the principles of diagnostic classification and its use in clinical practice. During the course, students will explore mental disorders, different diagnostic classification systems, the assessment of disorders, and the challenges related to assessment. The course also provides an introduction to psychological case formulation, enabling students to analyse psychological factors relevant to an individual's situation based on theoretical models and research evidence. The aim is that students learn to recognize differences between individuals and diagnostic categories in psychological, cognitive, and social functioning.

Learning outcomes

Upon completing the course, the student is able to:

- describe major mental disorders and their manifestations
- explain psychological processes related to mental disorders
- apply the principles of diagnostic classification and evaluate their appropriate use in clinical practice
- construct a basic psychological case formulation by integrating theory, research evidence, and client specific information
- identify differences between individuals and diagnostic categories in psychological, cognitive, and social functioning

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

Official course record: [KE00AZ59](#)

412106S | Clinical Psychology III

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

From the point of view of clinical work, the student gets to know the most important factors evaluated in individual research theoretically and learns to apply clinical psychology research, theories and approaches to certain psychological disorders. For example, the following disorders/contents are included: schizophrenia, non-organic sleep disorders and gender dysphoria.

Learning outcomes

The student can

- apply clinical psychology theories and research results and describe their practical applications
- describe the assessment of personality factors
- describe disorders in depth and critically evaluate their classification and related factors
- define appropriate research and treatment methods

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: 4121065

412057P | Clinical Psychology: Psychology of Health and Mental Health

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Henri Olkonieni

Content

The course introduces the main psychological and psychiatric approaches to mental health. Students will gain an overview of the prevalence of mental disorders, the factors that contribute to their development, the care system, and methods of intervention. The course also introduces the professional role and competencies of the psychologist in relation to mental health. Students will also be introduced to research issues and methods in clinical psychology.

Learning outcomes

The student will be able to:

- Describe the approaches and basic concepts of clinical psychology.
- Describe the basic concepts and approaches of clinical psychology and psychiatry.
- Describe the classification and prevalence of mental disorders.
- Identify critical stages and events in the life cycle related to mental health.
- Describe interventions used to promote mental health.
- Understand the specialist role of the psychologist in social and health care.
- Understand the basic methods of scientific research and issues related to the reliability of mental health data.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student is able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: 412057P](#)

AY412057P | Clinical Psychology: Psychology of Health and Mental Health (OPEN UNI)

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Henri Olkonieni

Content

The course introduces the main psychological and psychiatric approaches to mental health. Students will gain an overview of the prevalence of mental disorders, the factors that contribute to their development, the care system, and methods of intervention. The course also introduces the professional role and competencies of the psychologist in relation to mental health. Students will also be introduced to research issues and methods in clinical psychology.

Learning outcomes

The student will be able to:

- Describe the approaches and basic concepts of clinical psychology.
- Describe the basic concepts and approaches of clinical psychology and psychiatry.
- Describe the classification and prevalence of mental disorders.
- Identify critical stages and events in the life cycle related to mental health.
- Describe interventions used to promote mental health.
- Understand the specialist role of the psychologist in social and health care.
- Understand the basic methods of scientific research and issues related to the reliability of mental health data.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student is able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [AY412057P](#)

KE00AE97 | Cognitive and Neuropsychology I

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Henri Olkonieni

Content

This course introduces the student to the basics of human information processing. The course covers the key theories and concepts of cognitive psychology and the basic cognitive processes. The student will also learn about the structure and functions of the nervous and sensory systems, and the consequences of brain damage. The course also introduces the student to the most common research methods used in the study of cognitive and neurological processes.

The following topics are covered:

- * Basic cognitive processes, such as perception, attention, and memory
- * Structure and development of the nervous system
- * Functions of the nervous and sensory systems
- * Cognitive and neuropsychological research and research methods

Learning outcomes

After the course, the student is able to:

- * Explain the key concepts and theories in the fields of cognitive and neuropsychology
- * Define the key structures and developmental phases of the nervous system
- * Describe the basic functions of the nervous system and the sensory system
- * Identify the most common research methods in the fields of cognitive and neuropsychology

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student is able to give and receive feedback, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AE97](#)

AY00AL78 | Cognitive and Neuropsychology I (OPEN UNI)

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Henri Olkonieni

Content

This course introduces the student to the basics of human information processing. The course covers the key theories and concepts of cognitive psychology and the basic cognitive processes. The student will also learn about the structure and functions of the nervous and sensory systems, and the consequences of brain damage. The course also introduces the student to the most common research methods used in the study of cognitive and neurological processes.

The following topics are covered:

- * Basic cognitive processes, such as perception, attention, and memory
- * The structure and development of the nervous system
- * The functions of the nervous and sensory systems
- * Cognitive and neuropsychological research and research methods

Learning outcomes

After the course, the student is able to:

- * Explain the key concepts and theories in the fields of cognitive and neuropsychology
- * Define the key structures and developmental phases of the nervous system
- * Describe the basic functions of the nervous system and the sensory system
- * Identify the most common research methods in the fields of cognitive and neuropsychology

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student is able to give and receive feedback, and develop their communication, interaction, and multiliteracy skills.

Official course record: [AY00AL78](#)

KE00AK21 | Cognitive neuroscience

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Juha Salmitaival

Content

In this course, the student will acquire deeper insight and knowledge (compared to the basic studies course) of neural mechanisms of cognitive processes and methods for studying them. The cognitive processes covered include, for example, perception, language, memory and learning, attention, executive function, and emotion. The course also covers topics related to brain damage and neurological disorders. In addition, the student will be introduced to current research topics in the field of cognitive neuroscience.

Learning outcomes

- * The student can describe, compare, and explain cognitive processes and brain mechanisms related to them
- * The student can evaluate and compare the key research methods of cognitive neuroscience
- * The student can describe research topics in the field of cognitive neuroscience
- * The student can identify common neurological disorders

Official course record: [KE00AK21](#)

KE00AT73 | Collaborative intercultural education project

5 ECTS | Education | Advanced Studies | English

Person in charge: Katri Jokikokko

Content

- active participation in a collaborative project in a multicultural context
- different theoretical concepts and approaches in the field of intercultural communication, education, social justice and sustainability.
- planning a collaborative project
- educators as change agents

Learning outcomes

- take an active role in planning of and participating in a collaborative project in a multicultural context
- identify and discuss theoretical concepts and phenomena related to the project
- analyze one's own possibilities to contribute to social justice/equity/sustainability
- analyze one's competences to work in a multicultural setting

Official course record: [KE00AT73](#)

KE00AU77 | Collaborative Problem Solving in Interdisciplinary Settings

5 ECTS | Educational Technology, Education | Advanced Studies | English

Person in charge: Riikka Tumelius

Content

- Collaborative problem-solving and open problems in authentic working life case
- Adaptive expertise and teamwork in interdisciplinary settings
- Pedagogical and technological design in working life
- Current topics in working life related to learning sciences
- Development of working life competencies and career planning

The course supports the development of the following generic skills defined by the University of Oulu: Analytical, critical and creative thinking skills; Well-being, and self-development skills; International and multicultural skills; Sustainability, responsibility and ethics skills; Multidisciplinary and interdisciplinary skills; Communication, interaction and digital skills

Learning outcomes

After completion of the course, the student is able to

- Apply the knowledge of learning sciences and modern technology to solve working life challenges
- Define and design open collaborative problem-solving process
- Select and apply relevant technologies in collaborative problem-solving process
- Work efficiently in a multidisciplinary team
- Interpret interdisciplinary educational challenges and current changes in working life

Generic skills

After completion of the course, the student is able to

- apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field
- solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments.
- promote multidisciplinary cooperation and lead multidisciplinary and multiprofessional teams.

Official course record: [KE00AU77](#)

442459A | Collaborative work in a child group as a pedagogic process

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Enni Ylikörkkö

Content

- practical activity in a child group, application of pedagogical methods
- interaction in an educational community (peer interaction in a group of children and in a team, interaction between educator and child)
- teamwork theory
- reflection of one's own professional development as an individual process and as a group process
- thesis work

Learning outcomes

Upon completion of the course, the student will be able to:

- apply a variety of pedagogical methods when instructing a group of children
- analyse and argue for processes of growth and learning from the viewpoint of an individual child and a group of children
- evaluate, argue for and develop both the activities of an educational community and her own abilities as a teacher in early childhood education and care in a team of educators
- identify the key factors related to their own well-being and self-leadership

[Official course record: 442459A](#)

413323S | Computer Supported Collaborative Learning

5 ECTS | Education | Advanced Studies | English

Person in charge: Azusa Nakata

Content

Students will learn the concept of CSCL as a theoretical construct and practical implementation. The course contents are created around key themes of CSCL, such as metacognition, social and cognitive challenges, scripting, and learning analytics. Through the individual study and collaboration work, students will also experience working with people with diverse backgrounds in digital environments and pedagogical intervention for facilitating learning.

Learning outcomes

After completion of this course, the student can:

- define Computer-Supported Collaborative Learning (CSCL) as a research area in learning sciences
- describe conceptual and practical aspects of CSCL research
- apply theoretical principles of collaborative learning in the context of digital learning environments
- explain the role of metacognition, socio-cognitive challenges, scripting and technology in CSCL
- demonstrate their understanding of recent technological developments in the CSCL research and practice, including hybrid human-AI interaction for teaching and learning
- experience inter-institutional and intercultural collaboration using digital communication tools
- use a digital platform (e.g. HowSpace) and design learning activities to facilitate CSCL

The course supports the learning of the following University of Oulu's generic skills: Communication, interaction and digital skills. After this course the student

- is able to communicate as an expert in a manner appropriate to the target audience, including in a foreign language, and to build professional networks
- is able to evaluate the performance of individuals and groups, such as goal attainment, group dynamics, communication, and work atmosphere; is able to provide constructive feedback, guidance, and development suggestions to others, and to lead a team

[Official course record: 413323S](#)

402149S | Cooperation and Professional Interaction

5 ECTS | Special Education, Education | Advanced Studies | Finnish

Person in charge: Riikka Sirkko

Content

- professional interaction
- solution-focusedness
- co-teaching
- pedagogical consultation
- multidisciplinary cooperation

Learning outcomes

After finishing the course the student

- can define the main concepts of the course (multidisciplinary cooperation, pedagogical consultation, co-teaching, solution-focus professional interaction skills)
- can apply the main concepts to the real-life cases about school life and can analyze them critically
- has practiced and got readiness both to participate in multidisciplinary cooperation and plan and evaluate the progress of the cooperation
- has practiced and got readiness for solution-focused professional interaction
- is able to evaluate the performance of individuals and groups, such as goal achievement, group dynamics, communication, and work atmosphere, is able to give constructive feedback, guidance, and development suggestions to others, and lead a team

[Official course record: 4021495](#)

442461A | Cooperation in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Susanna Kinnunen

Content

- theoretical approaches and topical research related to cooperation and interaction in early childhood education
- laws and documents guiding early childhood education guidance and related to cooperation
- interaction relationship and interaction skills in human relations work
- families and parenting
- cooperation with parents and families in different interaction situations in the child's early childhood education path
- child protection in early childhood education and identification of child protection needs
- multiprofessional and multidisciplinary cooperation

Learning outcomes

- the student is familiar with the key theoretical starting points of cooperation and interaction in early childhood education and knows how to apply and develop his/her own way of interaction and cooperation based on them.
- the student is familiar with the laws and documents guiding cooperation in early childhood education
- the student identifies and knows how to analyze the meaning of cooperation as part of the pedagogical processes in early childhood education
- the student reflects on his/her own professional interaction and cooperation skills and becomes aware of the importance of his/her expertise as part of multi-disciplinary cooperation
- the student demonstrates the ability to communicate clearly in group settings, engage in active listening, provide constructive feedback, and manage conflicts in a constructive manner

[Official course record: 442461A](#)

442455A | Craft and Design Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Minna Vastimo

Content

- handicrafts materials and applicable methods from the viewpoint of sustainable development
- techniques, tools and safe working practices in handicrafts
- development of a child's skills in handicrafts
- planning, evaluation and development of pedagogical activities

Learning outcomes

After completing the course, the student

- recognizes the importance of handicrafts and the concept of a holistic craft process as part of a child's development
- knows how to plan, implement, evaluate and develop teaching in handicrafts based on the curricula for early childhood and pre-primary education
- knows how to use handicrafts materials, techniques and tools suitable for early childhood education in a safe and versatile manner
- can describe their skills and develop their own professional identity

[Official course record: 442455A](#)

402336P | Craft culture and applications of technology

5 ECTS | Technical Work, Textile Work | Basic Studies | Finnish

Person in charge: Jouni Karsikas

Content

Craft culture, developmental stages and application of technology

Learning outcomes

Having completed the course, the student

- * identifies the developmental stages of craft culture and technology in different eras
- * understands design and crafts entrepreneurship as part of the surrounding society
- * knows how to explain the implementations of modern technological applications in craft education
- * has adopted more traditional and newer methods of manufacturing multimaterial crafts

Regarding generic competencies

- * identifies critical and creative thinking skills and is able to apply them to problem-solving
- * recognizes the key factors of wellbeing and self-leadership, manages the demands of expert work, and is able to develop their own competence as well as support the learning of a group
- * recognizes cultural diversity and the challenges of stereotypes and is able to act constructively
- * understands the dimensions of sustainability and is able to act ethically, equitably, and with respect for different people and environments
- * is able to communicate clearly to different audiences, collaborate constructively in a group, and use field-specific digital and AI applications responsibly

[Official course record: 402336P](#)

422267A | Creative and performing project

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Katja Sutela

Content

- Project planning, rehearsing and implementation,

Learning outcomes

Having completed the course, the student knows how to:

- use the tools of composition and lyric writing in a pedagogical environment
- apply the basic techniques of improvisation in the areas of music, movement and drama and how to apply them in artistic and pedagogical activities
- design and implement a small-scale musical project involving multi-artistic elements

[Official course record: 422267A](#)

KE00AM83 | Crisis and trauma in children and adults

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

The course focuses on crises and trauma in children and adults. It is conducted in collaboration with Psykonet, involving various Finnish psychology departments. A shared Moodle learning environment for all locations includes video lectures, articles, and learning assignments. The course includes practical training of clinical skills. In small group work, students practice methods suitable for working with relatively functional children and adults experiencing stress symptoms (e.g., self-regulation, regulation of hyper- and hypo-arousal states, and psychoeducation).

Learning outcomes

The student is able to:

- Identify and describe the effects of trauma and crises on a person's mental and physical health.
- Describe methods used in the treatment of trauma and crises and understand their theoretical foundation.
- Utilize exercises in client work that may assist in the treatment of individuals suffering from crises and trauma.
- Recognize risks related to crisis and trauma work (e.g., vicarious traumatization) and apply the exercises learned in the course to regulate their own energy levels and stress.

The course supports the development of the following generic skills:

- The student is able to apply analytical and critical thinking to questions within their own discipline and at the interfaces between disciplines, and to evaluate and produce well-reasoned arguments.
- The student is able to promote their own well-being, manage their own work, and develop their professional identity.
- The student is able to act constructively in situations of uncertainty and discomfort, practice self-compassion, and promote collaborative interaction.
- The student is able to operate in international and multicultural environments and to take their requirements into account in their work.
- The student is able to promote constructive cooperation with people from diverse backgrounds, develop their language skills, and critically examine their own patterns of thinking.
- The student recognizes the key interdependencies of social sustainability within their field and is able to assess the impacts of their field's activities on them.
- The student is able to address ethical issues in their field and justify their actions ethically, taking into account different perspectives and power relations.
- The student is able to apply the methods of their own field and recognize the possibilities and limitations of methods from other fields.
- The student is able to communicate appropriately as an expert to different target audiences, also in a foreign language, and to build professional networks.
- The student is able to utilize and critically evaluate digital solutions and artificial intelligence technologies within their area of expertise, and to recognize their impacts on research, working life, and society.

[Official course record: KE00AM83](#)

KE00AR88 | Critical Perspectives in Comparative Education research

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- * Theoretical debates on research in comparative education
- * Methodologies of comparative education research
- * Implication of knowledge production and power relations in the field of education
- * Political economy of knowledge production
- * Post-/de-colonial turn in comparative education

Learning outcomes

After completion of the course, students are able to:

- * Define the field of comparative educational research with reference to its history, central characteristics and approaches
- * Recognize the possibilities and challenges in comparative research
- * Map theories and methodologies shaping the field
- * Analyse implications in knowledge/power production related to North-South-East-West relations
- * Discuss current themes in debates about futures of comparative education

Official course record: KE00AR88

KE00AV08 | Curriculum, Planning and Evaluation of Education

5 ECTS | Education | Intermediate Studies | English

Person in charge: Veli-Mikko Kauppi

Content

- philosophical and pedagogical principles of curriculum planning and implementation
- recognizing diversity and differentiation in curriculum and assessment
- written, practiced, realized, experienced, assessed and hidden curriculum
- Finnish National Basic Education Core Curriculum as a case example.
- Process of designing school based curriculum and individual education plans (IEPs)

Learning outcomes

Upon completion of the course, the student

- is familiar with the basics of the construction of the national basic education core curriculum and school-specific curricula.
- knows how to analyse the values and goals underlying the curriculum and their connections to society and education policy.
- identifies and knows how to define the various levels and meanings of educational assessment (local, national and international levels; theoretical and practical levels).
- knows how to analyse curriculum development as a collaborative process that develops the entire school community

The course objectives also include the following generic skills of the University of Oulu:

- The student recognizes and can describe the importance of analytical, critical, and creative thinking in scientific, professional, and ethical activities
- The student is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- The student recognizes cultural diversity and the problems associated with stereotypes related to different languages, nationalities, and ethnic groups, and they recognize stereotypical ways of thinking
- The student is able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds
- The student is able to act in an equal and non-discriminatory manner with different people in accordance with professional ethics and good scientific practice, respecting different stakeholders, environments, and values
- The student has the ability to work in multidisciplinary and multi-professional teams and values expertise in different fields

407043A | Curriculum, School Development and Evaluation

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Veli-Mikko Kauppi

Content

- concept of curriculum
- different curriculum theories and approaches
- foundations, levels and methods of assessment
- assessment and education policy

Learning outcomes

Upon completion of the course, the student

- is familiar with the basics of the construction of the national basic education core curriculum and school-specific curricula.
- knows how to analyse the values and goals underlying the curriculum and their connections to society and education policy.
- identifies and knows how to define the various levels and meanings of educational assessment (local, national and international levels; theoretical and practical levels).
- knows how to analyse curriculum development as a collaborative process that develops the entire school community

The course objectives also include the following generic skills of the University of Oulu:

- The student recognizes and can describe the importance of analytical, critical, and creative thinking in scientific, professional, and ethical activities
- The student is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- The student recognizes cultural diversity and the problems associated with stereotypes related to different languages, nationalities, and ethnic groups, and they recognize stereotypical ways of thinking
- The student is able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds
- The student is able to act in an equal and non-discriminatory manner with different people in accordance with professional ethics and good scientific practice, respecting different stakeholders, environments, and values
- The student has the ability to work in multidisciplinary and multi-professional teams and values expertise in different fields

Official course record: 407043A

KE00BC80 | Designing HI solutions

5 ECTS | Educational Psychology, Educational Technology | Advanced Studies | English

Person in charge: Suijing Yang

Content

The course is organised around the following themes:

1. Fundamental concepts, theories, and perspectives on HI.
2. Applications of HI in formal and informal learning contexts.
3. Ethical considerations in HI applications.
4. Design-based research (DBR) and methodologies for HI in learning contexts:
 - Principles of DBR in educational technology
 - Iterative design cycles: problem analysis, requirement definition, stakeholder and user analysis, prototyping strategies and iterative development, and evaluation planning and success criteria.
5. Research and innovation project management:
 - Project/software development life cycle
 - Agile project management
 - Budget planning and management
 - Risk analysis and management
 - Collaborative strategies with multidisciplinary stakeholders

Learning outcomes

Upon successful completion of this course, students will be able to:

1. Explain core concepts, principles, and ethical considerations of Hybrid Intelligence (HI) in learning, teaching, and other educational practices.
2. Investigate the scope and significance of HI, including issues and challenges in teaching and learning.
3. Critically analyse and evaluate existing HI applications through theoretical frameworks, empirical evidence, cutting-edge technological developments, and socio-technical perspectives.
4. Apply design-based methodologies, and project management approaches to address contemporary educational technology problems through HI approaches.
5. Design and test evidence-informed HI solutions which augment both human and AI learning for meaningful symbiotic development.
6. Utilise and critically evaluate HI designs and solutions appropriately, safely and responsibly, and to identify their impacts on research, working life and society.
7. Promote multidisciplinary cooperation and work in multidisciplinary and multiprofessional teams.

The course supports the learning of the following University of Oulu's generic skills: Communication, interaction and digital skills. After this course the student

- is able to communicate as an expert in a manner appropriate to the target audience, including in a foreign language, and to build professional networks
- is able to evaluate the performance of individuals and groups, such as goal attainment, group dynamics, communication, and work atmosphere; is able to provide constructive feedback, guidance, and development suggestions to others, and to lead a team

Official course record: KE00BC80

442194A | Developing expertise of early childhood education teacher

10 ECTS | Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Enni Ylikörkkö

Content

- examining and reflecting one's teacherhood individually and in peer group
- expertise of teacher in early childhood education and care in communal and broader social contexts
- comprehensive carrying out of the tasks of the teacher in early childhood education and care utilising diverse pedagogical methods
- participation both in the activities in early childhood education centre's community and external cooperation

Learning outcomes

Having completed the course, the student knows how to

- to analyse and to develop one's own learning objectives and learning process as a teacher in early childhood education and care
- to argue the expertise of teacher in early childhood education and care as a part of the multi-professional community and broader societal context
- to work in the profession of teacher in early childhood education and care goal-oriented, responsibly and comprehensively
- to act as teacher in early childhood education and care paying attention to the points of view which are related to the welfare of an individual and community
- to recognize the UN Sustainable Development Goals

Official course record: [442194A](#)

412054P | Developmental Psychology I

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Pauli Sitomaniemi

Content

The aim of the course is to introduce the student to developmental psychological thinking. This is done by familiarizing student with the basic questions, concepts and key theories of developmental psychology. The student will also be introduced to the most common research methods in developmental psychology and to reporting the research results. The aim of the course is that the student learns to use the concepts of developmental psychology research and theories in understanding and supporting development. After completing the course, the student will have a basic knowledge of the key aspects of psychological development and the factors affecting development at different stages of life.

The following topics will be covered:

- * Key questions and theoretical concepts in developmental psychology
- * Psychological development, areas and stages of development
- * The role of biological, social and cultural factors in development
- * Developmental psychological research settings and methods

Learning outcomes

Upon completion of the course the student will be able to

- * explain, evaluate, and compare the key concepts and theories of developmental psychology
- * name the key aspects of psychological development and the key factors affecting development at different stages of life
- * explain the relationship between individual development through life course and family context, other social environments, and cultural factors
- * identify of the most common research methods in developmental psychology

Furthermore, the course supports the development of the following generic skills:

- * The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.

The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.

Official course record: [412054P](#)

AY412054P | Developmental psychology I (OPEN UNI)

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Pauli Sitomaniemi

Content

The aim of the course is to introduce the student to developmental psychological thinking. This is done by familiarizing student with the basic questions, concepts and key theories of developmental psychology. The student will also be introduced to the most common research methods in developmental psychology and to reporting the research results. The aim of the course is that the student learns to use the concepts of developmental psychology research and theories in understanding and supporting development. After completing the course, the student will have a basic knowledge of the key aspects of psychological development and the factors affecting development at different stages of life. The following topics will be covered:

- * Key questions and theoretical concepts in developmental psychology
- * Psychological development, areas and stages of development
- * The role of biological, social and cultural factors in development
- * Developmental psychological research settings and methods

Learning outcomes

- * The student can explain, evaluate, and compare the key concepts and theories of developmental psychology
- * The student can name the key aspects of psychological development and the key factors affecting development at different stages of life
- * The student can explain the relationship between individual development through life course and family context, other social environments, and cultural factors
- * The student can identify the most common research methods in developmental psychology

In addition, the course supports the development of the following generic skills:

- * The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- * The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.

Official course record: [AY412054P](#)

412059A | Developmental psychology II

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Sofia Pihlaja

Content

This study module covers individual development throughout the lifespan, from childhood to adolescence, adulthood, and aging, based on various theoretical and methodological perspectives. The aim is to understand how factors such as biology and neurology influence, family relationships, other social environments, and cultural factors impact different life stages. The course provides a comprehensive exploration of the effects of these factors on an individual's cognitive, psychosocial, and emotional development, as well as on emotion regulation, attachment relationships, personality, and identity formation. The module also addresses different ways to consider and influence people of various ages and their development by applying knowledge on developmental psychology.

Learning outcomes

The student is able to:

- Describe and critically evaluate key concepts and theories in developmental psychology.
- Generalize their knowledge on developmental psychology in different life stages to solve problems related to individual cases.
- Assess practical applications and recommendations based on developmental psychology theories.
- Evaluate and analyze developmental psychology research.
- Communicate their expertise in the field to others.
- Understand the professional competencies related to developmental psychology in healthcare services and other areas of psychology.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: 412059A

KE00AS91 | Developmental Psychology III: Developmental Psychopathology

4 ECTS | Psychology | Advanced Studies | English

Person in charge: Katja Jussila

Content

The student learns about methods, models, and constructs in psychopathological research, knows how to explain and apply seminal and emerging theories, and innovative approaches. Specific content includes transdiagnostic approaches towards neurodevelopmental disorders, early brain and stress response system development, emotion regulation, and the pubertal stress recalibration hypothesis, child maltreatment, trauma, and adverse childhood experiences (ACEs), as well as risk, resilience, and differential susceptibility theory research, and practical implications.

Learning outcomes

The student knows how to describe psychopathology as a field of science with a multilevel and interdisciplinary nature, its scientific theories, assessment and analysis methods as well as seminal and recent studies. The student understands the complex impacts of life stage and sociocultural context on mental health.

Official course record: KE00AS91

KE00AR05 | Didactic seminar

5 ECTS | Pedagogical Studies for Teachers | | Finnish, English

Person in charge: Mervi Heikkinen, Sonja Lutovac

Content

- University pedagogy research
- Qualitative and/or quantitative methods of data analysis
- Interpreting and reporting empirical results
- Academic writing and publishing of educational research

Learning outcomes

Upon the completion of the course, participants will be able to:

- utilize pedagogical research in developing and researching one's own teaching
- apply qualitative and/or quantitative methods of analysis in researching one's own teaching
- apply practices of academic writing and publishing in educational research
- draft an empirical research article addressing a pedagogical challenge

Official course record: [KE00AR05](#)

416010A | Didactics and school pedagogy

5 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Jouni Peltonen

Content

planning of teaching and curricula
teaching methods, activation, motivation
evaluation

The viewpoint of adult education is emphasized with all the contents mentioned above are

Learning outcomes

Having completed the course, the student

- knows how to produce curricula instead of master plans, period plans and teaching session plans
- knows how to use the most common teaching methods, evaluate their strengths and weaknesses and when each method should be used
- knows how to motivate and activate pupils or students
- knows how to use the most common methods of assessment needed in teachers' work

Official course record: [416010A](#)

KE00AV10 | Discussion practice

1 ECTS | Psychology | Other Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

Psychological phenomena, studies and theories.

Learning outcomes

The student knows how to discuss and present arguments about psychological phenomena, studies and theories.

Official course record: [KE00AV10](#)

KE00AQ58 | Diversity in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Riikka Kess

Content

- human rights, equality and social justice in educational communities
- diversity and central concepts related to it: intersectionality, intercultural competence, culture as a dynamic phenomenon, diversity of identity, diversity of gender and sexual diversity, diversity of world views, linguistic diversity, othering, antiracism, superdiversity
- reflection of the student's own diversity, attitudes and abilities to respect diversity
- worldview education in early childhood education
- pedagogical skills to recognize and acknowledge diversity
- unequal practices and mechanisms of othering and tools to deconstruct them

Learning outcomes

After the course, the student is able to:

- define and analyze diversity and the concepts and theories related to diversity
- discuss critically their own values, attitudes and ideas of diversity through language-, culture-, and worldview awareness
- describe the principles of equality, social justice and human rights and responsibilities resulted from them and apply them in educational communities
- analyze the ways diversity affects teacher's work, pedagogical choices and interaction in educational community
- recognize unequal practices and discourses and the mechanisms of othering
- recognize the diversity of cultures and the problem of stereotypical ways of thinking related to different linguistic, national and ethnic groups

Official course record: [KE00AQ58](#)

407048A | Diversity in Education

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Anniina Kettunen

Content

- diversity, equality, equity and social justice in schools
- key concepts related to diversity
- inequalities in school practices and mechanisms of reinsertion
- reflecting on one's own diversity, attitudes and capacities to respect diversity
- diversity in learning materials
- pedagogical skills and applications for recognising and respecting diversity

Learning outcomes

After completing the course, the student will be able to:

- define and differentiate diversity and related concepts and theoretical backgrounds
- apply different pedagogical approaches to diversity in schools
- recognize the diversity of cultures and the problematic nature of stereotypes related to different groups, and recognize stereotypical ways of thinking
- critically examine their values, attitudes and perceptions of diversity
- analyse the impact of diversity on teachers' work, pedagogical choices and school interactions
- identify and influence inequitable practices and discourses and mechanisms of othering in schools
- identify the role of educational materials in representing and addressing diversity

Official course record: [407048A](#)

KE00AM82 | Diversity of gender and sexuality

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Pauli Sitomaniemi

Content

- The course introduces students to gender and sexuality through lectures, written learning materials and learning assignments as personal, experiential and socio-cultural phenomena that take shape within the framework of social practices, norms and power relations.
- Get acquainted with the ways of structuring gender and sexuality using the concept of gender research.
- Familiarize yourself with gender and sexual diversity and their theoretical and practical perspectives.
- Deepen specific issues related to gender and sexual minorities in relation to health and well-being, family and interpersonal relationships, life stages and the need for support.
- Relate the above perspectives to professional encounters in psychological work.
- Course work includes practicing client work.

Learning outcomes

After completing the course, the student is able to

- explain and differentiate gender and sexuality as phenomena that are both experiential and identity-related as well as socio-culturally produced and power-related.
- define and differentiate theoretical perspectives related to gender and sexual diversity and use concepts related to the phenomena.
- identify and assess specific issues related to gender and sexual minorities in relation to health and well-being, close relationships, life stages and the need for support.
- evaluate and relate the above information from the perspective of professional encounters in psychological work.

Furthermore, the course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.

Official course record: [KE00AM82](#)

KE00AT72 | Early childhood education and transitions

3-5 ECTS | Education | Intermediate Studies | English, Finnish

Content

- Theoretical concepts and current pedagogical approaches in early childhood education and multiprofessional collaboration
- The development of early childhood education as a field from the perspective of equity, justice and democracy
- Finnish national curriculum framework from early childhood to primary education
- Multiprofessional collaboration including guardians especially in the transition from early childhood education to basic education.
- Teaching to read and write including learners studying Finnish as a second language (S2)

Learning outcomes

After completing the course, the student is able to

- Identify various theoretical concepts, values and pedagogical approaches to early childhood education and multiprofessional collaboration.
- Discuss the meaning of early years education from the perspective of social justice and democracy
- Identify the core values and features of Finnish national core curriculum for early childhood education and care.
- Recognise transitions from early childhood education and care through pre-primary education to primary education within the national curriculum framework
- Discuss the theoretical and practical foundations and strategies of teaching reading and writing in early years including Finnish as a second language.

Official course record: [KE00AT72](#)

442190A | Early Childhood Special Education and the Challenges of Learning

5 ECTS | Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Riikka Kess

Content

- key concepts of special education and inclusive early childhood education
- documents regulating and guiding early childhood special education
- challenges of growth, development and learning
- support and evaluating the need for support in early childhood special education and preschool education
- multi-professional and multidisciplinary cooperation
- Finnish as a second language (S2)

Learning outcomes

After completing the course, the student:

- has adopted a basic knowledge of the challenges in a child's development and learning and of the various work tasks and actors in the field of early childhood special education
- knows how to analyse the challenges of a child's wellbeing, development and learning from the viewpoints of the individual, environmental factors and interaction
- identifies the needs for support, knows how to give pedagogical support and refer the child to appropriate services
- is capable of cooperation with parents and other parties working with the child
- student is able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds.

Official course record: [442190A](#)

407534P | Economics of Education

5 ECTS | Education in Transition | Basic Studies | English

Person in charge: Audrey Paradis

Content

- Theoretical concepts in the economics of education
- Human and social capital in educational policy and planning
- Screening and signaling models as alternatives to human capital theory
- Productivity and efficiency in economics of education
- Effectiveness and quality factors in education
- Roles of the state and market in education in local and international contexts

Learning outcomes

After completion of the course, students are able to:

- Describe the economic conditions of education in different local and international contexts, including policymaking and society
- Identify and discuss the relationship between economics and education
- Analyze the role of human capital theory and its main alternatives in relation to societal development
- Evaluate efficiency, effectiveness and productivity factors in education
- Analyze the role of the state and market in education in local and global contexts

> Apply analytical & critical thinking appropriately to the discipline, considering interfaces between fields and new knowledge.

> Work in international cooperation; consider international operating environments.

> Communicate as an expert; adapt communication to audience; build networks.

[Official course record: 407534P](#)

413064S | Economics of Education

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Kimmo Kontio

Content

The course familiarizes the student with the theoretical and conceptual ways of the economics of education to view education. It is essential to identify the issues concerning the economic tasks and impacts of education and the economy of the activities of pedagogical institutions in relation to the peculiarities of pedagogical activity, to identify the essential significance of education both from the viewpoint of the economic and social welfare of society and in enabling individual professional and career choices and labour market qualifications. The course offers conceptual-theoretical tools to allow examination of the economic significance of education and economy of pedagogical institutions and development of professional competence, a readiness to evaluate critically and analytically scientific research results in the economics of education, economic decision-making on pedagogical institutions, and international and supranational definitions of education policy.

Learning outcomes

Having completed the course, the student:

knows how to use independently the theoretical concepts of economics of education to analyze the economical dimensions of the activities of pedagogical institutions

is able to participate in theoretical discussion on the economical basis of education

knows how to interpret and evaluate critically economic decision-making on education and national and supranational definitions of educational policy

[Official course record: 413064S](#)

407517P | Education as a Science

5 ECTS | Education | Basic Studies | English

Person in charge: Marika Oikarinen

Content

- Theories and concepts of mainstream educational sciences and intercultural education
- Formal education, informal and non-formal education
- Epistemology: forms of knowledge and knowledge production, cultural impact on knowledge construction
- Teacher's professional development and teacher's identity formation
- Basics of academic writing

Learning outcomes

After completing the course, the student is able to

- Describe the main paradigms and define the basic concepts of educational sciences
- Identify some of the most influential, past and contemporary educational theorists
- Consider the role of practical and theoretical knowledge in teacher's profession
- Apply the acquired knowledge in classroom discussions on international and multicultural learning and teaching contexts
- Read academic texts on education and write a short academic essay
- Compare the differences and similarities between their own field of study and related disciplines
- Critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems.
- Work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds.

Official course record: [407517P](#)

410084P | Education as an Object of Scientific Research

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Katariina Holma

Content

- Orientation to basic studies in educational sciences
- Specific features of scientific knowledge
- Specific features of educational research
- Education as a professional practice and research subject

Learning outcomes

After completing the course, the student

- is able to distinguish basic concepts and approaches in education
- is able to identify the main research areas of educational research
- is able to describe the main traditions and research approaches in education
- is able to apply educational concepts and research findings in describing and analyzing educational practices
- is able to reflect on, articulate, and apply the interaction skills essential for a professional of education as part of their studies
- has developed generic skills such as analytical, critical and creative thinking skills, communication, interaction and digital skills, and skills in well-being and self-development.

Official course record: [410084P](#)

AY410084P | Education as an Object of Scientific Research (OPEN UNI)

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Anniina Leiviskä

Content

- Orientation to basic studies in Educational Sciences
- Specific characteristics of scientific knowledge formation
- Specific characteristics of Educational Sciences
- History of Educational Sciences, key concepts, and theoretical approaches
- Education as a professional practice

Learning outcomes

After completing the course, the students is able to

- identify basic concepts and approaches in education
- identify the main research areas of educational research
- describe the main traditions and research approaches in education
- apply educational concepts and research findings in describing and analyzing educational practices
- reflect on, articulate, and apply the interaction skills essential for a professional of education as part of their studies
- has developed generic skills such as analytical, critical and creative thinking skills, communication, interaction and digital skills, and skills in well being and self development.

Official course record: [AY410084P](#)

411004A | Educational and Cultural Theory

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Ari Kivelä

Content

The course focuses on the basic concepts and principles of modern educational thought and civilisation theory, and examines their effect on the birth of modern educational sciences. The course will also look into their distinctive styles of question formulation and conceptual and theoretical structuring. In addition, the student learns to adopt conceptual tools for use in professional pedagogical activity and in understanding the multiple forms it comes in as well as in critical reflection and development.

Learning outcomes

After completion, the student will be able to identify the basic principles and concepts of educational thought and civilisation theory and their effect on the birth of modern educational sciences. The course will also look into their distinctive styles of question formulation and conceptual and theoretical structuring. In addition, the student learns to adopt conceptual tools for use in professional pedagogical activity and in understanding the multiple forms it comes in as well as in critical reflection and development.

Official course record: [411004A](#)

AY411004A | Educational and cultural theory (OPEN UNI)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Ari Kivelä

Content

The course focuses on the basic concepts and principles of modern educational thought and civilisation theory, and examines their effect on the birth of modern educational sciences. The course will also look into their distinctive styles of question formulation and conceptual and theoretical structuring. In addition, the student learns to adopt conceptual tools for use in professional pedagogical activity and in understanding the multiple forms it comes in as well as in critical reflection and development.

Learning outcomes

After completion, the student will be able to identify the basic principles and concepts of educational thought and civilisation theory and their effect on the birth of modern educational sciences. The course will also look into their distinctive styles of question formulation and conceptual and theoretical structuring. In addition, the student learns to adopt conceptual tools for use in professional pedagogical activity and in understanding the multiple forms it comes in as well as in critical reflection and development.

[Official course record: AY411004A](#)

407520P | Educational Philosophy and Ethics

5 ECTS | Education | Basic Studies | English

Person in charge: Audrey Paradis

Content

Various schools of educational philosophy
Perspectives on global and professional ethics
Educational implications of different approaches to ethical dilemmas in educational contexts

Learning outcomes

- Summarize and contrast central concepts and approaches of educational philosophy
 - Compare international perspectives on ethics
 - Apply concepts related to philosophy and ethics to discuss educational tasks and relationships
 - Describe current educational philosophy while explaining and illustrating approaches to professional ethics
-
- > Identify and describe the importance of analytical/critical/creative thinking in scientific, professional, and ethical activities.
 - > Recognise cultural diversity and the problematic nature of stereotypes related to linguistic, ethnic, or national groups.
 - > Work ethically and equitably with others; understand professional ethics and good scientific practice.
 - > Be open to perspectives from other fields; identify interdisciplinary opportunities.

[Official course record: 407520P](#)

411021A | Educational planning

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

During the course, the students are introduced to the basic concepts and approaches on educational planning. The emphasis is to perceive the traditional educational planning approaches – alternative human resource approaches and social demand approach – and the basics of strategic educational. In addition, the current national and supranational educational challenges are recognized and their impact on educational planning.

Learning outcomes

Having completed the course, the student:

- * perceives the traditional approaches on educational planning and the basics of strategic educational planning at different planning levels.
- * Recognizes the current educational challenges and their impacts on the educational planning.

[Official course record: 411021A](#)

AY00AH75 | Educational planning (AVOIN YO)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

During the course, the students are introduced to the basic concepts and approaches on educational planning. The emphasis is to perceive the traditional educational planning approaches – alternative human resource approaches and social demand approach – and the basics of strategic educational planning. In addition, the current national and supranational educational challenges are recognized and their impact on educational planning.

Learning outcomes

Having completed the course, the student

- * perceives the traditional approaches on educational planning and the basics of strategic educational planning at different planning levels
- * Recognizes the current educational challenges and their impacts on the educational planning.

[Official course record: AY00AH75](#)

411007A | Educational systems

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The course introduces students to the development and current state of the Finnish education system as part of national and international education policy trends from the 19th century to the present day.

Learning outcomes

After completing the course, students will be able to

- understand the historical development of the Finnish education system from the 19th century to the present day
- interpret discussions on education policy and form their own considered views on these topics
- communicate and discuss seminar presentations related to the course content
- develop their professional skills and seek employment in various educational institutions.

[Official course record: 411007A](#)

AY411007A | Educational systems (OPEN UNI)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The course introduces students to the development and current state of the Finnish education system as part of national and international education policy trends from the 19th century to the present day.

Learning outcomes

After completing the course, students will be able to

- understand the historical development of the Finnish education system from the 19th century to the present day
- interpret discussions on education policy and form their own considered views on these topics
- communicate and discuss seminar presentations related to the course content
- develop their professional skills and seek employment in various educational institutions.

Official course record: [AY411007A](#)

418029P | Educational Technology Project

10 ECTS | Educational Technology, Education | Basic Studies | English

Person in charge: Riikka Tumelius

Content

- Basics of project work
- Special characteristics of educational projects
- Designing for technology-mediated teaching and learning
- Pedagogical and technological decisions in authentic educational settings
- Teacher learning and collaboration
- Team work
- Collaborative problem solving
- Working life competencies
- My working life competencies and career planning

The course supports the development of the following generic skills defined by the University of Oulu: Analytical, critical and creative thinking skills; Well-being, and self-development skills; International and multicultural skills; Sustainability, responsibility and ethics skills; Multidisciplinary and interdisciplinary skills; Communication, interaction and digital skills

Learning outcomes

Part 1: Project work (8 ects)

After completion of this part, the student is able to

- Utilize theoretical knowledge of learning sciences in authentic educational challenges.
- Plan, implement and assess an educational technology project
- Design technology-enhanced learning (learning process, course, project, product, model etc.)
- Work efficiently in a team to solve a problem and/or create a learning design.

Part 2: Competence profile (2 ects)

After completion of this part, the student is able to

- Recognize and reflect personal learning in their studies
- Recognize and analyse working life competencies
- Describe the development of personal working life competencies during their studies

Generic skills:

After completion of this part, the student is able to

- work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds
- work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields.

Official course record: [418029P](#)

407077A | Encounters and Interaction by Means of Art

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Minna Myllykangas

Content

Project planning and implementation in small groups using skill- and arts-based educational methods at a school chosen by the group.

Writing the reflective paper.

The student reflects on the observations made during the course, the experiential learning process, and their own professional growth from the perspectives of arts education and the chosen theme.

Learning outcomes

The student

- understands the possibilities offered by art education from the viewpoint of interaction and encountering and knows how to apply them, how to plan and implement, how to document the fulfilment and goals of a project
- is familiar with factors influencing the functioning of a group
- learns to use various emotional and interaction skills, knows how to apply them and understands their meaning for a positive teaching and learning atmosphere and for school satisfaction
- gains insight into the significance of collaboration and his/her own responsible action
- knows how to evaluate the meaning of a project as part of his/her own growth to be a teacher
- knows how to reflect and report on the fulfilment and goals of the project
- knows how to produce an oral presentation/a poster/a multimedia presentation on the themes of the study module for the purposes of a seminar day

After completing the course, the student will be able to:

- apply methods of skill- and arts-based education from the perspectives of interaction and encounters.
- understand the significance of embodiment in the planning of an integrative project.
- plan and implement the execution and objectives of a project.
- identify factors influencing group dynamics, such as body positivity, body neutrality and principles of safe space.
- use various emotional and interaction skills and understand their importance for a positive teaching and learning atmosphere as well as overall school wellbeing.
- analyse the significance of the project as part of their own professional growth as a teacher.
- reflect on and report the implementation and goals of the project.
- understand the themes examined in the course as a whole: multiculturalism, interaction, encounters, community, participation, emotions, embodiment, and interdisciplinary integrative artistic methods.
- apply the given themes in their project.

[Official course record: 407077A](#)

406053A | Environmental Studies I: Living Environment

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Anne Pellikka

Content

- Species identification
- Ecosystems and biodiversity
- Map interpretation and geomedia
- Regional observing and geographical thinking in natural and human geography
- Weather and climate phenomena
- Sectors of health education

Learning outcomes

After completing the course student can:

- explain the meaning of biodiversity of organisms and function of ecosystem
- apply geographical thinking to teaching of natural and human geography phenomena
- analyze different kinds of geomedias and apply them to teaching of geographical contents
- apply different scientific research and observation skills to study nature and close environment
- combine different teaching methods to enhance environmental awareness
- plan and implement teaching which enhances primary school students' health skills
- apply inquiry-based teaching in planning environmental studies lessons
- evaluate primary school pupil's environmental studies knowledge and skills

Official course record: [406053A](#)

406054A | Environmental Studies II: Natural Phenomena in the Environment

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Johanna Havia

Content

Key content areas:

- safety at work
- didactics of physics and chemistry
- concepts and contents of physics and chemistry, g. water cycle, combustion and heat
- basic structures and phenomena of nature
- properties of matter and changes taking place in them
- Environmental studies as an interdisciplinary education

Learning outcomes

Having completed the study module the student knows how to:

- describe the principles of safety at work and take it into account on planning lesson activities
- design and implement teaching in environmental studies in primary school applying experimental work and research skills
- design and implement versatile assessment in environmental studies
- use key concepts of physics and chemistry in primary school
- recognise connections between key concepts of physics and chemistry and basic structures and phenomena in nature
- identify different learning environments in environmental studies
- G4: recognises the dimensions of sustainability and is able to assess the disciplines of environmental studies in relation to them
- G5: recognises the distinctive characteristics of the various disciplines within environmental studies and is able to apply them in a diverse manner

Official course record: [406054A](#)

443194S | Ethical and Political issues in Education

5 ECTS | Early Childhood Education | Advanced Studies | English

Person in charge: Katja Castillo

Content

Key political and ethical concepts and contemporary theories.

Current research from various disciplines as relevant for the ethics and politics of education (e.g., childhood studies, animal studies, environmental humanities)

Learning outcomes

At the end of the course, students will be able to

- know and be able to apply some key concepts and theories in the field of ethics and politics of education.
- show awareness of and think through everyday professional moral dilemmas and why they matter politically
- is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.
- is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments.

Official course record: [4431945](#)

KE00AZ28 | Ethically enabling home-school cooperation

2 ECTS | Education | General Studies | Finnish

Person in charge: Anu Alanko,

Content

I Home-school encounters at individual level

- Respectful communication
- Meeting parents
- Challenging situations

II Home-school cooperation at group level

- Meeting in the classroom / Meeting groups

III Home-school cooperation at school level

- Leadership in home-school cooperation
- An open school culture
- Parental involvement at school

IV Equality

V Ten Steps - a tool for home school cooperation

Learning outcomes

Familiarises oneself with ethically enabling home-school cooperation from the perspectives of individuals, groups, communities and society

Critically analyses home-school cooperation in the teacher's work

Explores equity planning in the context of home school cooperation as part of the teacher's work

Explores tools to strengthen the participation of parents/carers/legal guardians and children in basic education

Gain perspectives on the home as part of the school and as a partner in supporting education and learning

Official course record: [KE00AZ28](#)

406024A | Ethics

2 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Katja Castillo

Content

The study unit consists of teaching didactics in ethics.

The student gets a separate grade and record of completion for the study unit.

Learning outcomes

Having completed the study unit the student is able to

- recognize and understand the basic principles, general goals and values of the curriculum in ethics
- recognize central issues within transversal skills and phenomenon based learning
- recognize the unique characteristics of ethics
- understand and have a good hold of the nature and subject matter of ethics
- apply different teaching methods in varying study environments in line with the unique nature of ethics
- apply principles of evaluation outlined in the curriculum and to assess the place of evaluation in students' learning process and their supervision
- critically evaluate the subject content and underlying values of ethics within the curriculum
- recognizes the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognizes stereotypical ways of thinking
- knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.

Official course record: 406024A

KE00AZ10 | Ethics and privacy of artificial intelligence and learning analytics

1-5 ECTS | Educational Psychology | | English

Person in charge: Egle Gedrimiene

Content

Introduction to AI ethics. Overview of different ethical and privacy issues related to AI and learning analytics use in educational context. Data protection as an important part of privacy. Familiarizing with a critical approach literature to AI and learning analytics. Introduction to students' agency and AI literacy. Individual and group work on assignment. Critical evaluation of selected AI tools in educational context.

Learning outcomes

After the course student:

- * Is aware of key ethical and privacy issues of artificial intelligence (AI) and learning analytics.
- * Can critically review AI and learning analytics applications in educational contexts from ethical and privacy perspectives and recognize risks and challenges.
- * Knows different approaches to privacy and its importance for individual and society.
- * Can reflect the benefits, challenges and risks of AI and learning analytics in broader educational and societal contexts.
- * Can apply ethical principles and legal frameworks for evaluating AI and learning analytics applications.

Official course record: KE00AZ10

AY00AZ11 | Ethics and privacy of artificial intelligence and learning analytics (OPEN UNI)

1-5 ECTS | Educational Psychology | | English

Person in charge: Egle Gedrimiene

Content

Introduction to AI ethics. Overview of different ethical and privacy issues related to AI and learning analytics use in educational context. Data protection as an important part of privacy. Familiarizing with a critical approach literature to AI and learning analytics. Introduction to students' agency and AI literacy. Individual and group work on assignment. Critical evaluation of selected AI tools in educational context.

Learning outcomes

After the course student:

- * Is aware of key ethical and privacy issues of artificial intelligence (AI) and learning analytics.
- * Can critically review AI and learning analytics applications in educational contexts from ethical and privacy perspectives and recognize risks and challenges.
- * Knows different approaches to privacy and its importance for individual and society.
- * Can reflect the benefits, challenges and risks of AI and learning analytics in broader educational and societal contexts.
- * Can apply ethical principles and legal frameworks for evaluating AI and learning analytics applications.

Official course record: [AY00AZ11](#)

KE00AR86 | Ethics in Educational Contexts

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- Education as an ethical and value-laden activity
- Professional ethics in education
- Key debates in equality, justice, and human rights
- Teaching of ethics
- Ethics in Peace Education and Anti-racism
- Ethics in Intercultural competences and education

Learning outcomes

After completion of the course, students are able to:

- Discuss the multi-dimensional relationships between education and ethics in a global world
- Analyse educational practices and societal changes from ethical perspectives
- Critically examine issues in global ethics, including human rights, equity and peace
- Discuss the role of international organisations, forums and global agendas in ethics and education
- Recognize possible tensions between common ethical principles and respecting various cultural traditions

Official course record: [KE00AR86](#)

402339P | Experimental and innovative handicrafts

5 ECTS | Technical Work, Textile Work | Basic Studies | Finnish

Person in charge: Leena Hartikka

Content

Integration of different areas of technology in handicrafts

Learning outcomes

Having completed the course, the student

- * identifies the learning of handicrafts from the pupils' point of view
- * knows how to plan, implement, document and evaluate different methods and working practices with due consideration of pedagogy in handicrafts
- * is capable of independent data acquisition, development of ideas and experimental application
- * knows how to integrate the contents of different areas of technology in handicrafts
- * Is able to use critical and creative problem solving skills.
- * identify the principles of well-being and self-management and develop their own and the group's competence.
- * can work according to the principles of ethics and sustainability.
- * communicates clearly, works collaboratively, and uses digital and artificial intelligence applications responsibly.
- * is able to document his/her own ideation, design and manufacturing processes and reflect on his/her work and learning

Official course record: 402339P

402732P | Experimental natural science

5 ECTS | Education, Educational Technology, Environmental Studies and Technology | Basic Studies | Finnish

Person in charge: Sari Harmoinen

Content

- Experimental science in primary schools or kindergarten
- Inquiry learning and inquiry skills
- Assessment in experimental work
- Different learning contexts and environments: e.g. Science center Tietomaa and/or botanical garden Oulu
- Technologies in science and computational science

Learning outcomes

After completion of this course, the student is able to:

- Define central properties and concepts in experimental science
- Choose laboratory work and demonstrations which can be used in primary education
- Design and implement STEAM teaching
- Use different learning environments, tools and applications in experimental science
- Use research skills in approaching the science phenomena
- The student recognises the skills of critical and creative thinking and is able to apply them in pedagogical planning.

Official course record: 402732P

412075A | Experimental Psychology

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Henri Olkonieni

Content

The course covers the following topics:

- * Experimental research as part of scientific research
- * Principles and requirements of experimental research settings
- * Features of the structure of scientific reports and critical examination of reports

Learning outcomes

Upon completion of the course the student will be able to

- * Describe the basic principles of an experimental study and scientific reporting
- * Describe how to design a scientific experiment
- * Collect and analyze data under guidance
- * Write a limited scientific report based on the results

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [412075A](#)

KE00BA88 | Expert in the field of special education

5 ECTS | Professional Studies in Special Education, Special Education | Intermediate Studies | Finnish

Person in charge: Elina Viljamaa

Content

- the key principles of instruction based on areas of functioning and of the extended compulsory education in early years
 - differentiation of instruction
 - studying according to broader competence areas and deviations from the general syllabus
- the expertise of early childhood and special education teachers as part of professional, multiprofessional and multidisciplinary collaboration
- self-leadership and managing one's own work
 - legislation and professional guiding documents, group- and student-specific support, and pedagogical documentation from the point of view of multidisciplinary collaboration

Learning outcomes

After completing the course, the student

- is able to evaluate professionalism and develop the work community from the perspectives of equality and equity
- is able to explain the significance of individual and communal student welfare as part of early childhood, pre-primary and basic education
- is able to explain the importance of multiprofessional collaboration
- is able to plan, implement and assess support for learning and schooling / support for growth and learning as part of early childhood, pre-primary and basic education

Official course record: [KE00BA88](#)

402120A | Expertise in Special Education

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Riikka Sirkko

Content

- the teacher's professional identity
- professional ethics of a special education teacher
- expertise in special education as part of professional, multi-professional and multidisciplinary cooperation
- group and student-specific support and pedagogical writing
- multidisciplinary cooperation
- lifelong learning

Learning outcomes

Having completed the course, the student knows how to

- reflect on working as a teacher on a professional ethical basis
- evaluate professionalism and develop the work community from the viewpoint of equality
- describe the expertise of his/her own profession in (multi)professional and multidisciplinary cooperation
- plan for, implement and evaluate schooling and learning support as part of preprimary and primary education
- describe their competence in well-being and self-development skills, develop their own professional identity and recognize the need for lifelong learning
- recognize and be able to describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities
- knows how to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds

Official course record: [402120A](#)

KE00AJ75 | Expertise in Working Life

10 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Outi Ylitapio-Mäntylä

Content

Identification of own expertise and professional interests and areas of strength.

Applying for a place of work and practical arrangements.

Getting familiar with the theoretical background and practical implementation of the expertise required by the place of work.

Learning outcomes

The student expands and deepens his/her own competence and expertise.

The student is familiar with the theoretical basis of the field of his/her choice and is able to apply and evaluate them .

The student recognizes and strengthens their own networks and understands their importance in expert work.

The student is able to promote constructive cooperation with people from different backgrounds and is able to challenge their own stereotypical ways of thinking.

Official course record: [KE00AJ75](#)

407541A | Finnish Education and Pedagogy

5 ECTS | Education | Intermediate Studies | English

Person in charge: Katri Jokikokko

Content

- * Key features of the Finnish education system
- * Curriculum as a guiding document: values, aims, contents, assessment
- * Pedagogy in Finnish schools
- * Teachers' duties and position, students' rights in Finland
- * Teacher Education in Finland

Learning outcomes

On completion, students can:

- * Discuss the key features of the Finnish education system, pedagogy and assessment
- * Define the core values, aims and contents of Finnish national curriculum
- * Describe the main characteristics of teacher education and teachers' work in Finland

[Official course record: 407541A](#)

408537S | Finnish Educational Research and Development

5 ECTS | Education | Advanced Studies | English

Person in charge: Katri Jokikokko

Content

- Research conducted at the Faculty of Education
- Educational research in Finland: trends and emerging issues
- National and international influences shaping educational research in Finland

Learning outcomes

The students will be able to:

- Describe the connections between educational research and development in Finland
- Identify main trends and discussions in educational research in Finland
- Brief on the research conducted at the Faculty of Education, University of Oulu

[Official course record: 408537S](#)

KE00AZ33 | Foundations of clinical psychology

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Sofia Pihlaja

Content

- Key empirically validated concepts and approaches in clinical neuropsychology
- Identification and classification of neuropsychological disorders
- Basic research and applications related to clinical neuropsychology

Learning outcomes

Student can

- describe the key empirically validated concepts in clinical neuropsychology
- apply the knowledge of clinical neuropsychology to classification, evaluation and differential diagnosis of neuropsychological phenomena, disorders and diseases in different age groups
- describe research topics and methods related to clinical neuropsychology

The course supports the development of the following generic skills:

- The student is able to identify and critically evaluate key skills related to analytical and critical thinking, understands their importance in scientific, professional, and ethical practice, and applies disciplinary knowledge to solving complex and unpredictable problems.
- The student acts responsibly, equitably, and in accordance with professional ethics in diverse interaction contexts, respecting stakeholders, environments, values, and principles of good scientific practice.
- The student recognizes differences and commonalities between their own discipline and related fields, adopts an open attitude toward expertise from other disciplines, and is able to work constructively in multidisciplinary and interdisciplinary teams.

Official course record: [KE00AZ33](#)

422264A | Free accompaniment 2

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Pietu Halonen

Content

Advance his/her skills as a free accompanist in guitar and piano

Learning outcomes

Having completed the course, the student will be capable of

Piano and guitar:

- using his/her skills in free accompaniment in various styles
- apply his/her skills in harmonization, prima vista and transposition in practice
- put into practice pedagogical approaches in free accompaniment

Official course record: [422264A](#)

412085A | Geropsychology

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Sofia Pihlaja

Content

The significance of the elderly and the position in current society, the phenomena of psychological ageing, the psychological well-being and mental health among elderly, cognitive ageing, ageing and illness

Learning outcomes

The student can

- describe ageing and widely describe psychological phenomena and changes related to ageing
- identify and describe the psychological, physical, and social factors associated with psychological well-being of an elderly
- identify the mental disorders among the elderly and describe their treatment
- identify and describe cognitive ageing, the different shapes of it and factors related to them

The course supports the development of the following generic skills:

- recognize and evaluate the key skills of analytical, critical, and creative thinking, understand their relevance in scientific, professional, and ethical contexts, and apply disciplinary knowledge to solve complex and unpredictable problems.

[Official course record: 412085A](#)

408535S | Global Education Development

5 ECTS | Education in Transition | Advanced Studies | English

Person in charge: Marika Oikarinen

Content

- * Education development globally: education as one of the sustainable development goals (SDG4), education policies, trends, challenges, and international cooperation
- * Global coloniality and approaching education through the decolonial option
- * Using decoloniality to review research in education development, education in sustainability and development education
- * Connections between local, national, and global education development.

Learning outcomes

After completing the course, the student will be able to

- * Recognize the various perspectives on global education development
- * Reflect on education development using the decolonial framework
- * Discuss and compare data on SDG 4 to demonstrate a nuanced understanding of trends, challenges, and issues related to education development in diverse contexts
- * Explore key global education development policy documents to recognize and analyze the role of organizations and different stakeholders at global, national, and local levels
- * Develop analytical and research skills to reflect on SDG 4 and education development globally
- * Demonstrate collaborative learning and critical thinking to explore decolonial options in global education development

[Official course record: 408535S](#)

442460A | Growth and Development in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Maria Peltola

Content

- * dynamics and processes of development and agency in early childhood
- * emotion regulation and its support in the everyday life of early childhood education
- * the child's language development, interaction and the role of the educator, literature, play, and literary art as part of a child's language development

Learning outcomes

Upon completion of the course, the student is able to:

- * recognize and analyze the dynamics and possibilities of child development and children's agency by integrating theoretical knowledge with practical examples
- * support the development of children's emotion regulation skills in daily practices in early childhood education
- * describe the stages of children's language development and support the development of children's language skills at different ages
- * understand the role of emotion regulation, language, interaction, and the learning environment in child's holistic development
- * communicate clearly in group settings, actively listen to others, provide constructive feedback, and resolve conflicts

[Official course record: 442460A](#)

AY410085P | Growth, Development and Learning (OPEN UNI)

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Anni Silvola

Content

- Individual growth, development and learning in the context of human development, cultural-historical environment, daily life and work
- The principal tasks of educational psychology as applied, new knowledge generating, and critical science
- Research traditions, main concepts and research approaches in educational psychology
- The professional applications in supporting growth

Learning outcomes

After completing the course, the students is able to

- Define and analyse learning from the perspectives of educational psychology and research on learning
- Identify the most prominent paradigms and tasks in educational psychology
- Apply acquired knowledge of psychological trends and theories in classroom discussions considering different learning and teaching environments
- Compare different perspectives of educational psychology focusing on age- and culture-specific aspects in education and upbringing
- Reflect on own practices as a learner, student and a teacher based on knowledge in educational psychology, both as an individual, and as a member of a group.

Generic competencies of the University of Oulu in this course

Analytical, critical, and creative thinking skills

- is able to identify the key skills of analytical, critical, and creative thinking, and can observe these skills in their own actions.

Wellbeing and self-development skills

- is able to identify the key components related to their own wellbeing and self-leadership.

Communication, interaction, and digital Skills

- is able to communicate clearly in a group, listen actively to others, give constructive feedback, and resolve conflicts constructively.

[Official course record: AY410085P](#)

410085P | Growth, Development, and Learning

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Hanni Muukkonen-van der Meer

Content

- Individual growth, development and learning in the context of human development, cultural-historical environment, daily life and work
- The principal tasks of educational psychology as applied, new knowledge generating, and critical science
- Research traditions, main concepts, and research approaches in educational psychology
- The professional applications in supporting growth

Learning outcomes

After completing the course, the students is able to

- Define and analyse learning from the perspectives of educational psychology and research on learning
- Identify the most prominent paradigms and tasks in educational psychology
- Apply acquired knowledge of psychological trends and theories in classroom discussions considering different learning and teaching environments
- Compare different perspectives of educational psychology focusing on age- and culture-specific aspects in education and upbringing
- Reflect on own practices as a learner, student and a teacher based on knowledge in educational psychology, both as an individual, and as a member of a group.

Generic competencies of the University of Oulu in this course

Analytical, critical, and creative thinking skills

- is able to identify the key skills of analytical, critical, and creative thinking, and can observe these skills in their own actions.

Wellbeing and self-development skills

- is able to identify the key components related to their own wellbeing and self-leadership.

Communication, interaction, and digital Skills

- is able to communicate clearly in a group, listen actively to others, give constructive feedback, and resolve conflicts constructively.

Official course record: 410085P

443196S | Guidance and mentoring in educational communities

5 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Outi Ylitapio-Mäntylä

Content

- Key concepts, approaches and methods of supervision
- Interaction in supervision
- Ethical questions in supervision
- Mentoring

Learning outcomes

Upon completion of the course, the student will be able to:

- Know the key concepts, theoretical approaches and methods of supervision
- Apply supervision approaches and methods in supervising individuals and groups in educational communities
- Analyze and develop her/his own actions as a supervisor
- Evaluate the performance of individuals and groups, such as goal achievement, group dynamics, communication, and work atmosphere;
- Provide constructive feedback, guidance, and development suggestions to others; and able to lead a team

Official course record: 443196S

KE00BB70 | Guidance of discussion practice

2-3 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

The student gets familiar with the basic principles in group facilitation

Students work as a facilitator in group discussions

Learning outcomes

- The students perceives the role of group dynamics for group work
- The student understands the basic principles in group facilitation
- The student can facilitate groups and group discussions

The course supports the development of the following generic skills:

- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: KE00BB70](#)

KE00BB71 | Guidance of discussion practice

2-3 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

- The key principles of group dynamics
- The concept of group phenomena
- Group leadership and different leadership styles
- The essential principles of facilitation and chairing

Learning outcomes

The student can:

- Understand the key factors of group dynamics and their significance for group functioning
- Identify various methods for leading and facilitating groups, and evaluate and apply them in different group situations
- Perceive the essential principles of facilitation and chairing
- Plan and carry out a group session using appropriate facilitation and guidance methods

The course supports the development of the following generic skills:

- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills

[Official course record: KE00BB71](#)

412185A | Guiding and supporting collaborative learning

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Riikka Tumelius

Content

- Collaborative learning process and its phases
- Planning, guidance, and evaluation of the collaborative learning process
- Collaborative learning environments
- Roles in guiding and participating in collaborative learning
- Guidance and support for interaction in collaborative learning

Learning outcomes

After completing the course, the student will be able to

- apply theoretical principles and fundamentals of research on collaborative learning and guidance in the design of collaborative learning environments and processes.
- plan, implement, and evaluate collaborative learning processes in various learning environments.
- act in various roles when participating in and guiding collaborative learning processes.

Generic skills

After completion of the course the student is able to

- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [412185A](#)

KE00AJ18 | History and Social Studies

3 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Ainur Elmgren

Content

The course focuses on teaching history and social studies in grades 4–6 of basic education and on the general principles of these subjects.

The course introduces the objectives of history and social studies in the basic education curriculum and the special features of these subjects in basic education, and familiarizes students with the significance of both subjects as part of civic and democratic education in schools. The exercises introduce teaching methods and involve the creation of learning assignments in accordance with the principles of inquiry-based learning. Both history and social studies teaching encourage the use of experiential and active working methods. Students practice their historical and civic literacy and the assessment of subject competences. Students familiarize themselves with research in subject didactics.

****The course emphasizes the following generic skills:****

- Analytical, critical, and creative thinking skills: Students practice subject-specific competences in history and social studies, and understand why these competences are taught and assessed as key objectives in primary school history and social studies education.
- Well-being and self-development skills: Students practice time management and the cooperation and interaction skills needed for expert work during independent study time.
- International and multicultural skills: Students understand that the objective of history in basic education to support the development of pupils' identities also applies to multilingual and multicultural pupils. Students understand the importance of equality and non-discrimination in civic education. Students are encouraged to critically examine the linguistic accessibility of learning materials and the representations of different groups of people, cultures, and eras.
- Sustainability, responsibility, and ethics skills: Students understand that recognizing the dimensions of sustainability (social, ecological, economic, cultural) and ethically evaluating their own and others' actions are part of historical and civic competences.
- Multidisciplinary and interdisciplinary skills: Students recognize the knowledge-based nature of the subjects and understand that both subjects draw on cooperation between several different disciplines.
- Communication, interaction, and digital skills: The course provides practice in communication and multiliteracy skills using a variety of tools and methods, such as presenting in front of a group, active listening, giving feedback, oral and written communication, interpreting and producing visual media, and the responsible use of various digital applications and tools.

Learning outcomes

On completion of the course, the student is able to:

- recognize the subject-specific objectives of history and social studies and the special characteristics of these subjects in basic education
- understand the significance of history and social studies as part of civic and democratic education in schools
- familiarize themselves with research in subject didactics
- prepare learning assignments and teaching modules in accordance with the principles of inquiry-based learning, applying experiential and active working methods as well as the objectives and content of the curriculum
- guide pupils to develop historical and civic literacy, i.e., the ability to read and analyze sources produced by actors in the past and present and to interpret their purpose and significance
- familiarize themselves with the assessment criteria and descriptions of competence levels for the 6th grade academic year assessment and practice applying the assessment criteria of the curriculum
- develop generic skills as part of their training as a teacher in basic education.

Official course record: [KE00AJ18](#)

422285A | History of Music

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Nina Jokela

Content

Familiarization with the developmental phases of western music. Evaluation and development of models for pedagogical action in music history

Learning outcomes

Having completed the study module,

- the student knows how to analyze and compare stylistic features and meanings of western art and popular musics and jazz
- knows how to analyze developmental phases of musics in different periods
- knows how to date and localize the western musics s/he encounters in their cultural contexts
- identifies the main factors that have influenced, and are influential in, each music
- perceives his/her own pedagogical courses of action and his/her possibilities in teaching music history and knows how to apply what s/he has learnt in his/her future work.

[Official course record: 422285A](#)

407518P | Human Development and Learning

5 ECTS | Education | Basic Studies | English

Person in charge: Marika Oikarinen

Content

- Different approaches to human development
- Selected learning theories and their representatives
- Current debates and discussions related to human development and learning

Learning outcomes

After completing the course, the student is able to

- Identify different approaches to the study of human development
- Examine selected learning theories and their representatives
- Discuss different perspectives of learning and development focusing on different dimensions of human diversity
- Is able to communicate clearly in a group, actively listen to others, give constructive feedback and resolve conflicts constructively
- Is able to be open to the perspectives of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field
- Identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities

[Official course record: 407518P](#)

KE00BC77 | Human-AI collaboration and learning analytics

5 ECTS | Education | Advanced Studies | English

Person in charge: Khánh Nguyen

Content

- Core concepts and frameworks for human-AI collaboration in education (e.g., Human-AI Shared Regulation of Learning; Hybrid Intelligence; learner agency).
- Foundations of learning analytics and multimodal learning analytics, including data collection, preprocessing, visualising, interpretation, and responsible data practices.
- Applications of learning analytics for modelling human-AI interaction patterns, collaborative learning processes, and regulation of learning.
- Design and evaluation of AI-enhanced learning environments, such as adaptive feedback systems, AI writing support, speech-based pedagogical agents, and XR-based AI companions.
- Ethical, pedagogical, and societal considerations of learning analytics and human-AI collaboration (e.g., transparency, fairness, explainability, data protection, learner autonomy).

Learning outcomes

Upon successful completion of this course, students will be able to:

- Explain key theories, models, and design paradigms underlying human-AI collaboration in learning and task performance across educational contexts and workplace settings, with particular emphasis on hybrid intelligence and human-AI shared regulation of learning.
- Analyse and interpret (multimodal) learning analytics data, ranging from log-based traces to physiological signals, to understand learners' strategic, cognitive, and socio-emotional processes in learning, including those occurring in AI-mediated learning environments.
- Design and implement evidence-informed pedagogical solutions that leverage human-AI collaboration and learning analytics to enhance learner agency, collaboration, and ethical use of AI.
- Function effectively as learning scientists and educational technologists who can operate in data-rich, AI-supported learning environments and translate analytics insights into pedagogical decision making.

The course supports the learning of the following University of Oulu's generic skills: Communication, interaction and digital skills. After this course the student

- is able to communicate as an expert in a manner appropriate to the target audience, including in a foreign language, and to build professional networks
- is able to utilize and critically evaluate digital solutions and AI technologies within their area of expertise in an appropriate, safe, and responsible manner, and to recognize their impacts on research, working life, and society

Official course record: [KE00BC77](#)

402719P | Image, Form and Representation

5 ECTS | Art | Basic Studies | Finnish

Person in charge: Minna Myllykangas

Content

Methods and tools of photography, graphic and computer graphics.

Learning outcomes

After the course, the student is able to

- use tools of photography, graphic and computer graphics in her/his expression.
- consider image's visual and narrative contents.
- apply the methods of photography, graphic and computer graphics in teaching.
- utilize the possibilities of visual art to promote well-being.

Official course record: [402719P](#)

KE00AT71 | Inclusive Education and Multiprofessional Collaboration

5 ECTS | Education | Intermediate Studies | English

Person in charge: Marika Oikarinen

Content

- Critical, theoretical foundations and historical perspectives to inclusive education.
- Inclusion in education from the perspective of student, teacher, school and society.
- Principles of inclusive pedagogy and inclusive school culture
- Inclusion in relation to social justice
- Multiprofessional collaboration between teachers, with other professionals, such as assistants, special education teachers and families.

Learning outcomes

After completing the course, the student is able to:

- Describe theoretical and historical perspectives related to inclusion in education
- Recognize the importance and value of inclusive education
- Plan inclusive pedagogies
- Know the possibilities of multiprofessional collaboration and recognize its role in implementing inclusive education
- Critically analyse inclusion in education from the perspective of student, teacher, school and society
- Identify and be able to describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities
- Knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.
- Is able to develop their communication, interaction and multi-literacy skills
- Is able to be open to the perspectives of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field

[Official course record: KE00AT71](#)

423276S | Inclusive music education

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Katja Sutela

Content

Basic concepts and perspectives to special education in the context of music education
perspectives to inclusive music education, diversity, equality, and accessibility
possibilities of music education approaches in diverse, inclusive contexts
field studies based on own interest

Learning outcomes

After completing the course, the student will be able to:

- improve the skills and knowledge in inclusive music education
- apply music education approaches in the context of inclusive music education among diverse students
- know the latest research on inclusive music education and the basic concepts of special education.
- know different approaches to inclusive music education (figure notes)
- understand the role of inclusive music education as a part of equal arts education
- is able to work in multidisciplinary collaboration and to integrate and utilise expertise from different fields.

Official course record: [4232765](#)

KE00BB12 | Inquiry and playful child: Finnish and Literary Art

5 ECTS | Preschool and Primary Education | | Finnish

Person in charge: Minna Sääskilahti

Content

- * documents and curricula for pre-primary education and primary education and apply them
- * theoretical models in reading and writing instruction and characteristic features in the development
- * literary art
- * learning environments, material and didactical solutions

Learning outcomes

Having completed the course, the student knows how to:

- * recognize characteristic features and phases in a child's learning
- * apply theoretical models based on a child's learning needs
- * justify own pedagogical reasoning and actions
- * plan and implement study module concerning reading and writing that take a child's learning phases into account in promoting learning

Official course record: [KE00BB12](#)

422277A | Instrument Studies 2

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Nina Jokela

Content

The student deepens their skills as a pianist and singer, practices instrumental pedagogy in piano and vocal teaching, identifies the key factors of well-being and professional growth, and develops their competence and self together with others.

Learning outcomes

Having completed the course, the student is able to

- * apply his/her piano skills and repertoire as both soloist and accompanist
- * apply voice skills and the repertoire in singing as both a soloist and in harmony singing
- * put into practice pedagogical approaches in both piano and voice instruction
- * strengthens their well-being, leads themselves, and develops their competence, identity, and learning together with the group.

Official course record: [422277A](#)

407538A | Intercultural Education and Teaching as Profession

5 ECTS | Education | Intermediate Studies | English

Person in charge: Katri Jokikokko

Content

- Approaches to intercultural education and culturally responsive pedagogy
- Teaching as profession and teachers' professional development
- Teacher wellbeing and how to set boundaries at work
- Written and oral reporting of School Experience (Bachelor's level) teaching practice

Learning outcomes

After completing the course a student:

- knows the main approaches of intercultural education and culturally responsive pedagogy
- can analyse different educational contexts, structures and practices from the perspective of social justice and equity
- can analyse teaching as reflective profession from practical and theoretical viewpoints
- is capable of critically reflecting and reporting one's own professional development and intercultural learning
- can analyse the issues and perspectives related to teacher wellbeing

[Official course record: 407538A](#)

405522Y | Intercultural Education, Social Justice and Sustainability

5 ECTS | Education (Primary Teacher) | General Studies | English

Person in charge: Katri Jokikokko

Content

- Theoretical concepts and approaches related to intercultural education, social justice and sustainability (e.g. culture, diversity, identity, equality, equity and power)
- Current research findings and practices in the field of intercultural education, social justice and sustainability
- Concerns and debates connected to intercultural education, social justice and sustainability in educational practice

Learning outcomes

After completion of the course, students are able to

- Elaborate some basic concepts and dimensions of intercultural education and social justice
- Describe the basic approaches to intercultural education and social justice education
- Identify and analyse the complexities of diversities
- Acknowledge the necessity of sustainability in educational policies and practices
- Describe and critically analyse the interconnectedness of social justice, intercultural education and sustainability in education

[Official course record: 405522Y](#)

408536S | Intercultural Education, Social Justice and Sustainability

5 ECTS | Education in Transition | Advanced Studies | English

Person in charge: Katri Jokikokko

Content

- Theoretical concepts and approaches related to intercultural education, social justice and sustainability (e.g. culture, diversity, identity, equality, equity and power)
- Current research findings and practices in the field of intercultural education, social justice and sustainability
- Concerns and debates connected to intercultural education, social justice and sustainability in educational practice

Learning outcomes

After completion of the course, students are able to

- Elaborate on some basic concepts and dimensions of intercultural education and social justice
- Describe the basic approaches to intercultural education and social justice education
- Identify and analyse the complexities of diversities
- Acknowledge the necessity of sustainability in educational policies and practices
- Describe and critically analyse the interconnectedness of social justice, intercultural education and sustainability in education

Official course record: 408536S

407530P | Internship

5 ECTS | Education for Intercultural Competencies | Basic Studies | English

Person in charge: Katri Jokikokko

Content

Internship period in a relevant setting (e.g. intergovernmental agencies, non-governmental organisations and/or educational institutions in Finland or abroad).

- Work-life relevance and employability
- Professional growth and development
- Combining theory and practice in a working environment
- Internship report

Learning outcomes

- Demonstrate competence in organizing a practice placement independently
- Analyze the learning outcomes, challenges and successes of the internship period
- Develop one's intercultural competences in the field of education
- Design an internship plan and write the internship report
- Consider different career paths and alternatives
- Strengthen one's professional competencies and employability

Official course record: 407530P

408518S | Internship

5 ECTS | Education | Advanced Studies | English

Person in charge: Marika Oikarinen

Content

Internship, work, research or project experience in a relevant setting (e.g. intergovernmental agencies, non-governmental organisations or educational institutions).

Internship may also be a relevant project which needs to be accepted by responsible teacher.

- Work life relevance and employability
- Career planning
- Combining theory and practice in working life
- Ongoing learning and internship portfolio

Learning outcomes

After completing this course students are able to:

- * Recognize own strengths and development areas in the context of professional development
 - * Explore working life considering own competence development and career planning
 - * Define career goals
 - * Apply the general skills required in working life for the given internship tasks (e.g. collaboration, problem solving, and project management)
 - * Reflect and evaluate own working life skills and experiences
 - * Clarify career goals, future career prospects and alternatives
-
- Apply analytical & critical thinking appropriate to discipline, considering interfaces between fields & new knowledge.
 - Promote well being, self-management, professional identity, goal oriented competence.
 - Solve ethical questions with sound reasoning; justify actions ethically considering backgrounds, power, values.
 - Communicate as expert to target audience; build networks.

[Official course record: 4085185](#)

412125S | Internship

30 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

The student completes a five-month internship working in their chosen field of psychology under the supervision of an experienced colleague. The intern becomes familiar with the assessment of individuals or communities, guidance, counseling, and rehabilitation methods, the functioning of service systems, and the ethical foundations and responsibilities of the work. The internship includes several real client situations, multidisciplinary meetings, multiple independently conducted guided intervention or assessment processes, the preparation of reports or similar summaries, as well as delivering presentations or training sessions to other professional groups, thereby practicing how to communicate their specialized expertise to other professions.

Learning outcomes

The student is able to:

- Apply the knowledge and skills acquired during their studies in a professional environment.
- Plan and implement psychological assessments and interventions, as well as write psychological reports.
- Apply legislation, recommendations, and professional ethical principles governing psychological work in their practice.
- Work as a psychologist as part of a multidisciplinary team.

The course supports the development of the following generic skills:

- The student is able to apply analytical and critical thinking to questions within their own discipline and at the interfaces between disciplines, and to evaluate and produce well-reasoned arguments.
- The student is able to promote their own well-being, manage their own work, and develop their professional identity.
- The student is able to act constructively in situations of uncertainty and discomfort, practice self-compassion, and promote collaborative interaction.
- The student is able to operate in international and multicultural environments and take their requirements into account in their work.
- The student is able to promote constructive cooperation with people from diverse backgrounds, develop their language skills, and critically examine their own patterns of thinking.
- The student recognizes the key interdependencies of social sustainability within their field and is able to assess the impacts of their field's activities on them.
- The student is able to apply the principles of sustainable development and the UN Sustainable Development Goals in their professional practice.
- The student is able to address ethical issues in their field and justify their actions ethically, taking into account different perspectives and power relations.
- The student is able to apply the methods of their own field and recognize the possibilities and limitations of methods from other fields.
- The student is able to integrate expertise from different fields to produce innovative solutions to global challenges, and to work in and lead multidisciplinary and interdisciplinary teams.
- The student is able to communicate appropriately as an expert to different target audiences, including in a foreign language, and to build professional networks.
- The student is able to utilize and critically evaluate digital solutions and artificial intelligence technologies within their area of expertise, and to recognize their impacts on research, working life, and society.

Official course record: [4121255](#)

413329S | Internship

5 ECTS | Education | Advanced Studies | English

Person in charge: Riikka Tumelius

Content

Internship, work, research or project experience in a relevant setting (e.g. intergovernmental agencies, non-governmental organisations or educational institutions). Internship may also be a relevant project which needs to be accepted by responsible teacher.

- Work life relevance and employability
- Career planning
- Combining theory and practice in working life
- Ongoing learning and internship portfolio

Learning outcomes

After completing this course students are able to:

- Recognize own strengths and development areas in the context of professional development
- Identify and define one's professional goals
- Explore working life considering own competence development and career planning
- Apply the general skills required in working life for given tasks (e.g. co-operation, collaboration, team work, problem-solving, project management, technical skills)
- Take responsibility for given tasks in a responsible manner
- Reflect and evaluate own working life skills and working life experiences

The course supports the development of the following generic skills defined by the University of Oulu: Well-being, and self-development skills; Sustainability, responsibility and ethics skills; Communication, interaction and digital skills

[Official course record: 4133295](#)

412126S | Internship seminar

0 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

The seminar supports the completion of the 5-month internship as part of career readiness training. The seminar group serves as a peer support group, where topics and questions related to psychological internships and professional development are discussed. The internship seminar also includes learning assignments, such as presenting the student's own internship placement.

Learning outcomes

The student is able to:

- Examine and evaluate their professional identity as a psychologist.
- Examine and evaluate their skills and actions as part of a multidisciplinary work community.

The course supports the development of the following generic skills:

- The student is able to apply analytical and critical thinking to questions within their own discipline and at the interfaces between disciplines, and to evaluate and produce well-reasoned arguments.
- The student is able to promote their own well-being, manage their own work, and develop their professional identity.
- The student is able to act constructively in situations of uncertainty and discomfort, practice self-compassion, and promote collaborative interaction.
- The student is able to operate in international and multicultural environments and take their requirements into account in their work.
- The student is able to promote constructive cooperation with people from diverse backgrounds, develop their language skills, and critically examine their own patterns of thinking.
- The student recognizes the key interdependencies of social sustainability within their field and is able to assess the impacts of their field's activities on them.
- The student is able to apply the principles of sustainable development and the UN Sustainable Development Goals in their professional practice.
- The student is able to address ethical issues in their field and justify their actions ethically, taking into account different perspectives and power relations.
- The student is able to apply the methods of their own field and recognize the possibilities and limitations of methods from other fields.
- The student is able to integrate expertise from different fields to produce innovative solutions to global challenges, and to work in and lead multidisciplinary and interdisciplinary teams.
- The student is able to communicate appropriately as an expert to different target audiences, including in a foreign language, and to build professional networks.
- The student is able to utilize and critically evaluate digital solutions and artificial intelligence technologies within their area of expertise, and to recognize their impacts on research, working life, and society.

[Official course record: 4121265](#)

KE00AR61 | Introduction to Education for Global Futures

5 ECTS | Education in Transition | Basic Studies | English

Person in charge: Audrey Paradis

Content

- * Education as a phenomenon
- * The main paradigms and key concepts of educational sciences
- * Education for sustainable development and inclusive education as focuses in educational contexts
- * Educational institutions in relation to socio-economically marginalised groups
- * Role of educational professionals developing educational settings for global futures

Learning outcomes

After completion of the course, students are able to

- * Describe the main paradigms and define the key concepts of educational sciences
 - * Discuss inclusive education and marginalised groups in education for more peaceful global futures
 - * Examine the relation between the development of educational sciences, societal changes and educational contexts
-
- > Apply analytical & critical thinking appropriately to the discipline, considering interfaces between fields and new knowledge.
 - > Promote constructive cooperation with diverse backgrounds, develop language skills, challenge stereotypes.
 - > Apply UN SDGs; participate in societal debate & decision making.

[Official course record: KE00AR61](#)

KE00AR85 | Introduction to Global Studies

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- Historical and present narratives of globalization
- Economic, political, cultural, and environmental dimensions of globalization
- Global institutions and global citizenship
- Cosmopolitanism as a global ethics
- Global crises and social change

Learning outcomes

After completion of the course, students are able to:

- Demonstrate an understanding of key concepts and themes in Global Studies and the ability to critically analyze them
- Integrate information and ideas from various areas of study to describe and discuss complex global issues
- Critically engage with various assumptions and views of globalization (including their own), position them in relation to scholarly works on the same issues
- Apply conceptual and theoretical tools to analyze 'real world' problems of global ethics

[Official course record: KE00AR85](#)

412180A | Introduction to Learning Sciences

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Anni Silvola

Content

History and theoretical groundings of learning sciences,
key concepts and theoretical approaches in learning sciences,
key concepts of individual learning process,
examples of learning sciences research and
observing learning as phenomena from practical, empirical and theoretical perspectives.
Learning sciences expertise in working life

Learning outcomes

After the course student can

- Name and describe the key concepts of learning
- Name and describe key theories and paradigms in educational psychology from history to present
- Analyze educational practices and contexts by using the terminologies of different paradigms and contexts.
- Describe key paradigms in learning sciences, and
- reflect and steer ones' own learning process

This course focuses on developing the following generic skills:

Analytical, critical, and creative thinking skills: the ability to critically evaluate knowledge within one's own field and apply it to solve complex and unpredictable problems

Multidisciplinary and interdisciplinary skills: is able to compare the differences and similarities between their own discipline and related fields

Official course record: [412180A](#)

KE00AU71 | Introduction to pedagogical use of digital technologies

2 ECTS | Educational Technology, Education | Basic Studies | English, Finnish

Person in charge: Jari Laru

Content

Media and information literacy, digital literacy, data literacy and artificial intelligence literacy, and the EU's DigCOMP reference framework

Searching for online material and using generative artificial intelligence as an expert tool

Copyright, privacy and data protection

Using artificial intelligence as a tool (artificial intelligence as a tool) and as a subject of learning (artificial intelligence literacy)

Learning environments and technologies Presentation of the tools and applications used in the course workshops at a general level

Learning outcomes

Learning outcomes:

Identify general literacy and competence frameworks in the field

Be able to link the above literacy skills and competences to internationally recognised broad competence frameworks (21st century skills)

Identify the key tools, working methods and applications of technology-supported learning (digital competence), computational thinking (programming competence), media literacy and artificial intelligence literacy (AI competence).

Official course record: [KE00AU71](#)

402370P | Introduction to Physical Education

5 ECTS | Physical Education | Basic Studies | Finnish

Person in charge: Ari Rahikkala

Content

* objectives, planning, content areas, working methods, motivation and assessment

* role in supporting comprehensive development

* the foundations of the national core curriculum

* basic concepts of mobility and motor development and their role in physical development

* differential (motor)learning

* principles of measuring physical functional capacity (MOVE)

Learning outcomes

Having completed the course the student is able to:

- * explain the educational meaning and effects of physical education in the life of children and young people.
- * apply pedagogy and curriculum of physical education in the planning, application and assessment of physical education teaching in grades 0 to 6.
- * identifies the various stages of motor development and motor learning
- * measure in practice the physical functional capacity of children and young people (MOVE)

- *apply creative methods within the subject area of the course.
- *communicate clearly in a group setting and listen actively to others.
- *identify the basics of professional ethics in their field and act accordingly.
- *follow the development of scientific and professional knowledge in their field.
- *work goal-orientedly in a team, negotiate, delegate tasks, and resolve conflicts constructively.
- *take other students and teachers into account and treat them with respect.

Official course record: [402370P](#)

402730P | Introduction to STEAM

5 ECTS | Education, Educational Technology | Basic Studies | Finnish

Person in charge: Sari Harmoinen

Content

- * STEAM as a concept
- * STEAM skills a working life skills specially for teachers
- * STEAM education
- * Collaborative problem solving
- * Basic in maker education, computational thinking and digital fabrication

Learning outcomes

After completion of this course, the student is able to:

- * Define concepts of STEAM and maker education
- * Understand role of collaborative problem solving and multidisciplinary, cross-topic, themes in the context of STEAM education
- * Recognize learning processes in STEAM education
- * Describe how STEAM is related to needs of the working life
- * Participate in the groupwork efficiently, so that group working skills increase
- * The student recognises the skills of critical and creative thinking and is able to apply them in pedagogical planning.
- * The student recognises the skills of critical and creative thinking and is able to apply them in pedagogical planning.

Official course record: [402730P](#)

AY402100P | Introduction to the Basics of Special Education (OPEN UNI)

2 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Sirpa Sneek

Content

- Ideologies, values and principles underlying special education
- Views of the essence, dissimilarity and diversity of man
- Challenges in learning
- Support for learning and school attendance

Learning outcomes

After completing the course, the student is able to

- describe some principles in Finnish special education
- is aware of the key special pedagogical values
- describe key learning challenges

[Official course record: AY402100P](#)

AY410090P | Introduction to the basics of the science of education (OPEN UNI)

2 ECTS | Education | Basic Studies | Finnish

Person in charge: Anniina Leiviskä

Content

- * Preliminary orientation to basic studies in education
- * The object of study and central concepts of educational sciences

Learning outcomes

After completing the course the student can

- * identify some of the central objects of study of educational research
- * preliminarily describe and analyze some of the key concepts of educational sciences.

[Official course record: AY410090P](#)

411008A | Introduction to the Economics of Education

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

During the course, the students are introduced to the economic definitions of education. The emphasis is to introduce the basic theories and models explaining the relationship between education and labor markets, the contribution of the education in the economic and social well-being of individuals and society and the role of the economics of education in educational decision making.

Learning outcomes

Having completed the course, the student perceives the basic concepts, theories and models of economics of education and is able to utilize these analyzing the meaning of educational institutions promoting and furthering the economic and social well-being of individuals and society. Moreover, the student adopts conceptual tools for evaluating the interdependency of educational and economic decision making.

[Official course record: 411008A](#)

AY411008A | Introduction to the Economics of Education (OPEN UNI)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

During the course the students are introduced to the basics of educational planning and the economics of education. In addition, the interdependent relationship between decision-making on educational systems and economic decision-making is investigated.

Learning outcomes

Having completed the course, the student perceives the connection between pedagogical institutions on the one hand, and work, division of work and labour markets on the other. The student identifies the stressed relationship between the thinking represented by modern educational theory and economic thinking. The student knows how to evaluate the fundamental theories and models related to the relationship between pedagogical institutions and labour markets as the basis for educational planning, and gets to know the main research areas in educational economics.

[Official course record: AY411008A](#)

KE00BC21 | Introduction to the Master's Programme in Early Childhood Education

1 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Signe Siklander

Content

The course supports students in planning their master's studies. Engaging in this planning and reflection provides them with tools to commit to their studies and to manage their schedules effectively.

Learning outcomes

The course supports students in planning their master's studies. Engaging in this planning and reflection provides them with tools to commit to their studies and to manage their schedules effectively.

[Official course record: KE00BC21](#)

402718P | Introduction to Visual Arts Education

5 ECTS | Art | Basic Studies | Finnish

Person in charge: Tapio Tenhu

Content

- history of art
- art museums, exhibitions and art institutions as part of art education
- visual literacy
- cultural diversity and sustainability
- basic techniques and materials of drawing, painting and art graphics
- basics of visual composing
- the course includes a study trip to Helsinki and Tallin

Learning outcomes

After completing the course, the student will be able to:

- describe the main phenomena and styles of art.
- identify the main works of visual art.
- analyze and interpret works of art and examine their societal, ethical, social and individual meanings.
- evaluate and value the individual, societal and cultural meanings of art.
- apply the methods, basic techniques, tools and materials of visual expression in their work.
- understand the significance of art as an enabler of analytical, critical and creative thinking and worldview.

[Official course record: 402718P](#)

KE00AR62 | Language, Power, and Diversity in Sociocultural Contexts

5 ECTS | Education in Transition | Basic Studies | English

Person in charge: Audrey Paradis

Content

- * Language, knowledge and power relations
- * Theories of linguistic diversity
- * Discourses of language diversity, mobility and social change
- * The role of linguistic diversity in sociocultural processes
- * Critical language awareness in educational contexts
- * Critical literacies and global education

Learning outcomes

After completion of the course, students are able to:

- * Identify relationships between language, linguistic diversity, power and social justice
 - * Define critical literacy and discuss its use in educational contexts
 - * Examine how the entanglement of language and sociocultural processes affect education
 - * Discuss the way different language ideologies and discourses configure linguistic diversity in different parts of the world
 - * Analyse and critique their own experiences reflecting on the role of language in their lives
- > Apply analytical & critical thinking appropriately to the discipline, considering interfaces between fields and new knowledge.
- > Work in international cooperation & consider international contexts.
- > Promote constructive intercultural cooperation, develop language skills, challenge stereotypes.
- > Solve ethical questions with sound reasoning; justify actions ethically considering values, power, inequality.

Official course record: [KE00AR62](#)

443195S | Leadership in educational organizations

5 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Sanna Parrila

Content

- the basic concepts and approaches in leadership research
- Organizational culture and development
- Entrepreneurial Leadership
- Pedagogical leadership
- Work-related well-being and interaction in working communities

Learning outcomes

The student will be able to:

- analyse basic concepts which are related to leadership and organisations and the central theories
- interpret practical leadership situations in pedagogical organisations in the light of the educational research information
- identify different ways to promote the learning and development in the organisations
- estimate the leadership as a part of ones own expertise

Official course record: [443195S](#)

KE00AZ26 | Learning analytics for teachers and students

1-5 ECTS | Educational Psychology | Other Studies | English

Person in charge: Anni Silvola

Content

Supporting learning, teaching and guidance and with learning analytics and AI. Practical examples and exercises where student LA/AI tools will be used.

Learning outcomes

After participation in the course, student knows definitions and fields of learning analytics and artificial intelligence in education. Student can analyze the use of learning analytics and AI as a support for learning, teaching and guidance. Student knows different purposes and pedagogical approaches for using LA with different stakeholder groups. Student can critically evaluate the limitations of data use and improve data literacy skills. Student gets competencies to design, utilize and evaluate LA use as part of different pedagogical processes. Student can design and use LA and AI for teaching and guidance in their own working environments.

The course focuses on developing the following generic skills:

Analytical, critical, and creative thinking skills: the ability to apply creative thinking and problem-solving in one's work to develop new knowledge and new procedures

Sustainability, responsibility, and ethical skills: recognizes the interdependencies between the dimensions of sustainability (social, ecological, economic, cultural) within their own field of study and is able to assess the impacts of activities in their field on these dimensions

Communication, interaction, and digital skills: is able to utilize and critically evaluate digital solutions and artificial intelligence technologies in their own area of expertise in an appropriate, safe, and responsible manner, and to identify their impacts on research, working life, and society.

Official course record: [KE00AZ26](#)

AY00AZ27 | Learning analytics for teachers and students (OPEN UNI)

1-5 ECTS | Educational Psychology | Other Studies | English

Person in charge: Anni Silvola

Content

Introduction and overview of learning analytics and artificial intelligence. Supporting learning, teaching and guidance with learning analytics tools. Practical examples and exercises where student learning analytics tools will be used.

Learning outcomes

After participation in the course:

- * Students knows definitions, goals, stakeholders, applications of learning analytics (LA) and artificial intelligence (AI) use in educational contexts
- * Is aware of the possible advantages and challenges of data-based technologies in education
- * Students can analyze the use of LA and AI as a support for learning, teaching and guidance. Students know different purposes and pedagogical approaches for using LA with different stakeholder groups.
- * Students can critically evaluate the limitations of data use and improve data literacy skills.
- * Students get competencies to design, utilize and evaluate LA use as part of different pedagogical processes. Students can design and use LA for teaching and guidance in their own working environments.

Official course record: [AY00AZ27](#)

412182A | Learning Designs

5 ECTS | Educational Psychology | Intermediate Studies | Finnish, English

Person in charge: Riikka Tumelius

Content

- Theoretical foundations and basic concepts of designing for learning
- The concept of a personal learning environment and its design, implementation, and evaluation
- Designing for learning as part of individual continuous learning and career planning
- Examples of designing for learning in education, staff development, and digital environments

The course supports the development of the following generic skills defined by the University of Oulu: Analytical, critical and creative thinking skills; Well-being, and self-development skills; Sustainability, responsibility and ethics skills; Multidisciplinary and interdisciplinary skills; Communication, interaction and digital skills

Learning outcomes

After finishing the course the student is able to

- identify and describe basic concepts in designing for learning
- apply principles and theoretical foundations of learning and guidance research in design for learning
- design and support individual learning processes in various learning environments
- design and evaluate their own learning as part of continuous learning and career planning

Generic skills:

After completion of the course, the student is able to

- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- identifies key elements related to their own well-being and self-management

[Official course record: 412182A](#)

402108P | Learning Difficulties and Uniqueness of Learning

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Miia Ronimus

Content

- key learning difficulties and comorbidity (e.g., attention and executive function challenges, reading difficulties, mathematical difficulties, visuospatial learning difficulties)
- factors shaping learning (e.g., hereditary background, motivation, home environment, social relationships)
- specific learning issues related to immigrant background
- starting points for supporting learning

Learning outcomes

After completing the course the student

- can describe the interaction between genes and environment and the individuality of development
- can recognize and describe key learning difficulties
- can define key factors influencing learning
- can describe the importance of learning difficulties and support for learning, well-being and life course
- can develop their communication, interaction, and multiliteracy skills

[Official course record: 402108P](#)

AY402108P | Learning Difficulties and Uniqueness of Learning (OPEN UNI)

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Miia Ronimus

Content

Do you want to better understand learning challenges and individual learning needs? This course offers you an in-depth look at learning difficulties and how we can support each learner on their unique learning journey.

The course covers topics such as:

- key learning difficulties and comorbidity (e.g., attention and executive function challenges, reading difficulties, mathematical difficulties, visuospatial learning difficulties)
- factors shaping learning (e.g., hereditary background, motivation, home environment, social relationships)
- specific learning issues related to immigrant background
- starting points for supporting learning

Learning outcomes

After completing the course the student

- can describe the interaction between genes and environment and the individuality of development
- can recognize and describe key learning difficulties
- can define key factors influencing learning
- can describe the importance of learning difficulties and support for learning, well-being and life course
- can develop their communication, interaction, and multiliteracy skills

[Official course record: AY402108P](#)

KE00AU82 | Learning Difficulties in Reading and Writing

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Elisa Mainio

Content

- * Readiness to learn to read and write and the identifiable risk factors before school age
- * Pre-emptive support for dyslexia in early childhood education
- * Teaching and learning to read and write
- * Dyslexia, theoretical background of dyslexia and poor reading skills
- * Identification of dyslexia, group and individual assessment
- * Giving support and monitoring the effectiveness of support in school-age and in youth
- * Reinforcement of reading motivation
- * Multiprofessional collaboration and collaboration with parents

Learning outcomes

After completing the course the student

- * is familiar with and knows how to identify readiness and risk factors for learning to read and write
- * knows the basic methods of teaching reading and writing and understands the importance of multisensitivity in them
- * is familiar with the typical development of learning to read and write in a person's life cycle, and identifies development deviating from it in terms of technical reading, spelling, productive writing and reading comprehension
- * In addition to the theoretical knowledge, the student can use tools for assessment of difficulties in reading and writing and how to interpret individual results from the support point of view
- * is able to design targeted reading support and is familiar with different research-based reading and writing intervention methods.
- * understands the far-reaching significance of support and the importance of reading generally and specifically
- * knows and understands the importance of multiprofessional collaboration and collaboration with parents
- * is able to utilize and critically evaluate digital solutions and artificial intelligence technologies in their own area of expertise in an appropriate, safe, and responsible manner, and recognize their impact on research, working life, and society

KE00AU76 | Learning Dimensions and Assessment

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Elisa Mainio

Content

- mental disability, large-scale learning difficulties and talent as concepts
- differentiation of teaching
- learning by objectives and deviations from the syllabus
- early compulsory education and teaching by area of activity
- psychological test summaries to assist the teacher's work
- assessment of learning and skills from the perspective of support needs

Learning outcomes

After complementing the course student can

- describe different pedagogical solutions and assessment methods required by the diversity of development (e.g. the concept of talent and mental disability)
 - define the key principles of learning by objectives and deviations from the syllabus
 - define the key principles of early compulsory education and teaching by area of activity
 - define the principles of differentiation and know how to use the methods of differentiation in teaching
 - make use of psychological test summaries in pedagogical solution
 - is able to take into account the student's need for support in the assessment of learning and competence
- can critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- is able to take an open approach to the perspectives of representatives of other fields and recognize potential interdisciplinary perspectives that could promote the development of their own field and cooperation
 - can communicate clearly, both verbally and in writing, to experts in your field and to the general public

Official course record: KE00AU76

KE00BC82 | Learning Processes and Self-regulated Learning

5 ECTS | Education | Basic Studies | English

Person in charge: Kristiina Mänty

Content

Concepts and theories of self-regulated learning (SRL)

The role of motivation, emotions, cognition, and metacognition in learning and well-being

SRL as a 21st century skill

Analysing and supporting self-regulated learning

Learning outcomes

After completion of this course, the student is able to

- Define and describe concepts and theories related to self-regulated learning (SRL) and collaborative learning (CL)
- Describe the role of cognitive, metacognitive, motivational, emotional and social aspects of SRL as a part of academic learning, work-life competence and personal well-being
- Identify and analyse different interaction processes in intercultural collaborative learning situations,
- Apply theoretical knowledge of SRL and CL to learning situations.
- Identify key elements related to own well-being and self-management.
- Communicate clearly in a group, actively listen to others, give constructive feedback and resolve conflicts constructively

The course supports, among other things, the development of the University of Oulu's generic skills related to international and multicultural competencies.

After completing the course, the student will be able to:

- recognize cultural diversity and the problematic nature of stereotypes related to different languages, nationalities, and ethnic groups, and identify stereotypical ways of thinking

Official course record: [KE00BC82](#)

KE00BC76 | Learning sciences: Theoretical grounding and empirical foundations

5 ECTS | Education | Language and Communication Studies | English

Person in charge: Kateryna Zabolotna

Content

- Introduction to the course
- History and epistemological background of the Learning Sciences;
- Philosophical foundations of the Learning Sciences;
- Self-regulated learning;
- Cognition and metacognition in learning;
- Emotions and motivation in learning;
- Technology-enhanced learning.

Learning outcomes

The objectives of this course are:

- 1) to introduce the participants to the core theories of learning;
- 2) to build a basic understanding of the philosophy of science (epistemology, ontology, methodology) which will provide foundational knowledge for understanding Learning Sciences research and working on the master thesis;
- 3) to introduce core concepts related to learning individually and in groups, including self-regulation, emotions and motivation in learning, technology-enhanced learning, computer-supported collaborative learning, etc.;
- 4) to promote self-regulated learning and reflection on one's own learning progress and utilize knowledge of emotions and motivation to support own learning and well-being.

The course supports the development of the University of Oulu's generic skills related to wellbeing and self-development skills:

- 5) After this course, the student is able to promote their own well-being, develop their self-leadership skills, build their professional identity, and maintain their competence in a goal-oriented manner.

Official course record: [KE00BC76](#)

KE00AU75 | LET optional project

2 ECTS | Educational Technology, Education | Basic Studies | English

Person in charge: Kristiina Mänty

Content

Introduction to, or more in-depth treatment of, some special area, activity or field of study that can be connected to the LET master's degree programme's learning goals.

Learning outcomes

Upon completion of the course the students have familiarized themselves with self-chosen topics and have learned skills that are connected to the LET Master's Degree programme's overall learning goals.

Official course record: [KE00AU75](#)

442454A | Literary and Drama Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Pirjo Suvilehto

Content

- Basic concepts and methods of children's literature and drama in support of the overall personality of an early childhood child
- Drama and literature education, play, self-expression, interaction skills, storytelling, genres of children's drama and children's literature, bibliotherapy, Pritney method

Learning outcomes

Upon completion of the study module, the student:

- identifies the meaning of play in experiential learning
- knows how to apply storytelling, literary art and drama
- has been trained and encouraged in the skills of self-expression, empathy and interaction
- identifies the genres of children's theatre and literature and the pedagogical, expressive and therapeutic possibilities offered by them
- knows how to plan, implement and develop literary art and drama education in day care among children of different ages
- generic skills: develop one's own identity, self-expression, utilize self-compassion, know how to develop interaction, communication in a group, listen and express oneself

Official course record: [442454A](#)

408037S | Master's Level School Experience and Pedagogical Seminar

15 ECTS | Education | Advanced Studies | Finnish

Person in charge: Emilia Manninen,

Content

The theme of Master's level teaching practice is working as a teacher. Themes connected with it are discussed in the practice period and in a seminar.

The students are working in the school and classroom community in collaboration with other students and the supervising teachers. The practice introduces the student to the teacher's job as a whole. The student gets to know the various partners and forms of collaboration that are connected with the work of a teacher.

The practice period offers the student a supervised opportunity to deepen the skills of planning, implementing and evaluating lessons and larger blocks of studies.

The student plans and implements teaching based on the basic education curriculum in collaboration with the supervising teacher and other students. The teaching practice is based on the objectives and contents mentioned in the curriculum. The areas of transversal competence mentioned in the curriculum are taken into account in the planning and implementation of teaching. The student acquaints him/herself with some special theme or multidisciplinary learning entity connected with the school's activities.

Please note the pedagogical seminar for ITE students can be found: KE00AK17 Pedagogical seminar (Intercultural Teacher Education).

Learning outcomes

Having completed the course, the student knows how to:

- set learning objectives for him/herself and evaluate their fulfilment.
- plan and implement teaching based on the curriculum independently.
- perform student assessment and give feedback orally and in writing.
- plan and implement integrated teaching.
- show the skill of taking overall responsibility for the activities and teaching in a classroom.
- apply the essential characteristics of the culture of the school in his/her teaching.
- build and make use of learning environments to support learning and well-being.
- support the development of learning skills for individual students and groups of students.
- make use of varied and student-centred teaching methods.
- make skilled use of professional interaction.
- implement professional interaction and cooperation with various school staff
- plan the organization and scheduling of one's own work
- implement research-based teaching encouraging inquiry learning and evaluate its success.
- based on research knowledge, analyze, report on and evaluate his/her own view of teachership and education.

[Official course record: 4080375](#)

408043S | Master's Thesis

30 ECTS | Education | Advanced Studies | Finnish

No description supplied in the collected record.

[Official course record: 408043S](#)

408044S | Master's Thesis Seminar

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Hannu Heikkinen

Content

5 credits: seminar session and 30 credits: writing a thesis

1. Composing your own research plan and presenting it in a seminar.
2. Presenting an international (or domestic) refereed article related to your own thesis in a seminar (to be agreed on with the supervisor)
3. Presenting an intermediate stage of your own thesis (e.g. methodological solutions/basis of analysis - to be agreed on with the supervisor)
4. Presenting your Master's thesis and responding to an opponent's criticisms.
5. Acting as an opponent to another student's thesis
6. Other activities in the seminars
7. Finishing your own thesis

Learning outcomes

The student

- gets practice in using the basic concepts of his/her branch of science and knows how to determine and analyze the main research results in his/her field of science and how to evaluate them in relation to his/her own research
- masters the research methods chosen by him/herself and is able to describe the scientific traditions of the educational and social sciences, especially education and educational psychology
- knows how to compose alone or in pairs* an educational thesis that shows familiarity with its topic and proves a readiness for scientific thinking
- knows how to evaluate studies made by others and take part in scientific debate and defend his/her own thesis

* The master's thesis can be completed alone or in pairs, if it is both parties' parts of the thesis are clearly distinguishable and assessable. The thesis is supposed to prove, that the student masters the topic of the thesis, the student is competent in scientific thinking, and that the student is capable in research methods.

Official course record: 4080445

412127S | Master's Thesis Seminar in Psychology

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Mirka Hintsanen

Content

Contents of the Seminar are designed to support the student's completion of the Master's Thesis. The seminar covers e.g. scientific writing. The seminar includes giving feedback to other students.

Learning outcomes

The student will learn how to:

- determine and evaluate the main research results related to the subject and how to evaluate them in relation to the student's own research
- design and complete a master's thesis as an empirical study or meta-analysis
- critically evaluate research and the methods used and draw justified conclusions from the results
- more thoroughly evaluate and adhere to the ethics of science and research as well as the principles of scientific writing
- receive and provide constructive peer feedback both orally and in writing
- apply analytical and critical thinking skills in a manner appropriate to their discipline and apply creative thinking and problem solving to develop new knowledge and new procedures
- analyze arguments and argue appropriately
- develop self-leadership skills and build their professional identity and maintain their own expertise in a goal-oriented manner
- apply methods of their own discipline and identify the strengths and limitations of methods in other disciplines

402338P | Material and manufacturing technology

5 ECTS | Technical Work | Basic Studies | Finnish

Person in charge: Jouni Karsikas

Content

Working methods and materials in technical work, technological design

Learning outcomes

Having completed the course, the student

- * identifies materials, tools and techniques used in technical work with due consideration of pedagogical approaches
- * knows how to apply knowledge of materials in the design and manufacture of a craft product, taking into account the ecological and ethical points of view, among others
- * adopts various manufacturing and finishing methods used in technical work, as well as their uses with due regard for occupational safety
- * knows how to document his or her own processes of ideation, design and manufacture and to reflect on his or her work and learning

Regarding generic competencies

- * identifies critical and creative thinking skills and is able to apply them to problem-solving
- * recognizes the key factors of wellbeing and self-leadership, manages the demands of expert work, and is able to develop their own competence as well as support the learning of a group
- * recognizes cultural diversity and the challenges of stereotypes and is able to act constructively
- * understands the dimensions of sustainability and is able to act ethically, equitably, and with respect for different people and environments
- * is able to communicate clearly to different audiences, collaborate constructively in a group, and use field-specific digital and AI applications responsibly

Official course record: 402338P

402337P | Material and Skill

5 ECTS | Textile Work | Basic Studies | Finnish

Person in charge: Leena Hartikka

Content

- * materials, tools and techniques in handicrafts
- * apply documentation and evaluation as part of thinking up, planning and manufacture for a crafts process

Learning outcomes

Having completed the course, the student

- * is able to identify materials, tools and techniques used in textile work with due consideration of pedagogical approaches
- * knows how to apply material knowledge in the design and manufacture of a craft product, taking into account the ecological and ethical points of view
- * knows how to classify and describe textile structures from fibre to product
- * learns various manufacturing methods and finishing skills used in textile work as well as their applications with due regard for occupational safety
- * knows how to document her or his own processes of ideation, planning and manufacture, and to reflect on her or his work and learning
- * Is able to use critical and creative problem solving skills with textiles
- * identify the principles of well-being and self-management and develop their own and the group's competence.
- * can work according to the principles of ethics and sustainability in textile work.
- * communicates clearly, works collaboratively, and uses digital and artificial intelligence applications responsibly.
- * is able to document his/her own ideation, design and manufacturing processes and reflect on his/her work and learning

Official course record: 402337P

KE00AU83 | Mathematical Learning Difficulties

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Sirpa Sneek

Content

- development and assessment of mathematical skills (e.g. number sense, counting skills, arithmetic skills)
- learning difficulties in mathematics and related factors (e.g. working memory, language, motivation, emotions)
- comorbidity of other learning difficulties
- identification of difficulties, assessment, support, and monitoring the effectiveness of support
- teaching methods and materials

Learning outcomes

Upon completion of the course the student

- understands the developmental phases of mathematical skills and the difficulties in learning mathematics from early childhood to adulthood
- identifies needs for support and knows how to assess math skill, plan for and implement focused support and assess its effectiveness
- knows and is capable of using research-based assessment and teaching materials
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures

Official course record: KE00AU83

406052A | Mathematics

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- Contents of primary mathematics
- Using of Mathematics learning materials and tools
- Essential methods of work in primary mathematics
- Mathematics lesson plan
- Mathematics didactics
- Mathematics multimodal languaging
- Nature of mathematics, math identity

Learning outcomes

Having completed the study module, the student knows how to:

- calculation routines for the contents of primary mathematics
- explain maths assessment in primary school
- analyze the learning of maths contents and learning problems in primary school
- design maths teaching and set objectives for teaching and learning in accordance with the basic education curriculum
- use mathematics teaching methods, learning materials and tools in the context of primary school

[Official course record: 406052A](#)

407047A | Maturity Test

0 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Tapio Tenhu

Learning outcomes

According to the Decree on University Degrees (794/2004), students pursuing studies for the degree of Bachelor of Arts in Education shall write a maturity essay to show their familiarity with the field of their thesis and their skills in Finnish or Swedish. If either language is not the student's mother tongue, the test is completed in English.

[Official course record: 407047A](#)

KE00BD06 | Maturity Test of Bachelor's Thesis in Psychology

0 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Kiema-Junes

No description supplied in the collected record.

[Official course record: KE00BD06](#)

411020A | Methodology of theoretical and philosophical research

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The course introduces you to different ways of doing theoretical and philosophical research through expert lectures and methodological literature. The course will discuss the methodological tools of philosophical research and the relevance of theoretical and philosophical research to educational research and understanding of educational practice.

Learning outcomes

Upon completion of the course, the student will be able to

- read and analyse academic texts on the field of educational philosophy from a methodological perspective
- recognize central methodological tools used in educational philosophy and reflect on their relevance in relation to their research interest
- understand the potential of theoretical-philosophical research in multidisciplinary research projects
- articulate their methodological thinking through writing.

[Official course record: 411020A](#)

AY00AH74 | Methodology of theoretical and philosophical research (AVOIN YO)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The course introduces you to different ways of doing theoretical and philosophical research through expert lectures and methodological literature. The course will discuss the methodological tools of philosophical research and the relevance of theoretical and philosophical research to educational research and understanding of educational practice.

Learning outcomes

Upon completion of the course, the student will be able to

- read and analyse academic texts on the field of educational philosophy from a methodological perspective
- recognize central methodological tools used in educational philosophy and reflect on their relevance in relation to their research interest
- understand the potential of theoretical-philosophical research in multidisciplinary research projects
- articulate their methodological thinking through writing.

[Official course record: AY00AH74](#)

412092A | Methods in clinical practice

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Siltala, Sofia Pihlaja

Content

In this course, students practice the professional role of a psychologist, interview and interaction skills, and to a small extent, also record-keeping, through literature, lectures, practical exercises, discussions, reflection, and observation.

Learning outcomes

The student is able to:

- Describe the basics of professional interaction and interviews, as well as their theoretical foundation in the psychologist's client work.
- Describe the methods used in client work and analyze their significance in the therapeutic process.
- Conduct a professional initial interview with a client, analyze and evaluate the structure and interaction of the conversation, and be familiar with the process of psychological conversation and various methods of psychological influence.
- Reflect on their own strengths and areas for development related to professional interaction.
- Understand the basic principles of patient record-keeping.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student recognizes the dimensions of social sustainability and evaluates their own actions in relation to them, and acts responsibly, equitably, and in accordance with professional ethics in diverse interaction situations, respecting stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: 412092A](#)

412083A | Methods in psychology: Advanced course in quantitative research

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Sohvi Nuojua

Content

- Statistical analyses for experimental and correlative research designs commonly used in the field (repeated measures and mixed designs, multiple linear regression, logistic regression)
- Linear structural equation modelling
- Selecting analytical methods for research questions typical in the field
- Reporting of results of statistical analyses in APA style, interpretation of the results and evaluation of their reliability
- Practising the use of statistical software with field-specific data
- Generic skills addressed in the course: analytical, critical and creative thinking skills; sustainability, responsibility and ethics skills; and communication, interaction and digital skills

Learning outcomes

The student can:

- select data analysis methods that are suitable for the data and psychological research problems and can justify the selection
- analyze and interpret typical psychological quantitative research data with multi-variable analysis methods while taking into consideration their assumptions
- report research results in text, tables and figures according to common practice in the field
- describe the basics of structural equation modelling and interpret structural equation models relevant to psychological research questions
- describe the terms 'effect size' and 'statistical power' and explain their significance
- evaluate reliability and ethics in psychological research in a critical manner
- identify the key skills and importance of analytical, critical and creative thinking in scientific activities, critically evaluate knowledge in one's own field, and apply this knowledge to solve complex problems (generic analytical, critical, and creative thinking skills)
- work in accordance with good scientific practice (generic sustainability, responsibility and ethics skills)
- develop their communication and multi-literacy skills, and use digital applications relevant to one's field in an appropriate and responsible manner (generic communication, interaction and digital skills)

Official course record: [412083A](#)

412082A | Methods in psychology: Basic Course in Quantitative Research

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Sohvi Nuojua

Content

- Advancing the knowledge gained in studies in statistics preparing for psychology studies: basics of inferential statistics and reliability of quantitative research in psychology-relevant research questions
- Addressing research questions relevant to the field of psychology by using statistical methods commonly used in the field (t-tests and ANOVA and their non-parametric equivalents; correlation and simple linear regression)
- Reporting results of statistical analyses
- Practical exercises: Practising the use of statistical software using psychological datasets, choosing analysis methods for psychological research questions, reporting results in APA style and evaluating results while taking into consideration the characteristics of the field
- Generic skills addressed in the course: analytical, critical and creative thinking skills; sustainability, responsibility and ethics skills; and communication, interaction and digital skills

Learning outcomes

The student can:

- input, save and conduct basic handling of quantitative data
- formulate psychology-relevant research problems and choose analysis methods that are suitable for the data and the research question given their assumptions
- use the most common statistical methods and software in the field to analyze simple research problems
- report research results in text, tables and figures according to common practice in the field
- interpret statistical indicators and research results as well as their reliability in a critical manner
- identify the key skills and importance of analytical, critical and creative thinking in scientific activities, critically evaluate knowledge in one's own field, and apply this knowledge to solve complex problems (generic analytical, critical, and creative thinking skills)
- work in accordance with good scientific practice (generic sustainability, responsibility and ethics skills)
- develop their communication and multi-literacy skills, and use digital applications relevant to one's field in an appropriate and responsible manner (generic communication, interaction and digital skills)

Official course record: [412082A](#)

KE00AV35 | Methods in psychology: Quantitative Research III

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Sohvi Nuojua

Content

- Multivariate methods (e.g. linear models and structural equation modeling) and meta-analysis as well as expanding on the proficiency acquired in previous methodology courses in psychology
- Reporting of results from statistical analyses in APA format, interpretation of the results and evaluation of their reliability
- Practising the use of statistical software with field-specific data
- If possible, the student may use the data from their Master's thesis in this course. The student prepares a written report in which they evaluate the reliability of the methods used in the thesis and the obtained findings.
- Generic skills addressed in the course: analytical, critical and creative thinking skills; sustainability, responsibility and ethics skills; and communication, interaction and digital skills

Learning outcomes

The student can:

- use statistical multivariate methods typically used in the field of psychology
- interpret and report results from statistical analyses according to common practice in the field
- critically evaluate scientific studies and the reliability of their findings
- if possible, apply the statistical methods learned thus far in their Master's thesis
- apply and utilize the key skills of analytical, critical and creative thinking and problem-solving in producing new knowledge, and build arguments in a manner appropriate to one's discipline (generic analytical, critical, and creative thinking skills)
- reflect on and solve ethical questions in one's field with sound reasoning (generic sustainability, responsibility and ethics skills)
- communicate as an expert in a manner suitable for the target audience, and utilize and critically evaluate digital solutions and technologies used in one's field of research (generic communication, interaction and digital skills)

[Official course record: KE00AV35](#)

KE00BF14 | Methods in Youth Studies

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Veli-Matti Ulvinen

Content

The course is structured around the Annual Conference of Youth Studies in November-December. At the Conference, students will become familiar with

- research methods in youth research and, in particular, ethical issues in research targeting children and young people
- current methodological discussions in youth research.

Learning outcomes

After completing the course, the student will

- understand the methodological characteristics of interdisciplinary/social scientific youth research
- be able to evaluate the suitability of different methodological approaches to different research topics and questions.

[Official course record: KE00BF14](#)

406049A | Mother Tongue and Literature I: Language and Textual Skills

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Minna Sääskilahti

Content

- literacy and multiliteracy
- average features and challenges of children's language development
- development and evaluation of reading and writing skills
- process reading and writing and genre pedagogy
- developing language awareness in primary school
- teaching Finnish as a second language

Learning outcomes

Having completed the course, student :

- knows the basic principles of teaching literacy and multiliteracy
- is able to support and evaluate the development of pupils' literacy skills so that s/he takes into consideration the age-specific developmental level of the child and the national core curriculum.
- is able to apply different teaching methods and learning environments in developing pupils' literacy skills and is able to justify their solutions
- knows how to apply language knowledge to guide children to make observations on language and consciously consider language structure
- is able to describe the premises of teaching Finnish as a second language
- recognizes the importance of linguistic equality

[Official course record: 406049A](#)

406050A | Mother Tongue and Literature II: Literary Art and Drama

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Minna Sääskilahti

Content

- genres of children's literature
- supporting the child's literary interests
- folklore
- teaching methods of literature
- drama education as a field of science and as a part of education
- key concepts of drama education and the meaning of language, roles and group processes of theatre in drama work
- basics of dramaturgy and the significance of dramaturgical thinking as a part of mother tongue

Learning outcomes

Having completed the course, student

- is able to analyse children's literature and evaluate suitability of children's books for different learners
- knows how to apply and evaluate the learning outcomes, contents and teaching methods of literature teaching
- is able to use literature as a tool to support child's growth, development and learning
- is able to use literature in phenomenon oriented teaching
- is able to examine children's and youth literature from the perspective of cultural diversity
- is able to elaborate on the basic characteristics and genres of drama education as a part of mother tongue drama teaching
- is able to apply dramaturgy in processing of texts and organizing a play
- is able to conceptualize the design and guidance of teaching and learning processes involving drama for learners of different ages

406070A | Multidisciplinary studies School experience

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

The theme for this study module is teaching and learning.

The students are working in the school and classroom community in cooperation with other students and supervising teachers. The practice introduces them to different learners and learning problems.

The Bachelor's Level School Experience offers the student a supervised opportunity for practising the basic skills, planning, implementation and assessment of teaching. The student is acquainted with both collaborative and independent planning of both lessons and larger blocks of studies, flexible and situationally conditioned implementation of his/her own teaching, and critical assessment.

The student plans and implements teaching based on the basic education curriculum in collaboration with the supervising teacher and other students. The teaching practice is based on the objectives and contents mentioned in the subject-specific curriculum. The areas of transversal competence mentioned in the curriculum are taken into account in the planning and implementation of teaching.

Learning outcomes

Having completed the course, the student knows how to:

- set learning objectives for him/herself and evaluate their fulfilment.
- plan for and implement target-oriented teaching based on the curriculum and get practice in giving teaching episodes, lessons and courses.
- identify the essential stages of a teaching/learning process and knows how to use various teaching methods in an appropriate manner.
- evaluate a student's teaching/learning process.
- identify essential features of the school culture. give and receive a variety of feedback.
- based on research knowledge, analyze, report on and evaluate his/her own and others' activities as a teacher

Official course record: 406070A

KE00BC79 | Multidisciplinary work in an international world

5 ECTS | Education | Advanced Studies | English

Person in charge: Riikka Tumelius

Content

- diversity in teamwork, e.g., communication and working cultures; linguistic and cultural diversity; professional vocabulary; and varied expertise and strengths of people
- perspectives of multi- inter- and transdisciplinary teamwork
- Use of artificial intelligence and other technologies to facilitate interaction and support the work of diverse teams
- collaborative problem solving as a process
- Roles of interaction and shared regulation in maintaining group motivation and emotional climate
- Use of artificial intelligence as part of the work of a diverse group to facilitate interaction, common understanding and shared regulation among group members.

The course supports the development of the following generic skills defined by the University of Oulu: Analytical, critical and creative thinking skills; Well-being, and self-development skills; International and multicultural skills; Sustainability, responsibility and ethics skills; Multidisciplinary and interdisciplinary skills; Communication, interaction and digital skills

Learning outcomes

Part 1 - Analysing a collaborative problem solving project

After completing this part the student is able to

- Analyze characteristics and challenges of teamwork in interdisciplinary and international settings.
- Identify and describe characteristics and challenges of communication and working cultures in interdisciplinary settings
- Evaluate collaborative problem solving and interaction within a diverse team, including the role of technologies, and develop team work towards transdisciplinary collaboration.

Part 2: Career plan

After completion of this part, the student is able to

- Reflect on and analyse their learning in relation to their degree studies
- Describe the interrelation between future working life competencies and gained expertise in their degree programme
- Reflect on their professional identity
- Apply their understanding of learning sciences in their own work or study environment

Generic skills

After completion of the course, the student is able to

- recognize the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them
- seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- is able to promote multidisciplinary cooperation and lead multidisciplinary and multiprofessional teams.
- is able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

Official course record: [KE00BC79](#)

KE00AT69 | Multilingualism and Finnish as a second language

3-5 ECTS | Education | Intermediate Studies | Finnish, English

Person in charge: Marika Oikarinen

Content

- Language awareness
- Theories of linguistic diversity
- Language awareness
- The role of linguistic diversity in sociocultural processes and power relations
- Basic concepts in language teaching and learning
- Effective practices for supporting multilingual learners
- Organization of S2 teaching in the Finnish school system
- Language competence within the European framework
- Critical self-reflection of language learning process

Learning outcomes

After completing the course, the student will be able to:

- Examine the role of language and language diversity in education, culture and society
 - Discuss socio-linguistic theories in relation to bi/multi/plurilingualism
 - Recognise the connection of linguistic background and learning
 - Recognise the holistic experience of multilingual learner/S2 learner
 - Describe the implementation and principles of Finnish as a second language in the Finnish basic education
 - Identify the practices supporting multilingual learners in basic education
 - Evaluate the educational arrangements in the context of linguistically and culturally diverse learning environments
 - Critically analyse own experiences as a language user, learner and teacher
-
- Recognizes the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognizes stereotypical ways of thinking
 - Identify and be able to describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities
 - Is able to develop their communication, interaction and multi-literacy skills

Official course record: [KE00AT69](#)

422281A | Music and Movement

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Katja Sutela

Content

Basisc of Dalcroze Eurhythms, dances, creative movements, pedagogical orientation

Learning outcomes

After completing the course, the student will be able to:

- develop one's bodily awareness and skills in music and movement
- apply Dalcroze Eurhythms in practice
- use music and movement as an approach to music education
- use the music and movement teaching material in one's teaching
- to develop the ability to re-evaluate established practices in music and movement activities and to strengthen one's own creative problem-solving skills

Official course record: [422281A](#)

442453A | Music Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Susanna Söder

Content

- The role of music education in supporting the child's holistic personality and cognitive, motor, and socio-emotional skills across different developmental stages from 0 to 6 years of age
- methods of music education: singing, playing instruments, music and movement, listening, integration with other areas of orientation, art subjects, and children's literature (fairy tales, stories, poems), as well as other content areas
- Basics of music theory
- Reflections on the history of music education
- Play, self-expression, and socio-emotional and interaction skills in music education
- a Music psychology perspective in early childhood music education
- Means of supporting physical and mental well-being in early childhood education through music education
- Musical knowledge and skills as part of the student's professional identity and resilience development - instrumental skills (voice, guitar, and piano) in group lessons
- completing Moodle assignments and regular practice of instrumental skills

Learning outcomes

en, keho-, rytmi- ja laattasoittimilla sekä liikkuen soitettua ja kuunneltavaa musiikkia mukaan

- osaa suunnitella, käyttää sekä kehittää varhaisiän musiikkikasvatuksen eri sovellusalueita ja musiikillisia prosesseja mm. tarinoiden, kuvien, liikkeen ja leikkien kautta ottaen huomioon lapsen eri kehitysvaiheet sekä tunne- ja vuorovaikutustaidot

After completing the course, the student:

- Recognizes the significance of play in experiential learning and is able to apply integrated music education in early childhood education across different content areas
- Has practiced and gained confidence in self-expression, empathy, and socio-emotional and interaction skills in a group setting
- Recognizes the pedagogical and expressive possibilities of music, as well as its importance in supporting children's cognitive, social, motor, and emotional development in early childhood education-
- Has become familiar with the basics of music theory and learning materials, and is able to apply them in early childhood education environments at their own skill level
- Can make music according to their own skill level—singing, accompany with chords, using body percussion, rhythm and barred instruments, and moving in response to played and listened music
- Can plan, use, and develop different application areas and musical processes in early childhood music education—for example through stories, images, movement, and play—taking into account the child's developmental stages as well as socio-emotional and interaction skills
- Identify the stressors related to the work of an early childhood education teacher and utilize self-compassion and music to support well-being and coping

[Official course record: 442453A](#)

422271A | Music technology

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Jussi Jaako

Content

- Music technology in schools
- Music technology as teachers' tool
- the practices of music technology
- the basics of mixing music

Learning outcomes

After the course students are able to:

- use music technology, digital, and AI-based tools appropriately, safely, and responsibly in music learning, teaching, and creative work
- manage electro acoustic equipment used in schools
- manage digital audio technology
- take use of most valuable digital applications for different pedagogical contexts

[Official course record: 422271A](#)

422284A | Music Theory and Arrangement

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Jere Tulinrinta

Content

The course consists of studies in music theory, ear training and arranging music. The course deepens the understanding of harmony, structures and musical styles through analysis and ear training. Evaluation and development of pedagogical operating models concerning music theory, music arranging and ear training.

Learning outcomes

Upon completion of the course, the student will be able to:

- identify and analyze musical structures, harmonies and texture-technical solutions in Western art and rhythm music
- use their knowledge and skills regarding different instruments and ensembles to produce original and arranged textures for the needs of music education
- arrange music for various ensembles according to different music styles
- evaluate the stylistic consistency of the textures they produce
- is able to evaluate the stylistic appropriateness of music produced by him/herself
- define their own pedagogical methods and opportunities in the teaching of music theory and ear training

[Official course record: 422284A](#)

KE00AJ70 | Musical Instrument Teaching

1 ECTS | Early Childhood Education, Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Pietu Halonen

Content

Music instrument studies in piano and guitar

Learning outcomes

After completing the course, student is able to accompany songs at his or her own skill level

[Official course record: KE00AJ70](#)

KE00AV22 | Neuropsychological rehabilitation A

4 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Katja Jussila

Content

- Key approaches and effectiveness factors in neuropsychological rehabilitation
- Target groups and implementation methods of rehabilitation
- Defining appropriate goals for neuropsychological rehabilitation
- Therapeutic working methods and their application in practical rehabilitation work
- Legislation and the rehabilitation system related to neuropsychological rehabilitation

Learning outcomes

The student can:

- describe the key approaches and effectiveness factors in neuropsychological rehabilitation.
- identify target groups and implementation methods of neuropsychological rehabilitation.
- define appropriate goals for neuropsychological rehabilitation.
- apply therapeutic working methods in practical rehabilitation settings.
- explain the legislation and structure of the rehabilitation system related to neuropsychological rehabilitation.

Official course record: [KE00AV22](#)

KE00AV23 | Neuropsychological rehabilitation B

4 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Katja Jussila

No description supplied in the collected record.

Official course record: [KE00AV23](#)

412186A | Organizational learning

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Anu Kajamaa

Content

The course covers the most common organizational learning theories and main concepts from the point of view of organizational change processes and related challenges.

Learning outcomes

The student becomes familiar with relevant theories of organizational learning. After completing the course, the student can critically evaluate the foundations of various theories of organizational learning, specify organizational change processes and related learning challenges, and apply learning theories in the analysis and planning of organizational and working life changes.

Official course record: [412186A](#)

412184A | Organizational psychology I

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Teemu Suorsa

Content

Basic concepts and approaches in organizational psychology
Multi-disciplinary study of organizations
Multi-professional collaboration

Learning outcomes

Having completed the study module, the student

- knows the basics of organizational psychology in learning sciences
- identifies organizational psychological research objects and methods and understands the role and possibilities of psychological research in multi-disciplinary study of organizations
- knows the starting points of cultural historical psychology and multi-professional collaboration and expertise as its object of study
- knows the UN goals for sustainable development and can reflect upon questions of organizational psychological and multidisciplinary research in relation to these

Official course record: 412184A

KE00AF00 | Organizational psychology II

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Hanni Muukkonen-van der Meer

Content

Work and organizational psychology as a research subject

Organizational structures and cultures

Leadership and management in organizations

Group dynamics, team and group activity in organizations, social interaction

Project work and leadership

Psychological background of well-being at work

Development of knowhow and expertise

Learning outcomes

After completing the course, the student is able to:

- Identify the central elements of leadership and organizations and apply knowledge on them in different tasks and duties in an organization
- observe and reflect on his/her own action methods and apply knowledge of his/her own branch of science in a multi-professional group
- analyze and apply knowledge and practices connected with the operation of teams and organization and with group dynamics
- understands the role of individual and organizational factors for psychological well-being at work

The course evaluates the development of the following generic skills:

Sustainability, responsibility and ethics skills

- students recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them.

In addition, the course supports the practicing of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AF00](#)

KE00BC67 | Orientaatio maisteriopintoihin oppimistieteissä [Finnish source]

5 ECTS | Educational Psychology | Advanced Studies |

Person in charge: Teemu Suorsa

Content

- Expert in learning sciences and educational psychology in Finland and abroad
- Starting points and practices of higher education
- Planning your own studies and information retrieval
- Planning a community-building event

Learning outcomes

After completing the course, the student

- is familiar with the history and future prospects of the university and his/her own field of study
- is familiar with the research carried out at the Faculty and is able to plan his/her advanced studies
- knows the labour market of an expert in learning sciences and educational psychology in Finland and abroad
- is able to work in international cooperation and take into account the international operating environment in their activities
- is able to promote constructive cooperation with people from different backgrounds, develop their language skills and is able to challenge their own stereotypical thought patterns
- recognizes his/her own role in building the community of learning scientists and is able to participate constructively in the activities of the community

Official course record: [KE00BC67](#)

412090A | Orientation to clinical practice

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Pauli Sitomaniemi, Sofia Pihlaja

Content

- Getting acquainted with the profession and tasks of a psychologist working with clients and/or other tasks in one of the application areas of psychology
- Getting acquainted with interprofessional practices, the role of the psychologist, and interaction processes within them

The aim is for the student to form an understanding of the diversity of psychological work, as well as to explore the construction of their own professional identity and different career paths.

Learning outcomes

Upon completion of the course, the student will be able to

- describe the legislation governing psychological activities and has the knowledge of the ethical principles guiding the client work
- describe the different application areas and tasks of the psychologist profession
- describe the key research areas of psychology, understands the multidisciplinary nature of psychologist's work and the development of the profession, as well as its connections to social change
- describe the professional role of a psychologist in a multidisciplinary team or network
- describe the significance of a psychologist's job from the perspective of the client's care and service package
- observe and reflect elements of one's professional competence, interest and professional identity

Furthermore, the course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

Official course record: [412090A](#)

KE00BB74 | Orientation to intercultural education

3 ECTS | Education (Primary Teacher) | General Studies | English

Person in charge: Katri Jokikokko

Content

- Oulu University's general orientation materials (checking that students have studied pre-orientation materials)
- Studying in the university and intercultural teacher education
- Theoretical concepts and approaches related to intercultural education, social justice and sustainability (such as culture, diversity, identity, equality and power)
- Current research findings and practices in the field of intercultural education, social justice and sustainability
- Challenges and debates related to intercultural education, social justice and sustainability in the context of education.

Learning outcomes

After completing the course, the student will be able to

- take responsibility for planning and progressing their own studies in the university
- find ways to take care of their own well-being and balance between studies and free time
- examine the basic concepts and dimensions of intercultural education and social justice
- describe the most common approaches to intercultural education
- recognize and analyze the complexity of diversity
- be aware of the necessity of sustainability in educational policies and practices
- define and critically analyze the interdependence of social justice, intercultural education and educational sustainability

Official course record: [KE00BB74](#)

KE00BC70 | Orientation to LET Master's Studies

3 ECTS | Education | Language and Communication Studies | English

Person in charge: Riikka Tumelius

Content

- Study and career planning and counselling
- Role of teacher tutor
- Topics in internships
- Familiarizing with faculty research
- Library and information services

The course supports the development of the following generic skills defined by the University of Oulu: Analytical, critical and creative thinking skills; Well-being, and self-development skills; International and multicultural skills; Communication, interaction and digital skills

Learning outcomes

Having passed the course, the student is able to:

- find information regarding their own studies and future career, as well as to plan them
- analyze and produce scientific text
- perceive different ways of conducting educational research and producing academic knowledge
- present and compare different kinds of educational expertise and profile oneself in relation to them
- describe oneself as a future conductor of research and as a professional acting based on scientific knowledge

Generic skills:

After completion of the course, the student is able to

- work in international cooperation and take the international operating environment into account in their activities
- promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.

Official course record: [KE00BC70](#)

KE00BB75 | Orientation to master's studies and working life in diversifying educational contexts

5 ECTS | Education (Primary Teacher) | Advanced Studies | English

Person in charge: Katri Jokikokko

Content

Study and career planning and counselling (including PSP discussion)
Information retrieval skills on master's level studies
Presenting faculty research
Expert talks
Educational professional's identity, professional learning and wellbeing
Information services
Seminars and teacher tutor sessions
Independent work

Learning outcomes

Having passed the course, the student is able to:

- *find information regarding their own studies and future career, as well as to plan them
- *analyze and produce scientific text
- *perceive different ways of conducting educational research and producing academic knowledge
- *present and compare different kinds of educational expertise and profile oneself in relation to them
- *promote their well-being as a student and future education professional, develop their self-leadership skills and build their professional identity, and maintain their own competence in a goal-oriented manner
- *act constructively in situations of uncertainty and discomfort, develop self-compassionate practices, and promote community and interaction to support well-being.
- *describe oneself as a future conductor of research and as a professional acting based on scientific knowledge

Official course record: [KE00BB75](#)

KE00BC65 | Orientation to Master's studies in General Education Study Programme

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Henri Pettersson, Veli-Matti Ulvinen

Content

The course includes the following content:

- Planning your studies and future career (includes, for example, HOPS discussion, HOPS preparation)
- Information retrieval and utilization of scientific information in master's studies
- Presentation of faculty research
- Expert presentations on education and learning -Small group meetings with personal teachers (and tutors)
- Independent work

Learning outcomes

After completing the course, students will be able to:

- search for information related to their studies and future careers and plan them
- analyze and produce scientific texts and identify the key characteristics and styles of scientific texts
- identify and describe different trends in educational research and ways of producing scientific knowledge
- present and compare different forms of expertise in the field of education and learning and describe their own relationship to them
- describe themselves as researchers and professionals working on the basis of scientific knowledge

Official course record: [KE00BC65](#)

413069S | Orientation to Master's Studies

3-5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Hennariikka Valppu-Paaso

Content

- * Study and career planning and counselling
- * Presenting faculty research
- * Expert talks
- * Information services ([Library recap 2h](<https://libguides oulu fi/413069S>), [Information retrieval Let & EdGlo](https://libguides oulu fi/413069S_LET_EdGlo))
- * Seminars and teacher tutor sessions
- * Independent work

Learning outcomes

The course equips the student as a future expert of education and learning. It combines two themes topical to master level studies – the questions connected to work life and scientific production of knowledge. The course helps the student to recognize and strengthen their own expertise. It also provides experiences of finding, reading and producing scientific knowledge.

Having passed the course, the student is able to:

- find information regarding their own studies and future career, as well as to plan them
- analyze and produce scientific text
- perceive different ways of conducting educational research and producing academic knowledge
- present and compare different kinds of educational expertise and profile oneself in relation to them
- describe oneself as a future conductor of research and as a professional acting based on scientific knowledge

Official course record: [413069S](#)

KE00AS90 | Orientation to Master's Studies

1 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

The course prepares the student for Master's studies. The course provides the student with tools to act as a future expert in the field of psychology. The course helps the student to identify and develop their own strengths as expert. The student updates their study plan during the course.

Learning outcomes

After completing the course, the student is able to:

- * seek information for their own studies and future careers and plan them
- * assess oneself as a professional whose actions are based on scientific knowledge

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: KE00AS90

KE00BC19 | Orientation to primary teacher's master studies and working life

5 ECTS | Education (Primary Teacher) | Advanced Studies | Finnish

Person in charge: Veli-Mikko Kauppi

Content

- * Planning your studies and future career (including drawing up your personal study plan) and teacher-tutor guidance
- * Expert presentations on educational research, multi-professional schools, and the work of teachers
- * Independent work through academic literature and your own professional growth portfolio
- * In addition, the course includes the opportunity to receive guidance on information retrieval and the utilization of scientific information in master's studies

Learning outcomes

The course provides students with tools for their future careers as education and learning experts, particularly from the perspective of a primary school teacher's degree. Its content reflects two themes that are relevant to master's degree students: scientific knowledge formation and issues related to the transition to working life. The course helps students identify and develop their own strengths as experts. They also gain experience in searching for, reading, and producing scientific knowledge. They also gain an overview of their master's studies as a whole and an understanding of the relevance of their studies to working life.

After completing the course, students will be able to:

- * search for information related to their own studies and future career and plan them
- * recognize and describe different fields in educational research and ways of producing scientific knowledge, as well as their significance for their own work
- * describe themselves as professionals working on the basis of scientific knowledge
- * identify the needs, opportunities, and different methods of professional interaction
- * describe the multidisciplinary nature of a teacher's work

The course also supports the development of the following generic skills at the University of Oulu:

Students

- * are able to apply analytical and critical thinking skills in a manner appropriate to their field of study, taking into account the interfaces between disciplines and new knowledge
- * are able to promote their well-being, develop their self-management skills, build their professional identity, and maintain their own expertise in a goal-oriented manner
- * are able to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of working, and promote community spirit and interaction to support well-being
- * are able to promote multidisciplinary cooperation and lead multidisciplinary and multi-professional groups

Official course record: KE00BC19

KE00BC20 | Orientation to special education teacher's master studies and working life

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Riikka Sirkko

Content

- * planning of master's studies, degree structure, electives and minor subjects (HOPS discussion)
- * information search and utilization of scientific knowledge in master's studies
- * participation in joint university and faculty events and acting as an expert in them (e.g. Researchers' Night, Applicant's Day)
- * familiarization with social discussion and decision-making in one's own field
- * strengthening the connection to working life

Learning outcomes

After completing the course, the student will be able to:

- * plan own studies
- * identify and describe different trends in educational research and methods of scientific knowledge formation and their significance for their own work
- * promote well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner
- * develop own working life skills
- * act openly in international and multinational situations with people from different cultural backgrounds
- * apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field
- * communicate as an expert in a way that is appropriate for the target audience, also in a foreign language, and build professional networks

Official course record: KE00BC20

KE00AZ75 | Participation in Psychological Research

0 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

The course introduces students to the research carried out in the Unit of Psychology through first-hand experience. Alternatively, if the student does not wish to take part in the examination, the student will complete a learning task.

Learning outcomes

Students will be able to outline and describe the different stages of psychological research and the processes involved. Identify applications of the content learned in basic studies to research.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.

Official course record: KE00AZ75

411014A | Paths to Working Life

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

During the course, the students search for information about working life and acquaint themselves with sources of worklife information. They search for information about their own field, strengths and interests. Issues related to well-being at work and personal coping are discussed.

Learning outcomes

Having completed the course, The student

- * identifies her/his strengths, occupational interests in the field in s/he is studying, and thereby her/his choices of major and minor subjects, as well as her/his self-knowledge and professional identity and her/his placement in working life
- * knows how to acquire knowledge on working life
- * perceives the connections of and opportunities offered by education and working life (minor subjects, practice periods, Master's thesis, exchange programmes, work life requirements, jobs, etc.)
- * knows how to describe and evaluate the field of educational work and working life in general (e.g. worklife competences, general skills and coping)

[Official course record: 411014A](#)

442450A | Pedagogic Working Environment of Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Jaakko Moilanen

Content

- determination of and reflection on the student's own learning objectives
- important theories, curricula and other documents related to early childhood education
- ECEC as a child's growth environment
- collaboration in early childhood education
- ECEC as a work community
- observation, planning and implementation of pedagogical activity in a small group in the kindergarten

Learning outcomes

Having completed the course, the student

- knows how to determine objectives for learning and reflect on them
- is familiar with theories, curricula and other documents connected with early childhood education
- is able to describe the kindergarten as a child's growth environment and work community
- is able to describe the cooperation in early childhood education
- based on observation, knows how to plan and implement pedagogical activities in a small group
- is able to observe play, physical activity, arts and everyday cultural activities and the pedagogy implemented in them

[Official course record: 442450A](#)

408014S | Pedagogical Challenges in Research: Literature Course

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Veli-Mikko Kauppi

Content

Students familiarize themselves with different pedagogical challenges in the area of educational sciences in the different literature packages as well the research done at the Faculty of Education and Psychology. Students select one of the literature packages available in the course.

Learning outcomes

After completing the course, the students are able to:

- justify their educational views with topical and diverse scientific knowledge
- apply the read literature to their own thinking
- apply in their essays the principles of scientific writing

[Official course record: 408014S](#)

413063S | Pedagogical Institutions

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Ari Kivelä

Content [Finnish source]

-Opintojaksolla tarkastellaan pedagogisten instituutioiden teorian keskeisiä sisältöjä (käsitteet ja argumentaatiotavat) historiallis-systemaattisesti.

Learning outcomes [Finnish source]

Opintojakson jälkeen

- Opiskelija tunnistaa pedagogisten instituutioiden teorian keskeiset käsitteet ja ajattelumallit.
- Opiskelija tiedostaa pedagogisten instituutioiden erityispiirteet, jotka erottavat ne muista yhteiskunnallisista toimintakentistä ja instituutioista.
- Opiskelija hahmottaa pedagogisten instituutioiden ja muiden keskeisten yhteiskunnallisten instituutioiden keskinäisiä suhteita.
- Opiskelija kykenee hyödyntämään oppimaansa pedagogisten instituutioiden eri organisatoristen muotojen tarkastelussa, arvioinnissa ja kehittämisessä
- Kurssi lisää valmiuksia toimia ja hakeutua työskentelemään kasvatuksen ja koulutuksen eri instituutioihin.

[Official course record: 413063S](#)

442458A | Pedagogical Process in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Satu-Maarit Karjalainen

Content

- observation, documentation and evaluation as the basis for pedagogical planning and implementation
- early childhood education pedagogy as a collective process
- conception of the child and the child's agency and participation
- pedagogical growth and learning environments

Learning outcomes

Having completed the course, the student

- knows how to describe and analyse the pedagogical process theoretically
- is able to critically evaluate knowledge related to early childhood education pedagogy and apply it to solving complex and unpredictable problems
- through observation and documentation, knows how to plan, implement and evaluate pedagogical activities
- knows how to analyse and develop his or her own pedagogical conception of the child from the viewpoint of the child's active agency
- knows how to evaluate and develop growth and learning environments in a multitude of ways

[Official course record: 442458A](#)

407076A | Pedagogical Seminar

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Veli-Mikko Kauppi

Content

- reflection of pedagogical activity and thinking
- pedagogical activities of the teacher
- teacher identity and growing into teacherhood
- physical, psychological and social learning environment
- school and class culture
- assessment
- power and violence in educational environments

In addition, the course includes the following generic skills of the University of Oulu: students are able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems; students are able to identify key factors related to their own well-being and self-management; students recognize stress factors related to expert work and utilize self-compassion to support their well-being; students are able to describe their expertise, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning; they recognize cultural diversity and the problems associated with stereotypes related to different languages, nationalities, and ethnic groups, and recognize stereotypical ways of thinking; they are able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds; the student is able to work in multidisciplinary and multi-professional teams and appreciates expertise in different fields; the student is able to communicate clearly in a group, listen actively to others, give constructive feedback, and resolve conflicts constructively.

Learning outcomes

Having completed the study module, the student

- knows how to analyze and evaluate pedagogical activities as a teacher
- is able to reflect on the starting points and development of one's own teaching
- is able to communicate broadly about learning and teaching in a constructive way in different social settings
- is familiar with the significance of the learning environment to support learning and interaction
- knows how to analyze factors influencing the classroom and school culture
- knows how to view assessment as a part of the teacher's pedagogical activity
- identifies manifestations of violence and bullying in the educational environment, and know how to intervene in them.
- reflect the impact of Basic Education Act on teacher's work

[Official course record: 407076A](#)

416013A | Pedagogical seminar

5 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

- teachership
- development of teaching and educational institutions
- assessment of teaching (e.g. skills demonstrations and competence-based qualifications)
- theoretical foundations of teaching and educational work

Learning outcomes

Having completed the course, the student

- knows how to evaluate her/his own strengths and needs for development in the teaching profession
- knows how to discuss teachership and teaching as a job collegially
- is able to work in multiprofessional contexts
- knows how to apply educational research knowledge to the development of his/her teaching

[Official course record: 416013A](#)

KE00AJ69 | Pedagogy in Early Childhood Education Child Group

9 ECTS | Early Childhood Education, Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Jaakko Moilanen

Content

Theory of play

Art pedagogy

Child's participation in ECEC

Pedagogical process

Learning outcomes

Having completed the course, the student

- is able to observe, analyze and argue pedagogical processes
- recognizes the meaning of play, and creating and experiencing art as a part of child's growth and well-being
- is able to describe play and artistic processes, and identify connections between them in ECEC
- is able to observe and promote child participation
- is able to plan, implement, and evaluate pedagogic processes, which base on child group observation
- is able to reflect and develop ECEC pedagogy and own abilities as an ECEC pedagogic expert in educational community using methods based on dialogicity

Official course record: [KE00AJ69](#)

442451A | Pedagogy of Early Childhood Education and Pre-Primary Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Taina Kyrönlampi

Content

- documents and curricula for early childhood and pre-primary education
- transition phase from pre-primary to primary education
- observation and documentation, planning, implementation and evaluation of pedagogical activity in pre-primary and primary education
- collaboration in pre-primary and primary education
- integration of play with the pedagogy of pre-primary education
- main principles of learning to read and write
- cooperation with families in everyday pre-primary and primary education

Learning outcomes

The student knows how to

- apply the documents and curricula for early childhood and pre-primary education in practical education and teaching work
- identify the meaning of the transition phase from pre-primary to primary education for a child's growth, development and learning
- based on observation and documentation, implement and evaluate pedagogical activities in pre-primary education through integration of the possibilities offered by play, physical exercise, arts and technology
- apply and use his/her collaboration skills based on the principles of dialogicality
- apply methods and processes of learning to read and write as educator and teacher

Official course record: 442451A

423236S | Pedagogy of free accompaniment

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Pietu Halonen

Content

Advance his/her free accompaniment skills from the pedagogical point of view

Learning outcomes

Having completed the course, the student knows how to

- use the basic pedagogical methods and approaches when teaching free accompaniment skills
- apply his or her pedagogical skills in a pupil-centred manner
- analyze in a constructive way his or her own activities at different stages of teaching

Official course record: 423236S

423263S | Pedagogy of Music and Movement

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Katja Sutela

Content

Dalcroze Eurhythmics, dances, creative movements, accompaniment, field studies based on students' own interests

Learning outcomes

After completing the course, the student will be able to:

- develop skills in music-and-movement and deepen one's knowledge of the role of embodiment in music education
- apply music-and-movement in different educational contexts and
- apply skills in accompaniment regarding specialities in music and movement teaching practice
- is able to communicate clearly and responsibly in a teaching situation, make use of both verbal and nonverbal listening and discussion skills, and recognize the power relations and their own position inherent in the teaching context

Official course record: 423263S

423264S | Pedagogy of Music Technology

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Jere Tullirinta

Content

This course focuses on the pedagogical application of music technology in various learning environments, involving projects in technology-enhanced music education settings and independent exercises

Learning outcomes

After the course student is able to:

act independently in school music technological environments.

choose meaningful technological formats and platforms for school contexts

use audio digital tools and process from the demands set to school teachers' discipline

plan projects to school settings

Official course record: [4232645](#)

KE00AH14 | Pedagogy of pre- and primary education

5 ECTS | Preschool and Primary Education | Basic Studies | Finnish

Person in charge: Minna Sääskilahti

Content

*Curriculum and documentation for pre-school and grades 1-2

*Processes of children's learning and related factors

*Pedagogical documentation

*Evaluation methods suitable for the pre-school and grades 1-2 and practices that enhance motivation

*Child-centered pedagogy

* Well-being and emotional skills

Learning outcomes

Upon completing the course, you will possess the following knowledge and skills:

*Fundamental understanding of pre- and early childhood cognition and learning styles, and the methods for teaching these skills

*Ability to recognize and consider the impact of development, thinking, and motivation on learning in pre- and early childhood

*Proficiency in designing and implementing pre- and early education in a practical setting

*Documentation that supports learning

*Familiarity with various assessment techniques and practices used in pre-school and early grade education

Official course record: [KE00AH14](#)

423234S | Pedagogy of Rhythm Music

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Jussi Jaako

Content

Leading the band, learning to teach the basic techniques of band instruments, creating learning and practice material, preparing a student concert, teaching practice

Learning outcomes

After the course student is able to

- produce learning material for bands

- guide school students to play in a band with basic techniques, simple but straight style

- guide how to play different instruments

- evaluate the learning process of the group

Official course record: [423234S](#)

KE00AN20 | Peer mentoring

3 ECTS | Education | Other Studies | Finnish

Person in charge: Riikka Mononen

Content

The student will familiarise themselves with mentoring and guidance work, and will get a comprehensive picture of peer mentoring as a working tool. Student also gets to implement their knowledge in practice, when peer mentoring another student.

Learning outcomes

On completion of the course, the student will:

- * know the basic principles of guidance and counselling
- * be able to work in a confidential and goal-oriented manner in guidance situations
- * understand the basic principles of mentoring and is able to apply them as part of their own competence
- * knows how to use solution and resource oriented approaches as tools as part of peer mentoring
- * is able to use dialogue as part of mentoring.

[Official course record: KE00AN20](#)

402721P | Perception and Meaning

5 ECTS | Art | Basic Studies | Finnish

Person in charge: Tapio Tenhu

Content

- physical, psychological and social environment
- viewing one's own environmental relationship through art
- examination of the relationship between art, society and culture
- modernism, contemporary art, environmental and community art
- visual culture literacy
- basic techniques and materials of painting

the course includes an environmental art camp, the date of which is announced in the study guide

Learning outcomes

After the course, the student is able to

- apply basic techniques, equipment and materials used in visual arts
- analyze and study his/her own visual expression and its significance for identity and conception of art
- to observe, read and interpret a variety of environments and their esthetic, ethic and cognitive meanings
- analyze and interpret works of art and view their meanings
- assess the individual, social and cultural meanings of art.
- identify the dimensions of sustainability related to art education (social, ecological, economic, cultural) and be able to evaluate their own activities in relation to them

[Official course record: 402721P](#)

412071P | Personality Psychology I

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

The aim of the course is to introduce students the core concepts, theories and research in personality psychology. The student will understand the development, persistence and change of personality. In addition, the student gets acquainted with the role of personality for human life and life course.

Content

- The concepts and theories of personality psychology
- The research of personality psychology and personality assessment
- The biological base of personality and social interaction
- The role of personality in health and well-being

Learning outcomes

- The student is able to conceptualize the historical development of personality psychology and the common theories of personality
- The student is able to define the factors and the structure of personality
- The student is able to explain, evaluate and compare basic concepts and theories of personality
- The students is able to perceive the meaning of personality in the life course
- The students is able to recognize personality assessment methods and is able to estimate those critically

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.

Official course record: 412071P

AY412071P | Personality Psychology I (OPEN UNI)

5 ECTS | Psychology | Basic Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

The aim of the course is to introduce students the core concepts, theories and research in personality psychology. The student will understand the development, persistence and change of personality. In addition, the student gets acquainted with the role of personality for human life and life course.

Content

- The concepts and theories of personality psychology
- The research of personality psychology and personality assessment
- The biological base of personality and social interaction
- The role of personality in health and well-being

Learning outcomes

- The student is able to conceptualize the historical development of personality psychology and the common theories of personality
- The student is able to define the factors and the structure of personality
- The student is able to explain, evaluate and compare basic concepts and theories of personality
- The students is able to perceive the meaning of personality in the life course
- The students is able to recognize personality assessment methods and is able to estimate those critically

Official course record: AY412071P

412084A | Personality Psychology II

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Mirka Hintsanen

Content

Central theories of personality psychology, personality development, stability and change, changing personality intentionally, research in personality psychology and current results, meaning of personality for well-being and life course, personality psychology applications

Learning outcomes

The student knows

- how to describe and explain the following with more depth and comprehensiveness as previously: personality psychology theories and research results, personality as dynamic whole and personality development, stability and change
 - how to describe the meaning of personality for well-being and life course
 - how to apply personality psychology knowledge
-
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
 - is able to identify key factors related to one's own well-being and utilize self-compassion to support well-being
 - is able to work with equality with different people, respecting individual differences
 - is able to communicate clearly orally and in writing, both to experts in their field and to other audiences
 - is able to communicate clearly in a group, listen actively to others and give constructive feedback

[Official course record: 412084A](#)

406060A | Phenomena, language awareness and problem solving

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Minna Sääskilahti

Content

Areas of transversal competence in the basic education curriculum

- Problem solving skills
- Thinking skills in mathematics
- Language awareness and multiliteracy
- Transversal competences
- Self-assessment, peer assessment and assessment of a large block of studies as part of a teacher's professional skills
- Importance and methods of active learning
- Planning a unit from the premises of phenomenon-based learning
- Future skills
- Reflection of own teacherhood and pedagogy

Learning outcomes

Having completed the study module, the student knows how to

- plan teaching that activates learning process and strengthens learner involvement
- plan learning units that combine different subjects and know how to use evaluation that supports learning in them
- plan teaching and evaluation of problem solving skills
- recognize starting points for phenomenon-based learning and their connections to school subjects
- apply the contents and goals of school subjects in phenomenon-based learning
- recognize the meaning of language awareness and linguistic diversity in teaching and learning
- recognize the diversity of language awareness and the importance of linguistics rights in growing and development
- identify changes in learning needs as part of changes in school, society and working life
- is able to analyze knowledge critically from teacher's point of view

Official course record: 406060A

410088P | Philosophical and Ethical Foundations and Objectives of Education

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Henri Pettersson

Content

- Western and non-western schools of educational philosophy
- Perspectives on global and professional ethics
- Educational implications of different approaches
- Ethical dilemmas in educational contexts

Learning outcomes

Upon completion of the course, the student will be able to:

- summarize and contrast central concepts and approaches of educational philosophy
- compare international perspectives on ethics
- apply concepts related to philosophy and ethics to discuss educational tasks and relationships in global contexts
- describe their current educational philosophy and explain and illustrate their approach to professional ethics
- understand and justify ethically sustainable working methods as part of a multidisciplinary community.

Official course record: 410088P

AY410088P | Philosophical and Ethical Foundations and Objectives of Education (OPEN UNI)

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Henri Pettersson

Content

- Western and non-western schools of educational philosophy
- Perspectives on global and professional ethics
- Educational implications of different approaches
- Ethical dilemmas in educational contexts

Learning outcomes

Upon completion of the course, the student will be able to:

- summarize and contrast central concepts and approaches of educational philosophy
- compare international perspectives on ethics
- apply concepts related to philosophy and ethics to discuss educational tasks and relationships in global contexts
- describe their current educational philosophy and explain and illustrate their approach to professional ethics
- understand and justify ethically sustainable working methods as part of a multidisciplinary community.

Official course record: [AY410088P](#)

442456A | Physical Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Susanna Takalo

Content

Contents of the study module

- documents regulating physical education in early childhood education and pre-primary education
- physical education for a child's holistic development
- different forms and environments of movement in early childhood education
- physical activities for families

Learning outcomes

After the course, the student

- can implement physical education based on the documents regulating physical education in early childhood education and pre-primary education, including the Finnish recommendations for early childhood physical activity
- can plan, implement and evaluate physical education that supports the child's holistic development and inclusion and provides the joy of physical activity at different times of the year in different activity and learning environments.
- can observe and support the child's development of motor skills and physical activity.
- knows how to implement physical education that supports a physical lifestyle in families.
- can promote their own and their work community's well-being through physical activity.

Official course record: [442456A](#)

422283A | Playing Band Music

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Jere Tulirinta

Content

- Getting to know the instruments of different instrument groups and their characteristics, participating in a group performance
- Getting to know the school orchestra
- Practical training and conducting of different ensembles and musical styles
- Choosing material to play, adapting to different ensembles/adapting existing material to suit the group
- Evaluation and development of pedagogical approaches, differentiation in ensemble situations
- Preparation and implementation of a small-scale concert/performance
- Knows the basic technique of the chosen orchestral instrument and is capable of participating in ensemble playing

Learning outcomes

After completing the course, the student will be able to

- rehearse and conduct music in school orchestras and various ensembles according to the style and written arrangements
- know the basic playing techniques of the instruments used in ensemble music and be able to use the instruments of different instrumental groups
- can select appropriate material and arrange and adapt music for a group
- be able to apply pedagogical approaches to ensemble situations
- be able to prepare and perform a small-scale concert and perform as a member of a school orchestra/ensemble

[Official course record: 422283A](#)

422278A | Popular Music a)

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Jussi Jaako

Content

- Creating various transcriptions
- Playing different genres of music in the band

Learning outcomes

After the course students are able to:

- recognize different rhythm music styles and relate typical theoretical phenomena and harmonic progressions on them
- do different kinds of transcriptions
- play electric guitar, bass, drums and keyboards in the band

[Official course record: 422278A](#)

422279A | Popular Music b)

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Jussi Jaako

Content

- Making transcriptions and analyzing them
- Playing and arranging different genres of music in the band

Learning outcomes

After the course students are able to:

- recognize different rhythm music styles and relate typical theoretical phenomena and harmonic progressions on them
- do teaching material for bands
- play electric guitar, bass, drums and keyboards in the band both in rehearsal and in concert

[Official course record: 422279A](#)

416014A | Practical Training

18 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Jouni Peltonen

Content

- observation of teaching in the practice place
- observation of teaching in other schools or educational institutions
- acting as a teaching assistant and giving practice lessons, participation in individual and group supervision
- planning of practice lessons
- participation in the other activities of educational institutions
- assessment and report on her/his own practice activities

Learning outcomes

Having completed practical training, the student

- knows how to plan, implement, evaluate and develop teaching in the subjects taught by her/him
- knows how to use methods of pupil assessment
- is able to identify needs for special education among the learners and to face different learners
- is able to work in different learning environments
- is able to develop her/his work community and her/himself as a teacher
- knows how to function collegially and responsibly in her/his teaching profession

Official course record: 416014A

KE00BA86 | Practical training in early childhood special education I

5 ECTS | Professional Studies in Special Education, Special Education | Intermediate Studies | Finnish

Person in charge: Marika Loukusa

Content

- * Inclusive early childhood education
- * Job description of a special education teacher in early childhood education
- * Structures and methods for implementing special educational support, as well as pedagogical documents
- * Professional, multidisciplinary, cross-sectoral, and family cooperation in the context of early childhood education

Learning outcomes

After completing the practical training, students will be able to

- * analyze methods of implementing early childhood special education in a daycare context.
- * reflect on their own observations and discuss them using research in the field.
- * explain the importance of cooperation and networking in the work of a special education teacher in early childhood education.
- * name cooperation partners in the field of early childhood special education.

Official course record: KE00BA86

KE00BA87 | Practical training in early childhood special education II

5 ECTS | Professional Studies in Special Education, Special Education | Intermediate Studies | Finnish

Person in charge: Elina Viljamaa

Content

- Inclusive early childhood education as the operational environment of an early childhood special education teacher
- Identifying support needs and organizing support
- Co-teaching and a consultative approach
- Teamwork, professional and multiprofessional collaboration, and cooperation with guardians
- Pedagogical innovations and interventions
- Occupational wellbeing

Learning outcomes

After completing the practical training, the student will be able to:

- Reflect on special education practices in inclusive early childhood education and on their own work as a special education expert
- Make use of and apply scientific knowledge in special education
- Independently plan, implement, and evaluate activities and support for children's growth, development, and learning based on special education principles and multiprofessional collaboration

Identify key partners and networks essential for their work

Official course record: [KE00BA87](#)

KE00AU79 | Practical Training in Special Class

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Riikka Sirkko

Content

- * classroom special education
- * observing the culture of the school community from the perspective of pupil support
- * learning about and participating in the preparation of pedagogical documents
- * individual, small group and co-teaching of pupils with special needs
- * multiprofessionalism at work

Learning outcomes

After completing the practice, the student will be able to

- * plan and implement special education in groups
- * plan and implement forms of individual support
- * reflect on their work as a special class teacher
- * work in multidisciplinary and professional teams and value expertise from different fields

Official course record: [KE00AU79](#)

KE00AU85 | Practical Training in Special Education

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Elisa Mainio

Content

- * individual, small group and collaborative teaching of pupils with special needs in collaboration with a special needs teacher or class teacher, teachers and student teachers
- * assessment of pupil and group-specific support needs
- * planning, implementation and evaluation of pupil and group support and teaching arrangements that support learning conditions
- * using the period and lesson plans to plan and evaluate teaching and support
- * access to and participation in the drafting of pedagogical documents
- * using research-based interventions and evaluation methods
- * differentiation and structuring
- * participation in consultation situations
- * participation in community and individual student welfare work
- * participation in cooperation within the school and with parents and pupils

Learning outcomes

After completing the course, students will

- * be able to assess the need for student-specific support measures and to plan and implement support for student learning and school attendance
- * can assess the need for teaching arrangements and group-specific forms of support that support learning conditions, and plan and implement activities in accordance with these forms of support
- * can use pedagogical documents in the planning, implementation and evaluation of support for learning and school attendance
- * know how to use different special educational methods and working methods, such as research-based assessment methods and interventions, differentiation and structuring
- * know how to use periodic and lesson plans to plan support for learning and school attendance
- * has practised co-teaching with another special needs teacher and a class/subject teacher and understands its importance in providing group and pupil-specific support
- * have participated in consultation situations and understand the key principles and practices of consultation
- * have participated in pupil welfare activities and can define the meaning and methods of individual and community-based pupil welfare
- * has participated in multi-professional cooperation within the school and with the pupil and carer as far as possible and understands the importance of cooperation in supporting learning and school attendance
- * is able to promote constructive cooperation with people from different backgrounds, develop their language skills, and challenge their own stereotypical ways of thinking

Official course record: KE00AU85

KE00AU78 | Practice: Orientation to Special Education at School

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Elisa Mainio

Content

- monitoring inclusive education, in particular accessibility of teaching and learning and student participation
- observing, planning and implementing teaching arrangements that support the conditions for learning (specially differentiation and structuring of teaching) where possible
- participation in multidisciplinary and multi-professional cooperation where possible
- active participation in all school activities (e.g. teaching, interdisciplinary cooperation, homework parks, pupil welfare, etc.)

Learning outcomes

After completing the traineeship, students will be able to:

- identify factors that promote accessibility
- describe and have participated in activities to promote learning, inclusion and accessibility
- understands the broad scope of the special needs education environment
- describe the multidisciplinary cooperation in which they have participated as far as possible
- describe the cooperation at the transition from one level of education to another
- work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds

Official course record: KE00AU78

407075A | Pre and Primary Education

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Maria Peltola

Content

- Preprimary and primary education as a child's development and learning context
- The child's agency, everyday life and learning process from early childhood education to preprimary and primary education
- The meaning of play in development and learning
- The child's transition to school and collaboration between the home, pre-school, and school (multi-professionalism)
- Learning to read and write as part of language development and social interaction
- Integration, transversal competence and differentiation in preprimary and primary education
- Assessment in support of learning and teaching in preprimary and primary education

Learning outcomes

After completing the course, the student

- knows how to describe the meaning of play in child's development and learning
- identifies the child's role and the change in the growth environment in the transition to school, and is able to cooperate with the professionals in the child's various growth environments and with the child's family
- is familiar with the continuation of a child's growth and learning processes from early childhood education to preprimary and primary education
- is familiar with the theoretical and practical starting-points and methods of learning to read and write
- knows how to apply the principles of integration, transversal competence and differentiation in preprimary and primary education
- knows how to use assessment to support a child's learning and growth and to develop his/her own pedagogical activities.

[Official course record: 407075A](#)

KE00AJ68 | Pre-Primary Education

5 ECTS | Early Childhood Education, Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Taina Kyrönlampi

Content

- growth, development and learning of a child of pre-primary school age
- pre-primary school curriculum basics, transversal competencies, and learning areas
- cooperation in pre-primary school education
- transition phases in early childhood education to pre-primary school education and pre- primary school education to elementary school
- pre- primary school pedagogy
- basics of reading and writing learning

Learning outcomes

After completing the course, the student:

- knows and is able to describe the stages of growth, development and learning of a child of pre- primary school age
- knows the documents related to pre-primary school education and is able to apply them in practical educational and teaching work
- knows and is able to describe the processes and transition phases related to pre- primary school education
- knows and is able to utilize learning methods of reading and writing
- is able to analyze the pre-primary school education settings as a part of child education path and learning
- recognizes and is able to describe the importance of play as part of pre-primary school education

Official course record: [KE00AJ68](#)

402335P | Product design

5 ECTS | Technical Work, Textile Work | Basic Studies | Finnish

Person in charge: Leena Hartikka

Content

- * familiarisation with design and manufacturing processes in handicrafts and with the basis of craft science and technology education
- * familiarisation with occupational safety in handicrafts
- * design and manufacture of a product related to the course themes
- * The course includes visits to companies and other partners

Learning outcomes

Having completed the course, the student

- * is capable of forming an idea of the foundations and research basis of craft science and technology education
- * understands the perspectives of design on handicrafts and the surrounding society and of their application in basic education making use of various pedagogical methods
- * masters the basics of product design
- * identifies the viewpoint of occupational safety in craft methods
- * Is able to use critical and creative problem solving skills.
- * identify the principles of well-being and self-management and develop their own and the group's competence.
- * can work according to the principles of ethics and sustainability.
- * communicates clearly, works collaboratively, and uses digital and artificial intelligence applications responsibly.
- * is able to document his/her own ideation, design and manufacturing processes and reflect on his/her work and learning

Official course record: [402335P](#)

402731P | Product design and digitalization

5 ECTS | Education, Educational Technology | Basic Studies | Finnish

Person in charge: Juha-Matti Turpeinen

Content

- * Our environment, it's objects, things and artefacts.
- * Modern phenomena, designs and designers.
- * History and backgrounds of the product design and industrial design
- * Basics of the product design
- * Experimental product design: new and novel concepts and methods for creating design
- * Technical drawings and it's toolstekninen piirtäminen ja sen apuvälineet
- * Digital fabrication and digital design (2D and 3D tools). Virtual prototyping with XR tools (virtual and augmented reality)
- * Instructional design: how to apply product design methods and concepts in education and working life

Learning outcomes

After completion of this course, the student is able to:

- * Understand basics of product design
- * Use problem solving and teamwork skills in the context of product design
- * Recognize the role of the product design as a part of the future working life skills
- * Describe and analyze concepts such as design, creativity, ideating, innovation and invention
- * Interpret and apply basics of the product design in educational contexts.
- * Use tools used in digital design and fabrication (such as 3D printer, vinyl cutter and laser cutter)

Generic skills:

In the course, the student independently identifies critical and creative thinking skills and can apply them to the assessment of knowledge in the subject area and problem solving.

The student independently identifies the key factors of their own well-being and self-management, manages the handling of the workload of expert work and can develop their own competence and support group learning.

In the course, the student independently identifies the challenges of cultural diversity and stereotypes in the subject area and is able to act constructively in multicultural and international situations.

The student identifies the dimensions of sustainability in the subject area and can act ethically, equally and with respect for different people and environments.

As a result of their observations, the student can compare the perspectives of scientific disciplines, identify interdisciplinary opportunities and act constructively in multidisciplinary teams.

The student can communicate clearly to different audiences, act constructively in a group and use digital applications in the field responsibly.

Official course record: 402731P

KE00BC22 | Professional Expertise of a Master's Degree in Education

4 ECTS | Early Childhood Education | Advanced Studies | Finnish

Person in charge: Signe Siklander

Content

12h Expert lectures on education and teaching

2h Information retrieval

102h Independent work: learning diary

Learning outcomes

The course provides students with tools for their future role as experts in education and learning. Its contents reflect two themes that are particularly relevant for master's-level students: scientific knowledge production and issues related to working life. The course supports students in identifying and developing their own strengths as experts. Students also gain experience in searching for, reading, and producing scientific knowledge.

After completing the course, the student will be able to:

- search for information related to their studies and future career and plan them accordingly
- analyse and produce scientific texts
- identify and describe different approaches in educational research and various modes of scientific knowledge production
- present and compare different forms of expertise in the field of education and learning and describe their own relationship to them
- describe themselves as a researcher and as a professional who acts on the basis of scientific knowledge

Official course record: [KE00BC22](#)

423271S | Project

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Nina Jokela

Content

In this course, the student carries out a self-selected musical or pedagogical project that may involve planning, rehearsing, performing, developing learning materials, or other independent musical work, along with the related documentation and evaluation. The project may also be organized by the degree programme.

Learning outcomes

Upon completing the course, the student

- * is able to plan and carry out a project by applying appropriate working methods.
- * is able to act responsibly and purposefully within the project.
- * is able to document and evaluate their own work as part of their professional development.

Official course record: [423271S](#)

411015A | Project training

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Kimmo Kontio

Content

Getting to know one area in the field of education (consulting, guidance, training and its planning, teaching, research, staff issues) by participating in the selected activity and learning about the relevant organisation.

Learning outcomes

The student

- gains an initial insight into the knowledge and skills required in work practice and has a mastery of general working life competencies
- knows how to prepare a project plan and how to produce a compact report on work practice
- has acquainted her/himself with one area in the field of education such as counselling, guidance or training and its planning, teaching, research and staff issues

411016A | Proseminar

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The student composes a thesis on his/her chosen topic in the field of education. The thesis focuses on the mastery of the basics of scientific thinking, a scientific and theoretical approach to research, designing a research setup, and research methods. Seminar work will also focus on critical scientific writing and acting as an academic opponent. In designing the research setup, the student is encouraged to take an experimentally and developmentally minded attitude.

Learning outcomes

After completion, the student knows how to compose a research plan in the field of education and implement it using methodologies relevant to the research problem. The student is able to take a part in academic debate and report on his/her research work according to the principles of scientific writing.

Official course record: 411016A

AY411016A | Proseminar (OPEN UNI)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

The student composes a thesis on his/her chosen topic in the field of education. The thesis focuses on the mastery of the basics of scientific thinking, a scientific and theoretical approach to research, designing a research setup, and research methods. Seminar work will also focus on critical scientific writing and acting as an academic opponent. In designing the research setup, the student is encouraged to take an experimentally and developmentally minded attitude.

Learning outcomes

After completion, the student knows how to compose a research plan in the field of education and implement it using methodologies relevant to the research problem. The student is able to take a part in academic debate and report on his/her research work according to the principles of scientific writing.

Official course record: AY411016A

412091A | Psychological assessment methods

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Piia Hyytinen

Content

In the course, the student becomes familiar with the practices of psychological assessment, including the duty of confidentiality to the reporting of test results. The student learns about test theory and commonly used standardized cognitive tests for children, adolescents and adults, as well as adult personality questionnaires and their use.

The aim of the course is to form an understanding of the psychological assessment process as part of client and patient work.

The course includes practicing client work

Learning outcomes

- The student can describe the theories related to assessment of psychological phenomena.
- The student can describe the basic principles related to formulating, administering, and interpreting different assessment methods.
- The student can apply different assessment methods and can describe the ethical principles of their use and practices.
- The student can describe different psychological assessment methods for children, adolescents and adults.
- The student can specifically select and apply different assessment methods depending on different age groups, symptoms, and contexts.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems

Official course record: [412091A](#)

412093A | Psychological interventions and mental health service system

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Sofia Pihlaja

Content

- The reformed domestic mental health service system
- Legislation regarding the mental health service system
- The most important short interventions and forms of short psychotherapy used in the domestic service system
- The basic elements of therapeutic interaction and the central principles of psychological interventions
- Course work includes practicing client work.

Learning outcomes

Upon completion of the course the student will know how to

- describe the domestic mental health service system and its treatment paths
- describe the healthcare legislation regarding the service system
- describe key short interventions and forms of short psychotherapy used in the domestic service system
- describe basic elements of therapeutic interaction and the central principles of psychological interventions

Furthermore, the course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and interact in culturally diverse contexts.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student communicates clearly both orally and in writing to experts and broader audiences. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [412093A](#)

KE00AV18 | Psychological interventions for adults A

6 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

In this course, the student becomes familiar with the theory, methods, and applications of the therapeutic approach covered in the course (such as Acceptance and Commitment Therapy). The course also includes practicing client work. The therapeutic approach addressed may vary from year to year.

Learning outcomes

The student is able to:

- Analyse the change motivation, rehabilitation needs, and suitability for intervention work of a client seeking treatment.
- Explain and structure the theoretical framework and key methods of brief intervention.
- Apply the theory and methods of therapeutic intervention in client work in ways that meet the demands of different situations.
- Plan and implement, under supervision, an intervention process based on the client's needs.
- Evaluate and reflect on the course of the client process and their own professional actions with the help of supervision, and identify strengths and areas for development in their work.
- Assess the progress of rehabilitation, the achievement of goals, and the client's need for continued care.

The course supports the development of the following generic skills:

- The student is able to apply analytical and critical thinking to questions within their own discipline and at the interfaces between disciplines, and to evaluate and produce well-reasoned arguments.
- The student is able to promote their own well-being, manage their own work, and develop their professional identity.
- The student is able to act constructively in situations of uncertainty and discomfort, practice self-compassion, and promote collaborative interaction.
- The student recognizes the key interdependencies of social sustainability within their field and is able to assess the impacts of their field's activities on them.
- The student is able to address ethical issues in their field and justify their actions ethically, taking into account different perspectives and power relations.
- The student is able to apply the methods of their own field and recognize the possibilities and limitations of methods from other fields.
- The student is able to work in and lead multidisciplinary and interdisciplinary teams.
- The student is able to communicate appropriately as an expert to different target audiences, including in a foreign language, and to build professional networks.
- The student is able to utilize and critically evaluate digital solutions and artificial intelligence technologies within their area of expertise, and to recognize their impacts on research, working life, and society.

[Official course record: KE00AV18](#)

KE00AV19 | Psychological interventions for adults B

6 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Piia Hyytinen

Content

In this course, students become familiar with the theory, methods, and clinical applications of the brief therapy approach covered during the course. Based on this knowledge, they carry out a supervised intervention process with a real client. The specific therapy approach may vary from year to year.

The course includes practicing client work.

Learning outcomes

The student is able to:

- Analyse the change motivation, rehabilitation needs, and suitability for intervention work of a client seeking treatment.
- Explain and structure the theoretical framework and key methods of brief intervention.
- Apply the theory and methods of therapeutic intervention in client work in ways that meet the demands of different situations.
- Plan and implement, under supervision, an intervention process based on the client's needs.
- Evaluate and reflect on the course of the client process and their own professional actions with the help of supervision, and identify strengths and areas for development in their work.
- Assess the progress of rehabilitation, the achievement of goals, and the client's need for continued care.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: KE00AV19

KE00AV20 | Psychological interventions for children and adolescents A

4 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonien

Content

The student learns about the treatment of children and adolescents and parental guidance, which is based for example on the theory, methods and applications of cognitive behavioral therapy, and practices the intervention process and client work in practice.

Learning outcomes

The student can:

- Describe the factors affecting the planning, implementation, evaluation and monitoring of psychological rehabilitation for children and young people
- Utilizes practical intervention methods with mildly symptomatic clients
- Assess the client's motivation for change, rehabilitation needs and suitability for intervention work from the children's and youth's frame of reference
- Guidedly implements the intervention process from the reference framework of children and young people
- Reflect on the course of the customer process and own part in the work by means of work supervision.
- To evaluate the progress of rehabilitation and the achievement of goals.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: KE00AV20](#)

KE00AV21 | Psychological interventions for children and adolescents B

4 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonien

Content

The student learns about the treatment of children and adolescents and parental guidance, which is based for example on the theory, methods and applications of cognitive behavioral therapy, and practices the intervention process and client work in practice.

Learning outcomes

The student can:

- Describe the factors affecting the planning, implementation, evaluation and monitoring of psychological rehabilitation for children and young people
- Utilizes practical intervention methods with mildly symptomatic clients
- Assess the client's motivation for change, rehabilitation needs and suitability for intervention work from the children's and youth's frame of reference
- Guidedly implements the intervention process from the reference framework of children and young people
- Reflect on the course of the customer process and own part in the work by means of work supervision.
- To evaluate the progress of rehabilitation and the achievement of goals.

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AV21](#)

412087A | Psychology and Technology I

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Juha Salmitaival

Content

The course aims to improve students' awareness of the possibilities of various technologies at supporting psychological well-being and well-being at work as well as the risks associated with usage of technologies. The specific content of the course will be confirmed at the start of the course. Topics covered may include, for example:

- * telepsychology, virtual reality as supports of mental health
- * artificial intelligence
- * games and serious games
- * technology and well-being at work
- * technology and aging
- * social media and psychological well-being

Learning outcomes

- * The student can critically examine a person as a developer of technology and as its user.
- * The student can describe the potential risks and benefits of technology for human well-being and for well-being at work.
- * The student can evaluate the effects of technology on human well-being and mental health and on well-being at work.

412109S | Psychology and Technology II

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Anni Silvola

Content

Project management and leadership skills, as well as working with customers

Multidisciplinary teamwork

Research or development tasks for customers

Learning outcomes

After completing the course, students

- will be able to apply their conceptual and methodological expertise in their field to solve complex problems in teamwork.
- will be familiar with various technologies and previous research related to health, well-being, and skills development.
- will be familiar with scientific research in multidisciplinary collaboration and will be able to apply it in coordinating teamwork and working with clients.

The course focuses on developing the following generic skills:

Multidisciplinary and interdisciplinary skills: the ability to identify and integrate expertise from different fields to find innovative solutions to global challenges as part of a working group. Is able to promote

interprofessional collaboration and lead multidisciplinary and interprofessional teams

Communication, interaction, and digital skills: is able to utilize and critically evaluate digital solutions and artificial intelligence technologies in their own area of expertise in an appropriate safe, and responsible manner, and to identify their impacts on research, working life, and society

Official course record: 412109S

KE00AS25 | Psychology Master's Thesis

30 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Mirka Hintsanen

No description supplied in the collected record.

Official course record: KE00AS25

412067A | Psychology of counselling I

5 ECTS | Psychology, Educational Psychology | Intermediate Studies | Finnish

Person in charge: Teemu Suorsa

Content

- Research and practices in the field of guidance and counselling in Finland and internationally
- Educational psychological and psychological approaches to the theory, research and practice of guidance and counselling
- Starting points for developing personal style of counselling

Learning outcomes

- The student knows the field of guidance and counselling research and the role of psychological and educational psychological research as part of the whole
- The student is familiar with guidance and counselling practices in Finland and internationally
- The student knows the approaches in psychology and educational psychology relevant to guidance and counselling practices
- The student is able to apply approaches in research in understanding the counselling process and their personal style of counselling

Official course record: [412067A](#)

415040S | Psychology of counselling II

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Teemu Suorsa

Content

- counselling as a professional activity
- approaches to research on counselling
- analysis of counselling discussion

Learning outcomes

Having completed the study module, the student

- identifies the main characteristics of professional counselling
- is capable of evaluating her/his own counselling as a professional activity
- knows how to compare different approaches to research on counselling
- knows how to make use of the results of research on counselling to develop his/her own grasp of counselling

Official course record: [415040S](#)

KE00AS59 | Psychology of Language

3 ECTS | Psychology | Intermediate Studies | English

Person in charge: Henri Olkonen

Content

The course covers the following topics: written word recognition, sentence and text comprehension, reading as a perceptual process, reading development, emotions in reading, internet literacy & reading of science texts, figurative language processing, and reading & social media.

Learning outcomes

The student acquires knowledge about the mental processes required to comprehend and produce written and spoken language. The emphasis is on normal language processing, not on individuals with language problem

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AS59](#)

412181A | Psychology of learning I

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Eija Vuorenmaa

Content

Key paradigms and research themes of educational psychology

key dimensions of individual learning: cognitive processes, motivation and emotions

collaborative learning

Expertise

Learning analytics, artificial intelligence and digital traces in understanding and supporting learning

Learning outcomes

After the course student:

- Understands individual learning processes and their cognitive, motivational, emotional and social dimensions.
- Student can name factors that influence learning processes
- Define expertise, describe different forms of expertise and the development of these different forms of expertise
- Knows the basics of technology-enhanced learning.
- Recognize the principles of learning analytics and artificial intelligence use in educational contexts. Can name some existing LA/AI applications
- Can analyze learning processes and contexts by using terminologies from different theoretical approaches and paradigms.

This course focuses on developing the following generic skills:

Well-being and self-development skills: the ability to identify key factors related to personal well-being and self-management

Sustainability, responsibility, and ethics skills: identifies the dimensions of sustainability (social, ecological, economic, cultural) and is able to evaluate their own actions in relation to them

412154S | Psychology of learning II

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Hanni Muukkonen-van der Meer

Content

Theoretical approaches in educational psychology and their application

- learning across different developmental stages
- expertise and learning
- learning and learning difficulties
- technology and artificial intelligence-mediated learning
- collaborative learning and knowledge creation

Learning outcomes

Course Learning Outcomes

- The student masters the theoretical approaches and traditions of educational psychology.
- The student can analyze and evaluate information about the characteristics of learning across different developmental stages.
- The student can apply educational psychology knowledge to support growth and development.
- The student can apply research-based knowledge and concepts in defining and solving complex problems and expert tasks.
- The student can evaluate scientific knowledge and the process of creating new solutions.

University of Oulu generic competencies included in this course

Wellbeing and self-development skills

- knows how to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner
- knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being.

Communication, interaction, and digital skills

- is able to evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

Official course record: 412154S

423260S | Psychology of music

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Pirkko Paananen

Content

Psychophysiological fundamentals of music, principles of perception and processing of sound, models and theories of musical development, basic concepts of social psychology of music, meaning and motivation in learning music, the notion of musicality, introduction to the theoretical and practical principles of music therapy

Learning outcomes

Upon the completion of the course, the student will

- be conversant with the fundamental concepts and phenomena of music psychology, music cognition, and music therapy
- be able to assess learner's musical abilities and potentials in relation to models of musical development and current scholarship of music psychology
- have familiarized with the principles of music therapy and be able differentiate between the professions of music educator and music therapist
- be able to pose relevant pedagogical and research question pertaining to the relationship of mind and music.

The student will also achieve the following common generic skills of the University of Oulu, which are described on the Common generic skills and learning outcomes of the degrees page:

Analytical, critical, and creative thinking skills, objective:

Able to apply analytical and critical thinking skills in a manner appropriate to their discipline, taking into account interdisciplinary interfaces and new knowledge.

Multidisciplinary and interdisciplinary skills, objective:

Able to apply the methods of their own discipline and to recognize the strengths and limitations of the methods used in other disciplines.

[Official course record: 4232605](#)

KE00BC54 | Psychology of Well-being and Happiness

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Mirka Hintsanen

Content

The course contents include core concepts and theories of positive psychology and psychosocial factors and exercises affecting well-being. The course introduces various means and exercises that increase well-being and the students practice their use to support e.g. their own well-being. In addition, the course contents include well-being and the maintenance of well-being in the work of a psychologist.

Learning outcomes

After completing the course, the student is able to:

- describe the basic concepts and theories of positive psychology
- describe and assess the psychosocial factors and mechanisms that affect well-being
- design and implement actions to increase well-being and own well-being
- assess factors related to the professional well-being of the psychologist and maintain professional well-being and build professional identity
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- is able to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of working, and promote community and interaction to support well-being
- is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field

[Official course record: KE00BC54](#)

AY00BC55 | Psychology of Well-being and Happiness (OPEN UNI)

3 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Mirka Hintsanen

Content

The course contents include core concepts and theories of positive psychology and psychosocial factors and exercises affecting well-being. The course introduces various means and exercises that increase well-being and the students plan how to use them to support e.g. their own well-being.

Learning outcomes

After completing the course, the student is able to:

- describe the basic concepts and theories of positive psychology
- describe and assess the psychosocial factors and mechanisms that affect well-being
- design actions to increase well-being and own well-being

[Official course record: AY00BC55](#)

412080A | Psychometrics

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Nina Kullberg

Content

- Basics of psychological measurement and the structure of a psychological test.
- Test theory and the prerequisites for accurate psychological assessment from a clinical psychologist's viewpoint
- Use of statistical methods in the assessment of the quality of psychological data and the impacts of measurement error
- Practical applications: Psychometric assessment and interpretation of test results

Learning outcomes

The student can:

- demonstrate knowledge of the basics of psychometrics, the concepts of validity and reliability and their different assessment methods.
- describe and explain the basics of test theory and psychological test development.
- assess the functionality and psychometric properties of a psychological measure
- apply different methods of psychometrics using a statistical software.
- evaluate the reliability of psychological assessment methods according to the principles of psychometrics.
- identifies and evaluates the key skills of analytical, critical, creative thinking, understands their significance in scientific, professional, and ethical practice, and applies disciplinary knowledge to solving complex and unpredictable problems

[Official course record: 412080A](#)

KE00AM80 | Psychotherapy

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonen

Content

- Basic information about psychotherapy and its main trends
- Psychotherapy evaluation methods
- Specific and general effectiveness factors of psychotherapy
- Practicing client work

In addition, the course presents new research on the effectiveness of psychotherapies and the advantages and challenges associated with different forms of therapy.

Learning outcomes

Student can

- describe the main psychotherapy trends and their theoretical basis
- describe and apply the principles of psychotherapeutic working methods
- describe the forms, purpose, methods and process of psychotherapy evaluation and carry out psychotherapy evaluation
- communicate in the work community with other colleagues about issues related to psychotherapy
- describe and evaluate the central professional and ethical challenges of psychotherapeutic work
- describe the key findings of psychotherapy research

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AM80](#)

KE00AW75 | Qualitative and Quantitative Methods in Special Education 2

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Miia Ronimus

Content

Qualitative part: Philosophical foundations of science. Alternative approaches to qualitative research. Different methods of analysis of qualitative data and ways of interpreting the results. Factors affecting the reliability of qualitative research.

Quantitative part: assessing the reliability of the measure. Combined variables. Basics of linear regression analysis. Analysis of variance. Calculation and estimation of effect size. Non-parametric counterparts of mean tests.

Learning outcomes

On completion of the course, the student will:

- can choose an appropriate research method and data analysis method for the study of a research phenomenon
- to assess the validity, reliability and ethics of the research
- can interpret and report the results of research
- be proficient in the use of appropriate software for analysis
- can apply his/her knowledge and skills in small-scale practical work
- is able to analyze arguments and argue appropriately
- is able to apply the methods of their own field of study and recognize the strengths and limitations of methods used in other fields.

Official course record: [KE00AW75](#)

KE00AW73 | Qualitative Methods in Special Education 1

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Riikka Sirkko

Content

- scientific information gathering
- progression of the research process from research plan to reporting
- starting points and approaches to qualitative research
- literature review
- methods of analysis in qualitative research
- ethical issues in research

Learning outcomes

On completion of the course, the student can

- identify qualitative research approaches and their philosophical foundations
- can describe the characteristics of qualitative research
- identify the main types of data and the most common data collection methods
- be able to formulate a research problem and describe the qualitative research process
- be able to assess the reliability and ethicality of qualitative research
- can formulate a research task and describe a qualitative research process
- identify the key skills of analytical, critical and creative thinking and can observe them in their own activities
- can compare the differences and similarities between their own field of science and related disciplines

Official course record: [KE00AW73](#)

KE00BB69 | Qualitative research in psychology

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Siltala

Content

The course introduces the foundations, methods, and applications of qualitative research in psychology. Students will become familiar with the theoretical and philosophical underpinnings of qualitative inquiry, formulation of research questions, and writing a research plan. The course covers qualitative data collection and analysis methods, reporting results in accordance with scientific conventions, research ethics, and evaluating the credibility and quality of qualitative research.

Learning outcomes

After completing the course, the student will be able to:

- Describe the theoretical and philosophical foundations of qualitative research and their relationship to the scientific traditions of psychology.
- Identify, compare, and evaluate key qualitative research approaches and methodological traditions used in psychology.
- Explain the main characteristics of qualitative research and understand the research process as a whole, from formulating a research question to reporting the findings.
- Design an appropriate qualitative data collection strategy and write a research plan.
- Analyse qualitative research data using key analysis methods applied in psychology.
- Describe the principles and practices of reporting qualitative research findings.
- Follow research ethics principles and identify ethical considerations specific to qualitative research.
- Evaluate the credibility and quality of qualitative studies based on qualitative research traditions.
- Interpret and assess the significance, quality, and ethicality of qualitative research in psychology and discuss such research knowledgeably.

The course supports the development of the following generic skills:

- The student is able to analyse and identify the essential elements in qualitative data and critically examine methods, sources, and research findings.
- The student is able to recognise research problems and apply systems thinking to understand the research process as a whole.
- The student is able to reflect on their strengths and areas for development in research work and evaluate their own learning.
- The student is able to recognise the influence of cultural factors on data and interaction and act in a culturally sensitive manner.
- The student masters good scientific practice and the ethical principles of qualitative research and makes well reasoned and responsible decisions throughout the research process.
- The student is able to recognise how their own background and values shape research designs and interpretations, and promote equality and nondiscrimination in research practice.
- The student is able to identify the interdisciplinary connections of qualitative methods and value as well as integrate perspectives and expertise from different fields.
- The student is able to communicate clearly and convincingly about the research process and findings, while acknowledging power relations and their own positionality.

Official course record: [KE00BB69](#)

KE00AK76 | Qualitative Research Methodology

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- * Foundations of philosophy of science
- * Different paradigms and research traditions
- * Defining research tasks and research questions
- * Choosing an appropriate approach in terms of research problem/tasks/questions
- * Key concepts related to qualitative research
- * Types of data collection and analyses
- * Practicing data collection and analyses through a small-scale research project
- * Reading and interpreting qualitative research
- * Reflecting on the research process with reference to quality and ethics
- * Research reporting

Learning outcomes

Upon completion students are expected to be able to:

- * Describe different paradigms and research traditions
- * Justify and use appropriate research approaches and methods to address the research tasks
- * Assess the quality and ethics of research
- * Read and interpret research reports
- * Produce one's own master's thesis research plan

Official course record: [KE00AK76](#)

KE00AL40 | Qualitative Research Methodology

5 ECTS | Education | Advanced Studies | English

Person in charge: Jonna Malmberg

Content

- Foundations, traditions and concepts in qualitative and mixed methods research,
- Learning science as a research paradigm,
- Process orientation and research designs,
- Qualitative, quantitative and mixed method approach,
- Main phases in a research process,
- Types of data collection and data analysis
- Evaluating validity, reliability and ethics in learning sciences

Generic skills

- knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.
- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities

The course supports the development of the University of Oulu's generic skills related to analytical, critical and creative thinking and multidisciplinary and transdisciplinary skills

After this course,

- the student is able to analyze arguments and construct appropriate arguments
- is able to apply methods of their own field and identify the strengths and limitations of methods used in other disciplines

Learning outcomes

Upon completion students are expected to be able to:

- Describe and compare different methodological orientations,
- Justify and use appropriate methodological solutions based on the research problem (data collection and data analysis)
- Evaluate the validity, reliability and ethics in learning sciences
- Plan research process and write a research plan/research report
- Analyze qualitative, quantitative and mixed method research data
- Interpret and evaluate quality and meaning of research

Generic learning skills:

Is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

Official course record: [KE00AL40](#)

KE00AW74 | Quantitative Methods in Special Education 1

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Miia Ronimus

Content

The quantitative research process. The theoretical concept and its measurement. Sampling techniques, basics of statistical description and inference. One- and multidimensional frequency distributions and ratios. Hypothesis testing. Examination of interdependence between variables by correlation and cross tabulation. Examination of the difference between two groups by t-test or Mann-Whitney U test. Basics of using statistical software to analyse survey data.

Learning outcomes

On completion of the course, the student

- can identify a research problem related to special education and formulate research questions related to it
- can carry out quantitative research, select source material and collect data
- understand the potential and limitations of statistical analysis methods
- use indicators appropriate to the different levels of measurement and apply the most common analytical methods to answer research questions
- report research results using tables and graphs
- be able to use basic statistical software functions and interpret the results of statistical tests
- recognizes the key skills of analytical, critical, and creative thinking and is able to observe them in their own actions
- is able to compare the differences and similarities between their own field of study and related fields

Official course record: [KE00AW74](#)

KE00AK75 | Quantitative Research Methodology

5 ECTS | Education | Advanced Studies | English

Person in charge: Justin Edwards

Content

- * Defining research tasks, research questions, and formulating hypotheses
- * Choosing an appropriate approach in terms of research problem/tasks/questions
- * Understanding concepts and methods related to quantitative research
- * Recognizing types of data collection and analyses
- * Practicing quantitative data analysis (using R) through a small-scale quantitative research project
- * Reading and interpreting quantitative research
- * Reporting quantitative analyses and methods

The course supports the development of the University of Oulu's generic skills related to analytical, critical and creative thinking.

*After the course the student is able to apply analytical and critical thinking skills in a manner appropriate to their field, taking into account interdisciplinary boundaries and the creation of new knowledge

Learning outcomes

Upon completion students are expected to be able to:

- * Justify and use appropriate quantitative research approaches and methods to address the research tasks
- * Assess the quality of quantitative research
- * Read and interpret quantitative research reports
- * Produce one's own master's thesis research plan

Official course record: [KE00AK75](#)

406023A | Religion

2 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | Finnish

Person in charge: Katja Castillo

Content

The study unit consists of teaching didactics in religious education.

The student gets a separate grade and record of completion for the study unit.

Learning outcomes

Having completed the study unit the student is able to

- recognize and understand the basic principles, general goals and values of the curriculum in religious education
- recognize central issues within transversal skills and phenomenon based learning
- recognize the unique characteristics of religious education
- understand and have a good hold of the nature and subject matter of religious education
- apply different teaching methods in varying study environments in line with the unique nature of religious education
- apply principles of evaluation outlined in the curriculum and to assess the place of evaluation in students' learning process and their supervision
- critically evaluate the subject content and underlying values of religious education within the curriculum
- recognizes the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognizes stereotypical ways of thinking
- knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.

Official course record: 406023A

050127A | Research in Subject Didactics

5 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Oula Mommo

Content

- music education research: music learning, teaching and education
- music education as a research tradition
- methods, paradigms, interests in music education
- individual / pair work

Learning outcomes

After completing the course, the student will be able to:

- describe and explain the principles and methods of music education research
- apply the knowledge received in music education research in student's own candidate thesis
- evaluate the meaning of music education research in own teaching practice and construct the thinking of the "researching teacher"
- apply the knowledge received in music education research to the teaching practice
- identify the key skills of analytical, critical, and creative thinking and can observe them in their own actions
- compare the differences and similarities between their own field of study and related disciplines

Official course record: 050127A

412189A | Research methods II

5 ECTS | Educational Psychology | Intermediate Studies | Finnish

Person in charge: Jonna Malmberg

Content [Finnish source]

- Laadullisen tutkimuksen teoreettiset lähtökohdat ja käsitteet
- Tutkimuskysymysten asettaminen ja muotoileminen laadullisessa tutkimuksessa
- Laadulliset tutkimusmenetelmät, laadullisen tutkimusaineiston teemoittelu, kategorisointi ja analyysiyksiköt
- Laadullisen analyysiprosessin raportointi ja kuvaaminen

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija:

- tuntee keskeisimmät laadullisen tutkimuksen lähestymistavat ja menetelmät
- osaa tulkita ja arvioida laadullisia tutkimuksia
- osaa kuvailla ja eritellä laadullisen tutkimuksen keskeisiä vaiheita
- tuntee keskeisimpiä laadullisen tutkimuksen aineistonkeruumenetelmiä ja niiden käyttömahdollisuuksia
- osaa soveltaa laadullisen tutkimuksen periaatteita aineiston analysoinnissa

Geneeriset taidot:

Tunnistaa ja osaa kuvata analyttisen, kriittisen ja luovan ajattelun merkityksen tieteellisessä, ammatillisessa ja eettisessä toiminnassa

Official course record: [412189A](#)

412151S | Research methods III

5 ECTS | Educational Psychology | Advanced Studies | Finnish, English

Person in charge: Kati Mäkitalo

Content

Familiarizing with the key research settings in theory and practical exercises from the perspective of learning science research.

Reflection and the researcher's role

Research ethics

Learning outcomes

After completing the course, the participant

- has a knowledge and knows how to analyze different research settings in learning science research
- understand the methodological principles of design-based research
- knows how to build a coherent research setting from the perspective of learning science research
- can apply learning science research methods in an ethically sustainable way
- and develop the ability to critically evaluate research settings.

The participant

- is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field

Official course record: [412151S](#)

412152S | Research methods IV

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Joni Lämsä

Content

- Multivariate analysis
- Multi-method research and process-oriented analysis
- Delving deeper into the methods used in learning sciences
- Learning analytics and artificial intelligence as tools in learning sciences

Learning outcomes

After completing the course, the participant

- understand the methodological characteristics of process-oriented analysis and multi-method research
- have an in-depth knowledge of the chosen research method in learning sciences
- is able to report research results that are aligned with their methodological choices
- can evaluate research ethics and plan the conduct of research in an ethically sound manner
- has familiarized themselves of the use of statistical analysis software

Generic skills:

Sustainability, responsibility and ethics skills

- is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments.

[Official course record: 4121525](#)

419115J | Research plan seminar

1 ECTS | Education, Psychology, Music Education, Sociology and gender studies, Special Education, Educational Psychology | Post-graduate Studies | Finnish, English

Person in charge: Sonja Lutovac

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

A doctoral researcher is able to:

- present his/her research plan to a wider audience
- answer questions and critical comments concerning the research plan
- prepare a scientific presentation

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; and communication, interaction and digital skills.

[Official course record: 419115J](#)

412088A | Research practice in psychology

2-5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Henri Olkonen

Content

- The student participates in research work of research group and participates actively in different phases of research work
- The student goes into selected research subjects in detail

Learning outcomes

At the course student will:

- get to know and participate in the work of the research group
- acquire experiential knowledge of psychological research

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: 412088A

412112S | Research practice in Psychology

2-10 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Henri Olkonieni

Content

Phases of psychological research and research process

Learning outcomes

After completing the course, the student will:

- understand the how the research group works
- has acquired knowledge of the different stages of psychological research and the conduct of research
- has acquired experiential knowledge of research work in the field of psychology

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

KE00AL06 | Research-Based Subject Didactics

7 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Anne Pellikka

Content

Planning, implementation, as well as written and oral presentation of a subject didactic research includes practicing professional communication skills designed for the target audience. Acting as an opponent of another research. The research can focus on basic, middle or higher education or another teaching context. The topic of the research must be related to subject didactics, and research material needs to be used in the research.

Learning outcomes

After completing the course, the student knows how to:

- describe and apply subject didactic research and the qualitative, quantitative and multi-method approaches used in it as well as recognize the strengths and limitations of methods in own and other fields of science
- apply analytical and critical thinking when getting acquainted with literature during subject didactic research
- apply the chosen research methods in collecting and analyzing research data
- evaluate the importance of subject didactic research in the teaching of one's own subject and build the thinking of a research-based teacher

Official course record: KE00AL06

050413A | Research-based teacherhood

5 ECTS | Pedagogical Studies for Teachers | Basic Studies | Finnish, English

Person in charge: Minna Uitto, Sonja Lutovac

Content

- * research-based teaching
- * perspectives on university pedagogical research
- * utilization of the latest findings in pedagogical research

Learning outcomes

After completing the course, the participant will be able to:

- * identify pedagogical research questions in one's own teaching
- * search, analyze and apply relevant pedagogical research literature
- * advance research-basedness in one's teaching

Official course record: 050413A

KE00AR06 | Research-based training

10 ECTS | Pedagogical Studies for Teachers | | Finnish, English

Person in charge: Mervi Heikkinen, Sonja Lutovac

Content

- Research-based approach to teaching
- University pedagogy research
- Quantitative and/or qualitative methods of collecting data
- Interaction, wellbeing, multiprofessional collaboration and collegiality

Learning outcomes

Upon the completion of the course, participants will be able to:

- employ the research-based approach to one's own teaching practices
- describe the starting points for pedagogical research and apply qualitative and / or quantitative methods of collecting data in the study of one's own teaching
- utilize and apply educational research in teaching in one's own field
- deepen one's knowledge on pedagogy, including digital pedagogy in planning, implementation and assessment of one's own teaching and learning environments
- reflect on socio-emotional dimension in a teacher's work

Official course record: KE00AR06

407533A | School experience: Bachelor's level

5 ECTS | Subjects and Cross-Curricular Themes Taught in Basic Education | Intermediate Studies | English

Person in charge: Katri Jokikokko

Content

The overarching theme in this practice is teaching and learning with special reference multilingual/ intercultural/ international school settings. The purpose is that the student should deepen and enrich her/his personal understanding of the themes introduced in the course "Curriculum, Planning and Evaluation" and "Intercultural Education and Teaching as Profession" through hands-on work in the classroom. Other themes that will emerge in this practice will include different learners, obstacles to learning and pupil welfare.

School Experience offers the student an opportunity to practice the fundamental skills of planning, implementing and evaluation of lessons and longer periods of teaching. The emphasis is on critical evaluation of one's own teaching, and on how the teaching circumstances require flexible implementation of plans which are nevertheless based on the core framework.

From the experience, the student will use this opportunity to study the main phenomena and concepts of pedagogical action, such as pedagogical relationships, pedagogical tact, encountering the child and teacher responsibility, all in the context of intercultural education.

The student also has an opportunity to observe and consider how educational research and its results are linked to the work of a teacher.

The student should develop and experiment with various teaching methods appropriate for different learners that address the special characteristics of different subjects and cross-curricular themes. At all times there should be reflection on issues related to intercultural matters.

Learning outcomes

After completing the School experience II the student

- is aware of the challenges and opportunities in working in multilingual/ intercultural/ international schools
- is capable of analysing and reporting on his own view of 'teachership' and intercultural education
- knows how to plan and implement teaching based on the local and/or international curricula
- knows the central phases of teaching and learning process and is able to apply different teaching methods in a meaningful way
- knows how to evaluate the special characteristics of different subjects in primary education
- is able to assess pupils' learning
- is able to assess his/her own activity as a teacher
- knows how to utilize and contribute to synergy among colleagues in developing activities
- is able to give and receive feedback
- is able to analyse and evaluate his/her and other teachers' actions based on research knowledge.

Official course record: 407533A

408036S | School in Society - Society in School

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Eveliina Puutio

Content

- Facing and addressing societal challenges in school
- The power mechanisms of the school institution, school culture and children's peer relationships and how to address them
- Barriers to inclusion and supporting inclusion at school
- The school as a multidisciplinary working community
- Educational partnership as part of the teacher's work

Learning outcomes

After the course the student can:

- Identify and critically analyse social phenomena in the everyday life of the school and in the work of the teacher.
- Identify and address different manifestations of power and power relations together with primary school students.
- Understand and critically analyse the relationships between school and society.
- Know the ways in which teachers and school communities work together in a multi-professional way and can apply them in their work.
- Describe the diversity of families and the effects of family background for education
- Describe educational partnership between home and school and apply it in their work
- Analyse the theoretical background to educational partnership
- Critically evaluate research on educational partnership

Official course record: 408036S

408530S | Scientific Practices and Academic Skills

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- Overview of different scientific texts in the field of Education
- Overview of paradigms, methods, and research processes
- Evaluation of scientific information
- Planning of the reading, reading techniques and writing process
- Academic argumentation, style, tone and plagiarism in different types of academic texts
- Writing academic texts in an appropriate and internationally recognized academic style (with APA referencing)
- Recognising and exercising good scientific practices in research
- Practising mind mapping and oral presentation skills

Learning outcomes

After completion of the course, students are able to:

- Utilize research that is robust and relevant to national and international debates in Education
- Position their own research interests in the field of studies and scientific traditions
- Reflect on academic research and discuss how to get started with one's own research
- Search for scientific and academic information
- Produce academic writing according to standards (literature review) and conduct presentations in good academic style
- Use the conventions of academic writing, such as referencing and quoting texts, and to use grammatical patterns stylistically appropriate for scientific texts

Official course record: [4085305](#)

407531P | Selected Literature

5 ECTS | Education for Intercultural Competencies | Basic Studies | English

Person in charge: Katri Jokikokko

Content

Student chooses the materials for reading out of a list provided by the responsible teacher (Katri Jokikokko) and writes a report on the studied texts.

Learning outcomes

- Apply critical literacy to analyze the selected literature
- Demonstrate competence in discussing conceptual issues based on the individually selected literary sources
- Summarize the discussion on the studied texts in an academically valid written report

Official course record: [407531P](#)

KE00AU73 | Senses and Communication

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Elina Viljamaa

Content

During the course, we will delve into the relationship between senses and communication and the development of communication on a personal, historical and social level. You will learn how to identify and describe a child's normal and abnormal language development, and how to assess and support language development and interaction using speech support and substitution methods.

The central contents:

- the stages in the development of communication, and supporting them through exercises and/or the AAC methods
- identification, evaluation and rehabilitation of the most common articulation errors
- getting to know speech-supporting signs

Learning outcomes

After completing the course, the student

- understands the connection between the senses and communication and the historical and social development of communication.
- knows how to describe normal and anomalous language development in a child.
- can evaluate and support a child's language development on the general level
- can identify communication problems, such as difficulties with articulations and special difficulties in language development, and knows how to rehabilitate them through various interventions.
- knows how to act equally with people who communicate in different ways, supporting their inclusion in asymmetrical interaction situations.
- can use various communication methods that support and replace speech.

Official course record: [KE00AU73](#)

KE00AU81 | Significant Multi-Professional Support

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Elisa Mainio

Content

- * demanding multidisciplinary support in early childhood education and care, pre-primary, primary and secondary education
- * multidisciplinary co-operation in significant support
- * different learning environments
- * encountering the child, young and family who have experienced a trauma
- * absence from school
- * severe intellectual disability
- * drugs and crime

Learning outcomes

Upon completion of the course, student

- * will be able to explain the meaning of significant multidisciplinary support
- * knows the main actors and networks in the field of multi-professional co-operation
- * will be able to explain the meaning of functional areas and the main concepts, contents, and some practices in it
- * understands reasons of absence from school
- * will be able to tell the basics of the experience of trauma
- * understands the specific characteristics of crimes committed by minors and substance abuse
- * will be able to describe multidisciplinary cooperation in relation to students with developmental disabilities
- * will be able to apply analytical and critical thinking skills in a manner appropriate to their field of study, taking into account the interfaces between disciplines and new knowledge
- * recognizes the interdependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of science and be able to assess the impact of their own field's activities on them
- * will be able to promote multidisciplinary cooperation and lead multidisciplinary and multi-professional teams

Official course record: [KE00AU81](#)

KE00AT68 | Situating Finnish Education

5 ECTS | Education | Intermediate Studies | English

Person in charge: Katri Jokikokko

Content

- Theoretical foundations & basic principles behind the historical development of Finnish and other Nordic systems of education.
- The links between Nordic models of education and social mobility.
- Issues of inclusion in Nordic settings and how this relates to Finnish education.
- The influence of comparative international assessments on Finnish education.
- Emerging and topical trends in Nordic education & how they relate to Finnish education, such as immigration; decoloniality & intersectionality; the role of technology; and ecocritical & sustainability discourses

Learning outcomes

- Recognise, analyse & reflect on the basic principles of Nordic education and relevant theories that influence them
- Describe topical issues in Finnish education & relate these to both their societal contexts and educational practice in the wider Nordic context.
- Discuss and critique specific issues and themes relating to inclusion in Finnish education and Nordic society

Official course record: [KE00AT68](#)

KE00AZ41 | Situating Finnish Education (EDGLO)

5 ECTS | Education | Advanced Studies | English

Person in charge: Joffy Conolly

Content

- Basic principles and historical development of Finnish education
- Specific educational issues in the Nordic countries
- Comparative approach to educational systems
- Visits to local educational institutions

Learning outcomes

On completion, participants will be able to:

- Recognise, analyse & reflect on the basic principles of Finnish education
- Describe & compare specific issues in education in the Nordic countries & relate these to both their societal contexts and educational practice.
- Identify and relate trends in Nordic educational systems to the wider European and global educational context.
- Differentiate and evaluate models of educational structures and best practices.

Official course record: [KE00AZ41](#)

KE00BB76 | Social justice and sustainability in intercultural educational contexts

3 ECTS | Education (Primary Teacher) | General Studies | English

Person in charge: Katri Jokikokko

Content

- Theoretical concepts and approaches related to intercultural education, social justice and sustainability (such as culture, diversity, identity, equality and power)
- Current research findings and practices in the field of intercultural education, social justice and sustainability
- Challenges and debates related to intercultural education, social justice and sustainability in the context of education.

Learning outcomes

After completing the course, the student will be able to

- examine the basic concepts and dimensions of intercultural education and social justice
- describe the most common approaches to intercultural education
- recognize and analyze the complexity of diversity
- be aware of the necessity of sustainability in educational policies and practices
- define and critically analyze the interdependence of social justice, intercultural education and educational sustainability

Official course record: [KE00BB76](#)

412078A | Social psychology

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Nina Kullberg

Content

- The basic concepts and theories in social psychology, including social perception, attitudes, behaviour change, aggression, prosocial behaviour, relationships and group phenomena.
- The basic research orientations and methods in social psychology

Learning outcomes

The student can:

- describe and explain the basic concepts and theories in social psychology.
- describe social psychology as a science and describe the basic research methods and orientations in the field.
- apply the obtained knowledge in practice.
- identifies and evaluates the key skills of analytical, critical, creative thinking, understands their significance in scientific, professional, and ethical practice, and applies disciplinary knowledge to solving complex and unpredictable problems.
- acts responsibly, equitably, and in accordance with professional ethics in diverse interaction situations, respecting stakeholders, environments, values, and good scientific practice.
- recognizes the impact of cultural diversity and stereotypes and is able to act constructively in multicultural teams and international interaction contexts.
- identifies similarities and differences between their own discipline and related fields, approaches the expertise of other disciplines with openness, and is able to collaborate constructively in multi and interdisciplinary teams.

Official course record: [412078A](#)

KE00BC78 | Socially Shared Regulation of Learning in Research and Practice

5 ECTS | Education | Advanced Studies | English

Content

- Socially shared regulation of learning
- Co-regulation of learning
- Technology to support regulation in collaboration
- Learning design

Learning outcomes

After completing this course, the students are able to develop a theory-based practical learning design that supports social forms of regulation. Students will be able to identify and define theoretically the social forms of regulated learning and define targets of regulated learning in social interaction. Students will know how to transform theoretical knowledge into practice for supporting social forms of regulated learning and can justify practical solutions based on theory. Additionally, students will be able to apply learning theories adeptly across diverse contexts, including individual and collaborative learning, hybrid learning and human-AI interaction. They will also enhance their ability to think critically and creatively and improve their skills in effective communication and interaction. The course will emphasize the importance of social responsibility in educational practices, ensuring that students learn about the ethical use of data to create responsible practical solutions.

[Official course record: KE00BC78](#)

KE00AU72 | Society and Inclusive Education

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Riikka Sirkko

Content

- * the role and impact of special pedagogy on the relationship between the individual and society
- * different concepts of inclusion
- * societal change in relation to education and inclusive thinking internationally
- * development and changes in values
- * intersectionality
- * cultural diversity
- * UN sustainable development goals

Learning outcomes

After completing the course, the student will

- * understands the importance of the educational institutions of society, such as school, for human development
- * understands the significance of social change for education
- * is familiar with the current dialogue between society and special education
- * is familiar with international developments in the field of inclusion and is aware of the stages and process of inclusive education
- * understands the importance of the values at the global level of education
- * recognise the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognise stereotypical ways of thinking
- * identify the UN Sustainable Development Goals

[Official course record: KE00AU72](#)

407521P | Society, Education and Culture

5 ECTS | Education | Basic Studies | English

Person in charge: Katri Jokikokko

Content

- The paradigms and their representatives in sociology
- Main concepts applied in sociology of education
- Current debates on societal- and culture-specific issues in education such as socio-economic inequalities, globalization and migration
- Teacher's profession in national, and international contexts

Learning outcomes

- Identify the paradigms and their representatives as well as theories and concepts of sociology of education
- Apply acquired knowledge of sociological theories and concepts in class discussions
- Discuss meaning of different societal and cultural contexts for teaching and learning
- Analyze the role of educational professionals in society

Official course record: 407521P

402119P | Socio-Emotional Development

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Marika Loukusa

Content

- emotional and behavioural disorders based on different frames of reference
- concepts, diagnostics and interpretations of challenging behavior
- manifestation of behaviour in attention and behaviour among children and adolescents
- meaning of emotional life to a child's development and the related need for support
- risk factors of unfavourable development, such as the risk of marginalization
- factors providing protection from behavioural disorders and ways to support favourable development
- school bullying, criminality as a phenomenon of alienation

Learning outcomes

After the course, the student:

- knows how to define central concepts of challenging behaviour and describe their characteristics based on pedagogical, psychological, psychiatric, neurobiological and communal frames of reference
- identifies different challenges of behaviour in the educational system from the viewpoint of the individual and the community
- is familiar with ways to provide support to the pupil, and the contents and meaning of multidisciplinary collaboration
- knows how to identify key factors related to personal well-being and self-management
- recognize stress factors related to expert work and utilize self-compassion to support well-being
- understands how psychological problems or school bullying are part of a phenomenon called social exclusion

Official course record: 402119P

AY402119P | Socio-Emotional Development (OPEN UNI)

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Marika Loukusa

Content

- * children's and adolescents' socioemotional development
- * protective and risk factors of socioemotional development
- * challenges in socioemotional development and behavior
- * the impact of strengths-based education and the influence of encountering the child and youth for their self-esteem and self-image

Learning outcomes

After completing the course, the student is able to

- * describe the socioemotional development of children and adolescents and related protective and risk factors
- * reflect the challenges of socioemotional development and emotional and behavioral disorders in the educational contexts from the individuals and community's perspective.
- * tell how to support the socioemotional development of children and adolescents via multiprofessional cooperation and cooperation with parents and carers
- * describe the consequences of challenges in socioemotional development to an individual's life
- * knows how to identify key factors related to personal well-being and self-management
- * recognize stress factors related to expert work and utilize self-compassion to support well-being

Official course record: [AY402119P](#)

410087P | Sociocultural Contexts of Education

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Anu Alanko, Veli-Mikko Kauppi

Content

- * The basics of social sciences in educational research
- * The possibilities and limitations of education and growth determined by the context, i.e., culture, society and environment (incl., e.g., the political, economic and gendered points of view)
- * The social, multicultural, juridical and responsibility issues related to education (incl. e.g., from the point of view of gender, sexuality and intersectionality)
- * Education systems and their gender as part of the historical development of society (incl. education politics as a part of social politics)
- * Gender equality politics as a part of education politics and social politics

Learning outcomes

Upon completion of the course, the student will be able to:

- use the central concepts of social sciences in educational research and analyze the related basic issues in various contexts of education and growth
- identify, among other things, the significance of social status and gender in the discussion related to education and schooling (incl. intersectionality)
- apply the multicultural, legal, social and responsibility-related issues of upbringing and education in different situations of everyday life and in their professional interactions, both as a student and in working life
- describe the historical, socio-political and professional starting points of Finnish education system.

Common generic skills of the University of Oulu in this course:

- Well-being and self-development: Students recognize the key factors in their well-being and self-management, develop their professional identity and skills, and promote group learning.
- Internationality and multiculturalism: Students recognize cultural diversity and stereotypes and know how to act constructively in multicultural environments.
- Sustainability, responsibility, and ethics: Students recognize the dimensions and goals of sustainability and act equitably and ethically in different environments.
- Multidisciplinarity and interdisciplinarity: Students understand their own field in relation to other fields and are able to work in multidisciplinary and interdisciplinary teams.
- Communication, interaction, and digital skills: Students communicate clearly to different audiences, work constructively in groups, and use digital and artificial intelligence applications appropriately and responsibly.

Official course record: [410087P](#)

AY410087P | Sociocultural Contexts of Education (OPEN UNI)

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Veli-Matti Ulvinen

Content

- * The basics of social sciences in educational research
- * The possibilities and limitations of education and growth determined by the context, i.e., culture, society and environment (incl., e.g., the political, economic and gendered points of view)
- * The social, multicultural, juridical and responsibility issues related to education (incl. e.g., from the point of view of gender, sexuality and intersectionality)
- * Education systems and their gender as part of the historical development of society (incl. education politics as a part of social politics)
- * Gender equality politics as a part of education politics and social politics

Learning outcomes

Upon completion of the course, the student will be able to:

- use the central concepts of social sciences in educational research and analyze the related basic issues in various contexts of education and growth
- identify, among other things, the significance of social status and gender in the discussion related to education and schooling (incl. intersectionality)
- apply the multicultural, legal, social and responsibility-related issues of upbringing and education in different situations of everyday life and in their professional interactions, both as a student and in working life
- describe the historical, socio-political and professional starting points of Finnish education system.

Common generic skills of the University of Oulu in this course:

- Well-being and self-development: Students recognize the key factors in their well-being and self-management, develop their professional identity and skills, and promote group learning.
- Internationality and multiculturalism: Students recognize cultural diversity and stereotypes and know how to act constructively in multicultural environments.
- Sustainability, responsibility, and ethics: Students recognize the dimensions and goals of sustainability and act equitably and ethically in different environments.
- Multidisciplinarity and interdisciplinarity: Students understand their own field in relation to other fields and are able to work in multidisciplinary and interdisciplinary teams.
- Communication, interaction, and digital skills: Students communicate clearly to different audiences, work constructively in groups, and use digital and artificial intelligence applications appropriately and responsibly.

Official course record: [AY410087P](#)

413067S | Sociology of education

5 ECTS | Education | Advanced Studies | Finnish, English

Person in charge: Veli-Matti Ulvinen

Content

The study work in sociology of education is completed as a book exam (e-exam), alternatively as an essay or for instance, by participating into some project work in the Faculty of Education and Psychology for the development of expertise and working life skills in sociology of education, and reporting it. Agreement on the study method shall be made with the course instructor.

Learning outcomes

The students will familiarize themselves with a sociological perspective of education according to their own choice and interest.

After completing the course the student is able to

- * apply analytical and critical thinking skills in the sociology of education
- * analyze different ways to promote the sustainable development of the education system, taking into account the interdependencies between the different dimensions of the education system
- * evaluate the importance of educational sociology expertise and apply creative thinking and problem solving to develop new knowledge and new procedures in working life in the fields of education.

Official course record: [413067S](#)

402720P | Space and Time

5 ECTS | Art | Basic Studies | Finnish

Person in charge: Matti Lukkari

Content

Architecture- , film education and plastic design methods and materials in art education.

Learning outcomes

After the course the student is able to:

- look at natural and cultural environment aesthetically, ethically and cognitively.
- to apply the materials and methods of the three-dimensional image and architectural education in teaching.
- to observe and interpret different kinds of media.

After completing the course, the student will be able to:

- examine and identify different methods of constructing space.
- apply various materials and methods of three-dimensional expression and architectural education in teaching.
- analyze the expressive and narrative means of media and visual communication, and apply media education methods in teaching.

Official course record: [402720P](#)

423244S | Space Planning and Maintenance of Instruments and Musical Devices

5 ECTS | Music Education | Advanced Studies | Finnish

Person in charge: Jussi Jaako

Content

- Planning of modern music class facilities from the point of pedagogy and acoustics.
- Maintenance of music class
- Equipment and instrument maintenance and service
- School visits

Learning outcomes

After completing the course, the student is able to:

- act responsibly in the use, maintenance, and design of music technology, musical instruments, and learning environments, taking sustainability, safety, and the needs of diverse user groups into account
- demonstrate knowledge of the key principles of maintenance and upkeep of string instruments, electronic instruments, and sound reinforcement systems
- understand the importance of hearing conservation in relation to facility design, acoustics, and music pedagogy
- carry out basic maintenance procedures for band instruments
- search for, evaluate, and apply information related to the design of music facilities
- contribute as an expert in music facility design projects

Official course record: 423244S

402110P | Special Education and the Course of Life

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Kaisa Pesonen

Content

- special education at different phases of the life span
- service systems and multiprofessionalism in support of individual and family
- past, present and future of special Education
- integration, inclusion and the neighbourhood school principle
- accessibility

Learning outcomes

Having completed the course, the student knows how to

- reflect on their own experiences, emotions and attitude towards diversity
- name the service systems of Finland and values, meanings and paradigms behind them
- name qualities of an accessible, barrier-free society
- reflect on the significance of family and close relatives in collaborating with professionals
- communicate clearly in a group, is able to actively listen to others and give constructive feedback

Official course record: 402110P

AY402110P | Special Education and the Course of Life (OPEN UNI)

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Kaisa Pesonen

Content

- special education at different phases of the life span
- service systems and multiprofessionalism in support of individual and family
- past, present and future of special Education
- integration, inclusion and the neighbourhood school principle
- accessibility

Learning outcomes

After completing the course, the student knows how to

- reflect on their own experiences, emotions and attitude towards diversity
- name the service systems of Finland and values, meanings and paradigms behind them
- name qualities of an accessible, barrier-free society
- reflect on the significance of family and close relatives in collaborating with professionals
- is able to communicate clearly in a group, is able to actively listen to others and give constructive feedback

407049A | Special Education in Basic Education

5 ECTS | Education (Primary Teacher) | Intermediate Studies | Finnish

Person in charge: Marika Loukusa

Content

The content of teaching:

- * the inclusive teaching and education are guided by the values, the principles and the key practices
- * the Finnish special education system
- * familiarization to different learning challenges (e.g. learning difficulties, neuropsychiatric difficulties, behavior support) and taking them into account in teaching
- * support for learning and school attendance, differentiation
- * multiprofessional co-operation

Learning outcomes

After the course the student is able

- * to describe the value base, the principles and the basis of legislation for inclusive teaching and education
- * to understand the current special education system and its background
- * recognize and understand different learning challenges
- * to explain the forms of pedagogical support, fill out the pedagogical documents and understand the legislation behind the documents
- * structure different forms of co-operation between the special education teachers and class teachers

Official course record: 407049A

415044S | Specialisation studies in educational psychology

5 ECTS | Educational Psychology | Advanced Studies | Finnish

Person in charge: Teemu Suorsa

Content

Agreed with the leader of the research group and the person in charge of the course.

Learning outcomes

Student deepens their understanding on one of the research areas of educational psychology in terms of theory, methodology and/or practices.

Official course record: 415044S

KE00AG98 | STEAM workshop

10 ECTS | Education, Educational Technology | Basic Studies | Finnish

Person in charge: Jouni Karsikas

Content

- * Utilize the knowledge and skills learned in previous STEAM basic courses and direct workshop activities according to personal interests.
- * Practice various practical STEAM skills in workshops, such as problem-solving in the context of programming, robotics, and electronics, game and gamified environments, media skills, and artificial intelligence expertise.
- * Plan, implement, and evaluate a multidisciplinary STEAM-focused learning module as applicable in club, school, kindergarten, or other similar environments in collaboration with fellow students and potential other partners.

Learning outcomes

Upon completing the course, the student will be able to:

- * integrate the content learned in the STEAM minor into multidisciplinary learning modules
- * design, implement, and evaluate a plan for a multidisciplinary STEAM learning module as applicable
- * assess and implement STEAM-related learning materials and teaching arrangements
- * strengthen professional collaboration skills for teachers.

Regarding generic competencies

- * identifies critical and creative thinking skills and is able to apply them to problem-solving
- * recognizes the key factors of wellbeing and self-leadership, manages the demands of expert work, and is able to develop their own competence as well as support the learning of a group
- * recognizes cultural diversity and the challenges of stereotypes and is able to act constructively
- * understands the dimensions of sustainability and is able to act ethically, equitably, and with respect for different people and environments
- * is able to communicate clearly to different audiences, collaborate constructively in a group, and use field-specific digital and AI applications responsibly

Official course record: KE00AG98

KE00AT75 | Student welfare psychology

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonen

Content

The Student Services Act specifies that the work of a student service psychologist at an educational institution 1) promotes the well-being of the student community, communal activities and cooperation with students' families and 2) supports students' learning and well-being as well as social and psychological capabilities. The course offers perspectives on the implementation of these tasks as a psychologist in various educational institutions. The course covers preventive work, the psychologist's consulting role and multiprofessional working. In the course, the student learns to understand the psychologist's role in individual and community student welfare work. From an individual perspective, e.g. assessment and support of learning and emotional life and working with students' parents. From a community point of view, we consider how to promote students' learning, well-being and inclusion in the educational institution community.

Learning outcomes

The student can:

- describe the activities of student care
- recognize the psychologist's role as a special expert in multiprofessional study care
- describe the importance of preventive work and promoting well-being in student care
- describe the modes of operation of community study care
- identify the study care psychologist's methods for individual student assessment and support

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [KE00AT75](#)

050120A | Subject Didactics

5 ECTS | Pedagogical Studies for Teachers | Intermediate Studies | Finnish

Person in charge: Minna Sääskilahti

Content

- curricula
- the basics of subject didactics in their own subject
- learner-centered teaching methods, tools and technology as well as learning environments
- interaction and consideration of the diversity of learners in teaching
- planning, organization, implementation and evaluation of teaching

Learning outcomes

Having completed the course, the student knows how to

- describe the subject didactics of their own subject; different teaching approaches, teaching methods, learning environments, evaluation and teaching equipment
- apply curricula in the planning and implementation of the teaching in their own subject, taking diverse learners into account
- recognize the significance of interaction in their teaching
- develop their readiness to evaluate their own teaching and learners' knowledge

[Official course record: 050120A](#)

KE00AV48 | Subject Didactics 1

2 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Marja Ervasti

Content

Content

curricula

the basics of subject didactics in their own subject in primary school level

learner-centered teaching methods, tools and technology as well as learning environments

Interaction and consideration of the diversity of learners in teaching

planning, organization, implementation and evaluation of teaching

Learning outcomes

The student knows how to:

describe the subject didactics of their own subject; different teaching approaches, teaching methods, learning environments, evaluation and teaching equipment

apply curricula in the planning and implementation of the teaching in their own subject, taking diverse learners into account

recognize the significance of interaction in their teaching

develop their readiness to evaluate their own teaching and learners' knowledge

[Official course record: KE00AV48](#)

KE00AV49 | Subject Didactics 2

3 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Katja Sutela

Content

Contents as a continuation of Subject Didactics, Part 1:

* familiarisation with curricula and legislation guiding teaching

* familiarisation with the subject-specific didactics of one's own discipline

* planning a teaching unit individually or in a group

Learning outcomes

Learning outcomes:

- * describe the subject-specific pedagogy of their own discipline, including different teaching * approaches, instructional methods, learning environments, assessment practices, and teaching materials
- * apply curricula in planning and implementing instruction in their subject, taking diverse learners into account
- * recognize the importance of interaction in their teaching
- * develop their ability to evaluate their own teaching and learners' competence
- * strengthens their professional identity and develops the ability to act constructively and responsibly within diverse communities.

Official course record: [KE00AV49](#)

402136A | Supporting Behaviour

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Sirpa Sneck

Content

- concepts, diagnostics, and interpretations of behavioral disorders
- emotional and behavioral disorders in different contexts
- the application of special educational and child psychiatric research to behavioral support
- the connection between children`s and youths' neurological backgrounds (e. g. ADHD) with behavior
- identifying mental disorders and rehabilitative methods
- guiding and supporting behavior in different educational contexts
- multi-professional collaboration and collaboration with parents and guardians to support children and teenagers

Learning outcomes

After completing the course, the student will be able to:

- define challenging behaviour and understand the factors behind it
- apply special educational and child psychiatric research knowledge and methods related to behavioural challenges to support children and young people's behaviour
- apply different pedagogical solutions and interactional approaches to support behaviour
- organise multidisciplinary cooperation and understand the role of student welfare services in supporting behaviour
- name key legislation in relation to disciplinary action and behaviour management
- identifies key elements related to their own wellbeing and self management
- identifies stressors related to expert work and utilizes self-compassion to support well-being
- is able to work in multicultural teams

Official course record: [402136A](#)

402107P | Supporting Language and Communication Development

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Elina Viljamaa

Content

The aim of this course is to deepen students' understanding of the importance of language and communication in different age groups and contexts. Students will learn to recognise and support language development and communication skills in different learning environments and contexts.

The central contents:

- delayed and abnormal development of speech and language
- language and hearing problems from a communication perspective
- manifestation and identification of speech, language and communication problems
- AAC- communication.
- recognize the importance of multidisciplinary cooperation in supporting language and communication.

Learning outcomes

After completing this course the student

- is able to define various language and communication difficulties
- can distinguish between communication challenges different ages
- knows different assessment methods and their use
- recognizes the importance of multidisciplinary cooperation in supporting language and communication
- knows communication methods that support and replace speech
- considers their own responsibility as a more competent partner in various interaction situations

Official course record: 402107P

AY402107P | Supporting Language and Communication Development (OPEN UNI)

5 ECTS | Special Education | Basic Studies | Finnish

Person in charge: Elina Viljamaa

Content

The aim of this course is to deepen students' understanding of the importance of language and communication in different age groups and contexts. Students will learn to recognise and support language development and communication skills in different learning environments and contexts.

The central contents:

- Delayed and abnormal development of speech and language
- Language and hearing problems from a communication perspective
- Manifestation and identification of speech, language and communication problems
- AAC- communication.
- Recognize the importance of multidisciplinary cooperation in supporting language and communication.

Learning outcomes

After completing the course, the student

- is able to define various language and communication difficulties
- can distinguish between communication challenges different ages
- knows different assessment methods and their use
- recognizes the importance of multidisciplinary cooperation in supporting language and communication
- knows communication methods that support and replace speech
- considers their own responsibility as a more competent partner in various interaction situations

Official course record: AY402107P

442462A | Teacherhood and shared expertise in Early Childhood Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Outi Ylitapio-Mäntylä

Content

The teacher's professional identity

- the professional ethical and theoretical basis of an early education teacher
- expertise in early childhood education as part of professional, multi-professional and multidisciplinary cooperation
- practical equality planning from the point of view of gender and other related differences in everyday practice

Learning outcomes

Having completed the course, the student know how to

- reflect on working as a teacher on a professional ethical and theoretical basis
- evaluate professionalism and develop the work community from the viewpoint of equality
- describe the expertise of his/her own profession in (multi)professional and multidisciplinary cooperation
- is able to work in multicultural teams and interact openly with people from different cultural backgrounds

[Official course record: 442462A](#)

408042S | Teacher's Professional Growth

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Anniina Kettunen

Content

- self-knowledge and building one's professional identity in a peer group
- familiarising with teachers' work; as an early career teacher at school and as a member of the work community
- current phenomena in work life (e.g. working life skills, well-being, multi-professional work, relationality)
- transition phase from teacher education to working life

The course supports the following generic skills of the University of Oulu: Students will learn to promote their well-being, develop their self-management skills, build their professional identity, and maintain their own expertise in a goal-oriented manner. students will learn to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community spirit and interaction.

Learning outcomes

Having completed the course, the students are able to:

- reflect upon teachers' work and their role as education professionals in the multi-professional work community
- recognize factors related to well-being and coping at work
- locate their transition to work and their future as a teacher and an education professional
- recognize how they can develop their skills and professional identities now and, in the future

[Official course record: 408042S](#)

407519P | Teaching and Educational Interaction

3-5 ECTS | Education | Basic Studies | English

Person in charge: Katri Jokikokko

Content

- The basic concepts and approaches of teaching and learning
- Teacher's pedagogical thinking and action
- Interaction in educational situations
- The impact of cultural factors on learning and teaching
- Stress factors and resilience in teacher's work
- The role of ICT in learning and teaching

Learning outcomes

- Identifies and understands the basic processes and concepts of learning and teaching
- Understands the teachers' pedagogical thinking and action and the significance of interaction in education and teaching
- Applies theoretically justified principles in planning teaching and learning environments
- Relates the different cultural circumstances on pedagogical solutions in learning and teaching situations
- Identify the stress factors related to teaching and how to cope with them
- Discuss the possibilities offered by ICT in teaching and learning situations

Official course record: 407519P

410086P | Teaching and Educational Interaction

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Hanna Järvenoja

Content

- The basic concepts and processes of learning and related theoretical perspectives.
- Pedagogical thinking and practices of the teacher or learning facilitator.
- Interaction and learner participation in educational, learning, and instructional contexts.
- Models of active learning and learning environments.

Learning outcomes

After completing the course, the student is able to:

- identify and understand the basic concepts and core processes of learning and learning facilitation,
- describe the significance of teachers' or learning facilitators' pedagogical thinking, actions, and interaction in educational, instructional, and guidance contexts,
- apply and further develop professional skills both as a facilitator of learning and as a learner who works constructively as part of a group,
- apply theoretically grounded principles to the design of learning models and learning environments,
- apply theoretical knowledge to teaching and guidance situations arising from practical working-life contexts.

Generic skills:

The course supports the development of students'

- analytical, critical, and creative thinking skills, particularly in relation to learning, pedagogical thinking, and educational issues, and
- skills related to well-being and self-development, including reflection on one's own practices and constructive participation in group work.

Official course record: 410086P

AY410086P | Teaching and Educational Interaction (OPEN UNI)

5 ECTS | Education | Basic Studies | Finnish

Person in charge: Veli-Matti Ulvinen

Content

- * The basic concepts and processes of learning and related theoretical perspectives
- * Pedagogical thinking and practices of the teacher or learning facilitator
- * Interaction and learner participation in educational, learning, and instructional contexts
- * Models of active learning and learning environments

Learning outcomes

After the course, the student is able to:

- * identify and understand the basic concepts and core processes of learning and learning facilitation
- * describe the significance of teachers' or learning facilitators' pedagogical thinking, actions, and interaction in educational, instructional, and guidance contexts
- * apply and further develop professional skills both as a facilitator of learning and as a learner who works constructively as part of a group
- * apply theoretically grounded principles to the design of learning models and learning environments
- * apply theoretical knowledge to teaching and guidance situations arising from practical working-life contexts.

Generic skills: The course supports the development of students'

- * analytical, critical, and creative thinking skills, particularly in relation to learning, pedagogical thinking, and educational issues, and
- * skills related to well-being and self-development, including reflection on one's own practices and constructive participation in group work.

[Official course record: AY410086P](#)

KE00AG12 | Teaching and Educational Interaction, seminars

2 ECTS | Education | Basic Studies | Finnish

Person in charge: Hanna Järvenoja

Content

Familiarise yourself with the course description of 410086P.

Learning outcomes

Orientation to the basic studies in Educational Sciences from the perspective of the student's own degree programme.

See the learning objectives of course 410086P.

[Official course record: KE00AG12](#)

402127A | Teaching Practice I

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Sirpa Sneck

Content

- * planning of teaching and tests supporting the assessment of a student's need for support
- * teaching provided by a special education teacher or special education class teacher
- * Inclusive education, student welfare
- * research-based interventions
- * multidisciplinary collaboration
- * practice report

Learning outcomes

After completing the teaching practice, the student will be able to:

- * plan and implement special education, which is based on special pedagogy assessment, e.g. the information obtained from student tests
- * implement inclusive pedagogy, for example implementing co-teaching
- * evaluate the effectiveness of the support given
- * is able to reflect on her/his own activities as a special education teacher and educator and maintain her/his own professional growth and coping at work

[Official course record: 402127A](#)

402128A | Teaching Practice II

5 ECTS | Special Education | Intermediate Studies | Finnish

Person in charge: Miia Ronimus

Content

- * Designing special education to provide systematic support for the students and monitoring its effectiveness
- * Co-teaching
- * Special education teacher's multiprofessional and multidisciplinary collaboration, collaboration with guardians
- * Special education teacher's consultative work

Learning outcomes

After completing the training phase, the student will be able to

- * to plan and implement individual, small group and co-teaching based on an assessment of the need for support
- * evaluate the effectiveness of the support using different methods
- * work in part-time and/or class-based special education
- * understand what consultative special education is and identify situations where consultative expertise is needed and used
- * understand how a special education teacher engages in multidisciplinary and multiprofessional collaboration with guardians and in the context of the school

[Official course record: 402128A](#)

050415P | Teaching practice in university pedagogy

10 ECTS | Pedagogical Studies for Teachers | Basic Studies | Finnish, English

Person in charge: Sonja Lutovac, Mervi Heikkinen, Merja Maikkola

Content

- developing one's own teacher identity
- planning, implementing, developing and evaluating one's own teaching
- the university as a teaching and learning environment

Learning outcomes

After completing the course, the participant will be able to:

- * critically reflect on one's own teaching
- * employ and develop one's personal approach to teaching
- * apply and create new learning and teaching practices in one's own field
- * employ different teaching methods, learning environments and digital pedagogy in the planning, implementation and assessment of one's own teaching
- * plan and implement one's teaching based on the curriculum and pedagogical research

408038S | Thematic Practice

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Jouni Karsikas

Content

In Thematic Practice, the student has an opportunity to get to know the teacher's field of work widely by choosing a theme for the practice that is important for growth as a teacher. The practice consists of either educational guidance or teaching activities.

The practice can be carried out in either general or vocational education, in educational and training organizations or projects also in an environment other than grades 0-6 of basic education.

The Thematic practice can also be about experimental, developmental or research activities with cooperating parties in the field of education.

In the Thematic practice the student plans, implements and evaluates teaching and gets to know the status of the as part of the practice site as part of the educational system.

The contents of the course also include the following generic skills of the University of Oulu, taking into account the context of the training:

The student

- is able to apply analytical and critical thinking skills in a manner appropriate to their field of study, taking into account the interfaces between disciplines and new knowledge
- is able to promote their well-being, develop their self-management skills, build their professional identity, and maintain their own expertise in a goal-oriented manner
- is able to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of working, and promote community spirit and interaction to support well-being
- is able to work in international cooperation and take the international operating environment into account in their activities
- is able to promote constructive cooperation with people from different backgrounds, develop their language skills, and challenge their own stereotypical thinking patterns
- is able to apply the UN's sustainable development goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field
- is able to resolve ethical issues in their own field in a well-founded manner and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments
- is able to apply the methods of their own field and recognize the strengths and limitations of methods used in other fields
- is able to promote multidisciplinary cooperation and lead multidisciplinary and multi-professional teams
- is able to communicate as an expert in a manner appropriate to the target audience, also in a foreign language, and build professional networks
- is able to evaluate the performance of individuals and groups, such as the achievement of goals, group dynamics, communication, and work atmosphere, and is able to give constructive feedback, guidance, and development suggestions to others and lead a team

Learning outcomes

Having completed the course, the student knows how to:

- analyze his or her own needs for development
- apply the skills s/he has learnt in the practice period
- evaluate the significance of skills achieved in thematic practice for his/her own growth as a teacher
- apply a research-based approach to experimental and development activities, or has acquired other special skills
- applies his/her skills to the planning of project work

Official course record: 408038S

KE00AE92 | Themes in Psychology A

2-5 ECTS | Psychology | Intermediate Studies | Finnish, English

Person in charge: Henri Olkonieni

No description supplied in the collected record.

[Official course record: KE00AE92](#)

KE00AE93 | Themes in Psychology B

2-5 ECTS | Psychology | Intermediate Studies | Finnish, English

Person in charge: Henri Olkonieni

No description supplied in the collected record.

[Official course record: KE00AE93](#)

KE00AZ34 | Theoretical basics of psychotherapy

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Elina Jokiranta-Olkonieni

Content

The student has basic information about psychotherapy and its main direction, as well as familiarization with psychotherapies and general effectiveness factors. In the course, you get to know the psychotherapy assessment theoretically and its effectiveness. In addition, the course introduces new research information on the effectiveness of psychotherapies, as well as the advantages and challenges of different forms of therapy.

Learning outcomes

The student can:

- describe the main psychotherapy trends and their theoretical basis
- communicate in the work community with other colleagues about issues related to psychotherapy
- describe and evaluate the central professional and ethical challenges of psychotherapeutic work
- describe the key findings of psychotherapy research

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student recognizes cultural diversity and the impact of stereotypes, and is able to work constructively in multicultural teams and international interaction situations.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: KE00AZ34](#)

411005A | Theoretical Foundations of Education

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

- * Questions about the defining criteria of science
- * The scientific concepts that are at work within education, their philosophical assumptions, strengths and problems
- * The importance of philosophical and theoretical assumptions for research work

Learning outcomes

After completing the course, the student will be able to:

- * identify the philosophical and philosophical foundations of educational research, their justification and the assumptions underlying scientific knowledge production
- * analyse and compare the perspectives of the scientific concepts that are influential within educational science and the strengths and challenges of the philosophical arguments used to defend them
- * assess the relevance of philosophical assumptions and commitments to scientific research and be able to use this
- * understanding in their own theses and by participating in scientific argumentation and debate understand the potential of educational research in multidisciplinary collaboration.

[Official course record: 411005A](#)

AY411005A | Theoretical foundations of education (OPEN UNI)

5 ECTS | Education | Intermediate Studies | Finnish

Person in charge: Henri Pettersson

Content

- * Questions about the defining criteria of science
- * The scientific concepts that are at work within education, their philosophical assumptions, strengths and problems
- * The importance of philosophical and theoretical assumptions for research work

Learning outcomes

After completing the course, the student will be able to:

- * identify the philosophical and philosophical foundations of educational research, their justification and the assumptions underlying scientific knowledge production
- * analyse and compare the perspectives of the scientific concepts that are influential within educational science and the strengths and challenges of the philosophical arguments used to defend them
- * assess the relevance of philosophical assumptions and commitments to scientific research and be able to use this
- * understanding in their own theses and by participating in scientific argumentation and debate understand the potential of educational research in multidisciplinary collaboration.

[Official course record: AY411005A](#)

422268A | Theory and practise of music education

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Marja Ervasti

Content

- music as a part of individual's life and as a part of social group and society
- apply adapted music education approaches such as Kodály-, Orff-, Dalcroze-, Suzuki-pedagogy
- research in sonic environment, acoustic ecology, composition pedagogy

Generic skills:

- Recognize the key skills of analytical, critical, and creative thinking and be able to observe them in their own activities
- Recognize and be able to describe the significance of analytical, critical, and creative thinking in scientific, professional, and ethical activities
- Be able to critically evaluate knowledge in their field and apply it to solve complex and unpredictable problems.

Learning outcomes

After completing the course, the student will be able to:

- apply music education theories and approaches and their educational and musical principles
- critically assess music education practices based on recent music education research
- analyze contemporary discussions in music education

Official course record: [422268A](#)

413062S | Theory of Education and Bildung: Pedagogical Action

5 ECTS | Education | Advanced Studies | Finnish

Person in charge: Ari Kivelä

Content

In this study module the is familiarized with theoretical and conceptual ways to discuss pedagogical activity. It is essential to identify the special characteristics of pedagogical (educative and instructive) interaction which set it apart from other intercourse between people and forms of human activity. The student understands how pedagogical activity opens up possibilities for the development of subjectness in the growing person and for individual choices in life. The student adopts conceptual-theoretical tools which allow him/her to view the special characteristics of pedagogical activity from the frame of reference offered by educational theory formation, and to conceptualize the essential areas of competence from the viewpoint of professional pedagogical activity. The course helps the student to develop his/her professional competence, to evaluate critically and analytically both scientific research results on pedagogical activity and views arising from different practical experiences.

Learning outcomes

Having completed the course, the student

- knows how to use on his/her own the theoretical concepts and starting-points of education to discuss pedagogical activity
- is capable of participating in theoretical debate in his/her branch of science and field of research
- knows how to interpret and evaluate critically recent theoretical debate in his/her branch of science and field of research

Official course record: [413062S](#)

KE00AR89 | Transformative Leadership in Education

5 ECTS | Education | Advanced Studies | English

Person in charge: Audrey Paradis

Content

- key concepts related to educational policies, planning and leadership
- approaches to and research on educational leadership
- international organisations guiding educational policy, planning and monitoring
- educational policies in Finland and internationally
- transformative educational leadership
- educational leadership in practice: structures, schools as a community, teachers as leaders, principals' qualifications and work

Learning outcomes

After completing this course students are able to:

- Apply key concepts related to educational policy, planning and leadership
- Reflect on transformative and socially responsible leadership approaches and the connections between educational policy and implementation
- Find and analyse information about national and international educational policies and leadership
- Discuss the processes of decision making, planning and implementation at local, national and international levels
- Participate in research-informed discussions on educational leadership
- Apply analytical & critical thinking appropriately to discipline, considering interfaces between fields & new knowledge.
- Work in international cooperation and consider international operating environments.
- Solve ethical questions with reasoning; justify actions ethically considering backgrounds, values, power.
- Communicate as an expert, adapt to audience, build networks.

Official course record: [KE00AR89](#)

402722P | Visual Arts and Pedagogy

5 ECTS | Art | Basic Studies | Finnish

Person in charge: Minna Myllykangas

Content

- planning and realizing and evaluating art education in practice
- children's visual development
- art museums, exhibitions and art institutions as part of art education
- school curricula and different learning environments
- art project in an out-of-school learning environment, such as an art museum

Learning outcomes

After completing the course, the student will be able to:

- observe, conceptualize, and evaluate the artistic learning process.
- examine the practices of art education and analyze the underlying conceptions reflected in them.
- view, interpret, and verbalize artworks as part of early childhood and basic education contexts.
- explore the development of children's visual thinking, perceptual skills, imagination, and creativity within art education.
- design and carry out an art education project in an out-of-school learning environment, such as an art museum.
- reflect on their own art pedagogical practice.

Official course record: [402722P](#)

442452A | Visual Arts Education

5 ECTS | Professional Studies in Early Childhood Education | Intermediate Studies | Finnish

Person in charge: Jaakko Moilanen

Content

- Visual arts materials, tools and methods suitable for early childhood education and care
- Visual arts education as a place of expression, interaction and learning
- Planning, development and evaluation of pedagogical activities in early childhood visual arts education
- Play and art
- Development of the child's visual expression
- Visual literacy, multiculturalism
- Self-efficacy in visual arts, art perception and art education
- Learning environments in visual arts education

Learning outcomes

After the course, the student is able to

- reflect on and develop their own artistic skills
- reflect on their own conceptions about art, visual arts education and visual culture, and discuss them in a peer group
- describe, plan and evaluate visual arts education based on early childhood and pre-primary curricula
- examine and evaluate visual arts education from an inclusive perspective
- explore the links between play, playfulness and art
- describe and use various learning environment in visual arts education
- to use materials, equipment, technology, digital and AI applications relevant to visual arts purposefully, safely, and responsibly

[Official course record: 442452A](#)

412079A | Work and Organizational Psychology I

5 ECTS | Psychology | Intermediate Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

- Basic issues in work and organizational psychology
- Common work stress and job burnout theories
- Common and interventions in promoting well-being at work and work motivation

Learning outcomes

- The student is able to identify the basic issues and is able to define the basic concepts and theories related to basic organizational psychological issues
- The student is able to recognize factors that promote and impair well-being at work and work motivation
- The student understands basic principles related to organizational change, work development and management

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: [412079A](#)

412103S | Work and organizational psychology II

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

Work and organizational psychology as a research subject

Organizational structures and cultures

Leadership and management in organizations

Group dynamics, team and group activity in organizations, social interaction

Project work and leadership

Psychological background of well-being at work

Development of knowhow and expertise

Learning outcomes

After completing the course, the student is able to:

- Identify the central elements of leadership and organizations and apply knowledge on them in different tasks and duties in an organization
- observe and reflect on his/her own action methods and apply knowledge of his/her own branch of science in a multi-professional group
- analyze and apply knowledge and practices connected with the operation of teams and organization and with group dynamics
- understands the role of individual and organizational factors for psychological well-being at work

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
- The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student identifies similarities and differences between their own discipline and related fields, approaches other disciplines with openness, and is able to work constructively in multi- and interdisciplinary teams.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

Official course record: 4121035

412104S | Work and organizational psychology III

5 ECTS | Psychology | Advanced Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

Current research in work and organizational psychology

The dimensions of psycho social work environment and evaluating psycho social risk factors

The interventions of promoting of well-being at work and personnel development

The change in the nature of work; knowledge-based work, cognitive ergonomic

The change in the work force, such as aging employees

The role of occupational health care in supporting the work ability

Learning outcomes

After completing the course, the student is able to:

- apply current research and theory in work and organizational psychology
- analyze well-being at work as a phenomenon based on research and theory
- design and implement interventions to promote well-being at work and personnel development
- perceive the change in the nature of work, features of knowledge-based work and how knowledge-based work can be supported by cognitive ergonomic
- perceive the uniformity of work force, such as ageing employees, and recognize essential ways to support performance and well-being at work of ageing employees
- perceive the role of occupational health care in the promotion of well-being at work

The course supports the development of the following generic skills:

- The student recognizes and evaluates the key skills of analytical, critical, and creative thinking, understands their relevance in scientific, professional, and ethical contexts, and applies disciplinary knowledge to solve complex and unpredictable problems.
 - The student is able to reflect on their own well-being and self-leadership, identify work-related stressors in expert roles, and make use of self-compassion. They can describe and further develop their expertise and professional identity, support group learning, and identify the need for lifelong learning.
- The student acts responsibly, equitably, and in accordance with professional ethics in various interaction situations, respecting different stakeholders, environments, values, and good scientific practice.
- The student communicates clearly both orally and in writing to experts and broader audiences, also in a foreign language. They are able to contribute constructively to group communication, give and receive feedback, resolve conflicts, and develop their communication, interaction, and multiliteracy skills.

[Official course record: 4121045](#)

402143S | Work Community and Leadership in Special Education

5 ECTS | Special Education | Advanced Studies | Finnish

Person in charge: Marika Loukusa

Content

- Types and requirements of collaboration in the work community, models of leadership, administration, the concept and different forms of consultation, special education leadership, knowledge-based management.
- Organizational culture

Learning outcomes

Upon completion of the course, the student will be able to

- describe the collaboration networks in the work community
- identifies power hierarchies and different types of interaction
- explain the concepts of organizational culture, learning organization, and s/he finds ways to support its development
- s/he develops her or his models and methods of interaction, gets an idea of the models of leadership and management, and identifies the requirements of leadership in special education
- recognize and develop their self-management skills and build their professional identity
- explain the administrative structures, administrative activities, decision-making as well as the economics of education
- tell the meeting practices, responsibilities of various functionaries, and identify her or his competence and her or his individual development needs

413019S | Working Life Studies

5-10 ECTS | Education, Educational Psychology | Advanced Studies | Finnish

Person in charge: Henri Pettersson

Content

- Mapping of personal interests and strengths, application for and practical arrangements with a work practice site
- Familiarization with the theoretical starting-points and practical implementation of expertise required in the practice site
- Analysis of personal skills and working habits individually and in a group

Learning outcomes

The student

- expands and deepens his/her professional identity, competence and expertise
- acquires a knowledge of the theoretical basis of his/her field of duties and knows how to apply and evaluate it professionally
- identifies and strengthens his/her networks and understands their meaning in expert work

Official course record: 413019S

422280A | World Musics

5 ECTS | Music Education | Intermediate Studies | Finnish

Person in charge: Oula Mommo

Content

- key characteristics of Finnish folk music and world music cultures
- basic techniques of folk and world music instruments
- performing and arranging folk music
- planning, carrying out, and reporting on the rehearsals for the course task (a small-group concert programme of approximately 3-5 pieces)

Learning outcomes

After completing the course, the student will be able to:

- explore world music cultures from the perspective of music research
- practice the basic techniques of folk music instruments through experimentation and improvisation
- rehearse, arrange, and perform music in accordance with various styles of Finnish folk music as well as world music cultures
- work in multicultural teams and act openly in international and multinational situations with people from diverse cultural backgrounds
- act in an equitable and inclusive manner with diverse people, in accordance with professional ethics and good scientific practice, respecting different stakeholders, environments, and values

Official course record: 422280A

KE00AI05 | World's happiest student (self-knowledge and self-leadership)

3 ECTS | Education | Other Studies | Finnish

Person in charge: Sari Harmoinen

Content

The main content is well-being and the factors that influence it. The course consists of sections related to student well-being, which include lectures, independent assignments, and finally a summarizing assignment for the course. There are seven lectures in the course, and each lecture is given by a different expert or experts. More detailed information about current content and completion instructions can be found in the course's Moodle environment.

Learning outcomes

Upon completion of the courses, the student will be able to identify factors that affect their own well-being diversely. The student recognizes the most central sectors of their well-being and adopts tools which they can use to support and regulate their own well-being. The student understands the communal nature of well-being and can describe how they can support the well-being of others in, for example, a study- or work environment.

Official course record: [KE00AI05](#)

Engineering & architecture

TA00AT82 | Academic Study Skills for Architects

1 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Tanya Yliaho

No description supplied in the collected record.

[Official course record: TA00AT82](#)

477310S | Advanced Catalytic Processes

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Satu Ojala

Content

The course contents are divided into the following themes 1) surface chemistry and catalysis, 2) new catalyst preparation methods, 3) catalysis for a sustainable production and energy, and green chemistry and engineering, 4) design of catalysts and catalytic processes (reactor and process intensification, process improvements, new catalysts and catalytic processes, new opportunities by catalysis), 5) phenomena integration and catalysis and 6) new innovations in catalyst research.

Learning outcomes

After completing the course the student can explain the interdisciplinary connection of catalysis with material and surface science, define new catalyst preparation methods and application areas, catalytic reaction and process engineering, and methods in catalyst research (experimental and computational methods). He/she is able to explain the latest knowledge connected to catalyst research and applications. He/she is also capable of explaining the relation and differences between heterogeneous, homogeneous and biocatalysis.

[Official course record: 477310S](#)

477607S | Advanced Control and Systems Engineering

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Istvan Selek

Content

The course contains two themes: 1- Model-predictive control: including DMC, QDMC; GPC. 2- State estimation: including Kalman filtering and particle filters.

Learning outcomes

After completing the course the student can design the model predictive control systems, can formulate and solve state estimation problems, and/or discover recent research trends in control and systems engineering.

[Official course record: 477607S](#)

488305S | Advanced Course for Biotechnology

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Johanna Panula-Perälä

Content

The course focuses on the biotechnological production of proteins using different host organisms, the recovery and purification of produced proteins, and the development of biocatalysts from the perspective of industrial biotechnology. The course also examines the scale-up and intensification of bioprocesses and their effects on the performance of host organisms. Written assignments develop the student's ability to search for, evaluate, and utilize scientific literature in the field, as well as to communicate applications of biotechnology clearly and in accordance with professional practices. The course addresses key ethical issues related to applications of genetic engineering, thereby supporting the student's ability to consider the use of genetic engineering from a responsible and ethical perspective.

Heterologous protein production. Unit operations in product recovery and purification. Biocatalyst screening and optimization. Scale-up and intensification of bioprocesses.

Learning outcomes

Upon completion of the course, the student will be able to describe the biotechnological production of proteins using different host organisms, as well as the recovery and downstream processing of the produced proteins using various unit operations. The student will also be able to identify the effects of scaling up bioreactor cultivation on the performance of host organisms. In addition, the student will gain an understanding of the discovery and development of new biocatalysts. The student will also be able to structure and present, with justification, information based on written sources in the field of biotechnology clearly and coherently in written form.

[Official course record: 4883055](#)

462110S | Advanced course in mechatronics

8 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Toni Liedes

Content

Technology of digital control systems; Characteristics of dynamical systems and their behavior in time and frequency domain; Modelling and simulation of mechatronic systems; Basics of advanced vibration damping systems and their control; Modelling of friction; Experimental research of mechatronic systems.

Learning outcomes

Upon completion the course, the student will be able to analyze and design mechatronic products using contemporary calculation and modeling methods. The student will also be able to choose the implementation technology of a mechatronic product and compare the properties of different implementation options. In addition, the student will be able to evaluate the usability, performance, and operating conditions of various actuators in mechatronic products.

[Official course record: 462110S](#)

555351S | Advanced Course in Product Development

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Harri Haapasalo

Content

The concepts of requirements management, requirements engineering process, requirement prioritisation and valuation, Design for Excellence (DfX), delivery capability creation (DCC), different stakeholders and their requirements for product development.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the objectives of requirements engineering (RE), design for excellence (DfX) product design concept and delivery capability creation (DCC) in order to develop and ramp up sustainable products with minimum product specific investments
- understand requirements engineering process and its key activities, DfX product design concept as product design guidelines, targets and key performance indicators (KPIs)
- understand DCC process as a sub-process of new product development (NPD) process including key roles, tasks and milestone criteria
- analyse and further develop RM, DfX and DCC as a part of product development processes

[Official course record: 5553515](#)

555391S | Advanced Course in Project Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Kirsi Aaltonen

Content

Different types of projects and industry specific approaches to project management, managing large and complex projects, project governance, project stakeholders, project risk and uncertainty management, project time and schedule management, project finance.

Learning outcomes

Upon completion of the course, the student will be able to:

- * Explain different management processes and methodologies and evaluate their suitability to different project environments
- * Apply analytical methods that improve our ability to handle interdependencies, uncertainty, and dynamism in project scheduling
- * Analyze and manage risks and uncertainty in projects
- * Develop processes and structures to manage multi-firm projects
- * Manage the relationship of projects and their external environment and stakeholders
- * Develop financial plans and investment proposals for complex projects

[Official course record: 555391S](#)

485402S | Advanced Course in Traffic Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Virve Merisalo, Valtteri Ahonen

Content

The course provides an in-depth examination of transport system planning, governance and evaluation from the perspectives of transport policy, transport economics and traffic safety. The focus is on the sustainable development of transport systems from societal, economic and safety perspectives. The concepts and methods introduced in the course are applied in a large group-based planning project.

Key contents:

- Actors, objectives and policy instruments of transport policy. National and regional strategies and decision-making frameworks.
- The economic significance of transport in society. Evaluation of transport investments, cost-benefit thinking and decision-support methods.
- Theoretical foundations, indicators and analytical methods of traffic safety. Identification of traffic safety problems and evaluation of safety measures.

Learning outcomes

After completing the course, the student:

- is able to analyse and evaluate the key actors, objectives and policy instruments of transport policy and their impacts on the development of the transport system
- is able to apply principles of transport economics and key theories, methods and indicators of traffic safety to the assessment of transport investments and traffic safety problems, and to justify alternative solutions
- is able to examine transport system planning solutions from technical, economic and societal perspectives
- is able to work goal-oriented in a group, communicate planning solutions clearly in written and oral form, and utilise digital tools as part of collaborative work
- is able to develop analytical, critical and creative thinking in identifying multidisciplinary problems and evaluating alternative solutions, and to plan and manage own work and time in a large project-based assignment

[Official course record: 4854025](#)

555304S | Advanced Internship

5 ECTS | Industrial Engineering and Management | Practical Training | English

Person in charge: Osmo Kauppila

Content

Communication, co-operation, creativity, problem solving, project management, learning, technical skills, international skills, business and financial skills

Learning outcomes

Upon completion of the course, the student will be able to:

- apply professional skills learnt during studies (e.g. communication, co-operation, creativity, problem solving, project management, learning, technical skills, international skills, business and financial skills) in a work environment
- work in a responsible manner
- reflect performed work against IEM theories and methods
- reflect IEM education against recognized working life needs

[Official course record: 555304S](#)

463104A | Advanced manufacturing methods

7 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jyri Porter

Content

The lectures and seminars deal with operating principles, industrial processes and equipment of laser processing, electric discharge machining, abrasive water jet cutting and additive manufacturing. The course may include other processes. Interaction with the material in each process, process applications and limitations are also discussed. In addition safety aspects are discussed.

Learning outcomes

After the course the student can apply laser processing, electric discharge machining, abrasive water jet cutting and additive manufacturing in machine shop processes. The student is also able to select suitable machine tools, describe main features of processes and trends in the field.

[Official course record: 463104A](#)

493604S | Advanced Mineral Concentration

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Diego Poblete Moya, Kari Moisio

Content

- Fine and coarse particle recovery
- Advanced flotation, gravity separation, electrostatic separation and pre-concentration
- Sulphide beneficiation
- Non-sulphide beneficiation
- Industrial minerals concentration
- Waste re-processing and recovery
- Process optimization (DOE, MPC, ML, AI)
- Statistical tools in mineral processing
- Practical exercises and calculations

Learning outcomes

Upon completion of the course students should be able to:

- Understand and apply the innovation in technologies for mineral concentration
- Recognize and discuss the process techniques to recover valuable material commonly lost in fines and coarse particles and from secondary resources
- Identify and apply beneficiation processes according to the type of mineral
- Solve practical exercises of metallurgical accounting using various method
- Carry out calculation of efficiencies, balances and basic design of the unit operations that are used in ore processing
- Build and evaluate regression models
- Analyze various related unit operations including the advantages and short falls of different advanced separation techniques

[Official course record: 493604S](#)

477005S | Advanced Practical Training

5 ECTS | Process Engineering, Environmental Engineering | Advanced Studies | Finnish

Person in charge: Saara Luhtaanmäki

Content

During the advanced practical training, the student becomes acquainted with working life, preferably in duties aligned with the professional role of a Master of Science (Technology). The aim of the training is to support the student's transition into expert positions after graduation by providing insight into the responsibilities, practices and expectations of their future profession. The training may include tasks such as supervisory duties, substitution for forepersons or shift supervisors, as well as various design, research, development and product development assignments that deepen the student's professional competence and understanding of workplace practices.

Learning outcomes

After completing the advanced practical training, the student is able to work in duties typical of a Master of Science (Technology) in their field and apply the theoretical and methodological knowledge acquired during their studies to demanding and complex professional situations. The student can identify, analyse and solve problems in the work environment by drawing on analytical and critical thinking as well as technical expertise. The training enhances the student's communication and interpersonal skills, project management abilities and digital competence, and strengthens their capacity to work in multidisciplinary, networked and international expert environments. The student learns to use workplace tools and practices responsibly and to contribute to collaboration and shared learning within the work community. In addition, the student understands the professional, ethical and sustainability-related dimensions of their work tasks. The training supports the development of self-directed working skills and self-reflection, and helps the student assess their own competence development and their role within the broader expert community and society.

Official course record: 4770055

485002S | Advanced Practical Training

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Aino-Maija Vuori

Content

During the advanced internship, the student becomes familiar with professional duties in construction and civil engineering, preferably in tasks suited to a Master's level engineer. The aim is to provide the student with an opportunity to deepen their professional competence and to support a smooth transition into demanding expert positions after graduation. The internship may involve responsibilities related to production management, design or project management, duties that include supervisory or foreperson substitution, or tasks in planning, development, analysis, quality management or safety management. Through these tasks, the student gains a deeper understanding of the requirements and operating practices within construction, infrastructure and civil engineering environments.

Learning outcomes

Upon completing the advanced internship, the student is able to work in Master's level engineering roles within the field of construction and civil engineering and to apply the theoretical and methodological knowledge gained during their studies to demanding and complex professional situations. The student can identify, analyse and solve technical, organisational and economic challenges in the work environment by using analytical and critical thinking as well as professional expertise. The internship further develops the student's communication and interaction skills, project management competence and digital proficiency, and strengthens their ability to work in multidisciplinary, networked and international expert communities. The student learns to use the tools, methods and operating models of construction and infrastructure engineering responsibly and to promote cooperation and shared learning within the workplace. In addition, the student understands the professional, ethical and sustainability-related dimensions of their tasks. The internship enhances the student's self-direction and self-reflection and improves their ability to evaluate their own professional development and their role within the wider expert community and society.

Official course record: 485002S

521016A | Advanced Practical Training

3 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Juha Häkkinen

Content

Training in the research laboratories, development laboratories and process laboratories, among others, of the industry and institutions in the field of their study is recommended to the students. The basic requirement is that the practice must be performed in a job supervised by a person who has taken an engineering degree. The technical goal of practical training is to give a general insight of the field in which the trainee will work after having taken the degree and to support and to promote theoretical studying. Likewise, the training has to acquaint the trainee with the social points of the industrial production and with industrial safety and has to give a sufficient picture of the technical details of the performing of different work. Furthermore, the training has to give a general idea of the technical and economic organizing, administration and management of a company and its production.

Learning outcomes

After advanced practical training the student can describe one possible future job, or another kind of position in an already familiar working environment. The student can identify problems in the working environment and solve them. The student can apply theoretical knowledge acquired in the studies to practical tasks. The student can identify roles of a diploma-engineer in the work place.

Official course record: 521016A

IE00AV13 | Advanced RF measurements in telecommunications

4 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Marko Leinonen

Content

Standardization and regulation of 5G, beyond 5G, and 6G
3GPP and IEEE standards for RF measurements
Design for testability (DfT)
RF system design for measurement system
Connectivity options for RF measurements
RF circuitry linearity measurement
RF Noise measurements
VNA-based measurements
Wideband modulated signal measurements
Over-the-air (OTA) measurement techniques including EMC, EMI ja SAR topics

Learning outcomes

- * The course gives an overview of the main RF measurements that are needed for 5G and 6G RF circuitry characterization, or RF system-level measurements with a complete radio solution for the student.
- * After attending the course, the student should understand how the main RF measurement measurements are performed at different frequencies and some limitations of RF measurement equipment.
- * During the course, students will perform calculation examples that reflect real-life cases in the field of radio testing.
- * The student will gain understanding of the main 3GPP telecommunication related RF tests as well as EMC, EMI topics.

Official course record: IE00AV13

491686S | Advanced Rock Mechanics

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Adeyemi Aladejare, Kari Moisio

Content

1. Introduction to rock as an engineering material
2. Rock mass classification
3. Methods and mechanism of rock drilling
4. Mechanical rock excavation
5. Tunneling in rock mass
6. Rock support systems
7. Challenges in deep drilling and mining
8. Rock slope engineering
9. Factors affecting stability of rock slope
10. Stability of tunnels and underground excavation
11. Stabilization of rock mass

Learning outcomes

Upon completion of the course students should: (1) understand the methods and mechanism of rock excavation; (2) understanding tunnelling in rock mass; (3) be able to perform slope stability analysis; (4) understand the concept of rock support and its applications in Mines; (5) understand the challenges associated with deep Mining and how to address them.

Official course record: [491686S](#)

477311S | Advanced Separation Processes

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Nora Jullok

Content

The course is divided into lectures given by experts from different fields (industry, research institutes and universities) and seminars given by students and senior researchers. The lectures open up the newest innovations in separation and purification technologies. The lectures can include for example the following themes: Phenomena in Supercritical fluid extraction, Pressure-activated membrane processes, Reverse osmosis, Nanofiltration, Ultrafiltration, Microfiltration, Pervaporation, Polymer membranes, Dialysis, Electrolysis and Ion-exchange, Forces for adsorption and Equilibrium adsorption isotherms, Sorbent materials and heterogeneity of surfaces, Predicting mixture adsorption, Rate processes in adsorption/adsorbers and adsorber dynamics, Cyclic adsorption processes, Temperature and pressure swing adsorption. Innovative separation methods, Phenomena integration, New hybrid materials as separation agents. Fluids and their application in gas extraction processes, Solubility of compounds in supercritical fluids and phase equilibrium. Extraction from solid substrates: Fundamentals, hydrodynamics and mass transfer, applications and processes (including supercritical water and carbon dioxide). Counter-current multistage extraction: Fundamentals and methods, hydrodynamics and mass transfer, applications and processes. Solvent cycles, heat and mass transfer, methods for precipitation. Supercritical fluid chromatography. Membrane separation of gases at high pressures. The topics of the course seminars will change annually depending on the research relevance and visiting scientists.

Learning outcomes

After completing the course the student is able to review the most recent methods and techniques for separation and purification of components and products, e.g. in the chemical, food, and biotechnology industries. He/she is able to define the principles of green separation processes and their research status and potentiality in industrial applications.

Official course record: [477311S](#)

485113S | Advanced topics on building physics

5 ECTS | Civil Engineering | Advanced Studies | English

Person in charge: Filip Fedorik

Content

The course covers advanced topics in building physics through applied examples and numerical simulations. Key topics include one-, two-, and three-dimensional heat conduction; heat convection in building-related contexts; and coupled heat and moisture transfer in selected building components. The course introduces multiphysical simulation approaches, focusing on model setup, boundary conditions, material properties, and interpretation of results.

Learning outcomes

The objective of this course is to deepen students' understanding of advanced building physics phenomena through practical and applied examples. The course focuses on heat conduction in one-, two-, and three-dimensional cases, heat convection, and coupled heat and moisture transfer in building components. By using multiphysical simulation software, students learn to analyse complex physical processes, interpret simulation results, and understand the underlying modelling principles. Emphasis is placed on developing transferable skills that enable students to critically use and adapt to different simulation tools in future professional and research contexts.

The course supports the development of generic academic and professional skills, including analytical thinking, problem-solving, and the ability to work independently. Students also strengthen their skills in critical evaluation of numerical results and in communicating technical findings clearly.

Official course record: [4851135](#)

485115S | Advanced topics on concrete technology

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Hannu Lienes

Content

Durability and defects of concrete structures, high-strength concrete, self-compacting concrete. Processing of secondary raw materials for the preparation of special concrete, utilization of fly ash, slag and dust.

Learning outcomes

After completing the course the student is able to manage the goal of the subject by broadening the knowledge to new concrete types and their design methods, testing and application conditions and also on concrete with special properties such as e.g. high-quality, high strength and self-compressing. He can also explain how to assess the structural condition of concrete.

Official course record: [485115S](#)

485116S | Advanced topics on design of concrete structures

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

Plastic analysis of concrete structures. Strut and tie method. Deep beams. Corbels and bearings. Theory of tensioned structures. Losses in prestress. Limit state design of pre-stressed concrete beams.

Learning outcomes

Upon completion of the course, the student

- is able to describe analysis and design methods for concrete structures based on plasticity theory, and to apply analytical and critical thinking when assessing the assumptions, limitations, and applicability of these methods
- is able to apply the strut-and-tie method in ultimate limit state design of concrete structures and to justify design solutions in a technically sound manner
- understands the key differences between prestressed and post-tensioned concrete structures and is able to assess their implications for structural behaviour and sustainability
- is able to design and dimension bonded post-tensioned concrete beam structures in accordance with EN standards, making use of creative problem-solving and appropriate digital tools.

[Official course record: 485116S](#)

485119S | Advanced topics on design of steel structures

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Rui Hao

Content

The following topics are covered during the course: Plated structural elements with stiffeners. Cold-formed members. Mechanical vibrations. Seismic design. Chimneys. Crane supporting structures. Accidental design situations and progressive collapse.

Learning outcomes

The student can design welded plate beam structures and sheet metal structures. He / she is able to analyze dynamically loaded structures and to evaluate the effect of vibrations on the functionality and usability of structures

[Official course record: 485119S](#)

461118S | Advanced topics on engineering mechanics

5-10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

No description supplied in the collected record.

[Official course record: 461118S](#)

464108S | Advanced Topics on Machine Design

5-10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Emil Kurvinen

No description supplied in the collected record.

[Official course record: 464108S](#)

463110S | Advanced topics on manufacturing technology

5-10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jyri Porter

Content [Finnish source]

Työturvallisuus ja opastus koneiden käyttöön. Koneistus, hitsaus, ohutlevytyöt, kokoonpano ja korjaustoimenpiteet opiskelijan omien suunnitelmien mukaan. Kurssi on vaativa ja soveltuu niille opiskelijoille, jotka haluavat sisällyttää käytännönläheistä tekemistä opintoihinsa.

Learning outcomes [Finnish source]

Kurssin tavoitteena on tarjota opiskelijalle mahdollisuus tutustua konepajaympäristöön ja siellä käytettäviin työkaluihin. Opiskelija muodostaa käytännön kokemusten kautta hyvän käsityksen yleisimmistä konepajan työtekniikoista ja niiden vaatimuksista. Opiskelija osaa myös itsenäisesti suunnitella sellaisen tuotteen, joka on valmistettavissa käytettävissä olevin konepajamenetelmin sekä osaa itse valmistaa sen.

Official course record: [4631105](#)

465117S | Advanced topics on materials engineering

5-10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jukka Kömi

No description supplied in the collected record.

Official course record: [465117S](#)

462113S | Advanced topics on mechatronics and machine diagnostics

5-10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Toni Liedes

Content

Project work

Learning outcomes

The learning objectives are defined on a case-by-case basis, depending on the project work being carried out.

Official course record: [462113S](#)

485111S | Advanced Topics on Structural Timber Design

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

Design and analysis of difficult timber structures. Curved beams and timber arches. Frame structures. CLT structure. Structural vibrations. Progressive collapse. Timber bridges. Special joints. Carbon footprint.

Learning outcomes

Upon completion of the course, the student

- is familiar with the design and dimensioning principles of long-span load-bearing timber structures at the ultimate and serviceability limit states in accordance with EN standards, and is able to critically and analytically assess the applicability and limitations of the solutions
- understands the main structural systems used in multi-storey timber buildings and is able to explain the basic principles of their design and dimensioning, taking into account structural safety, sustainability, and economic considerations
- is able to apply expertise in timber engineering to the design of large-scale timber structures in multidisciplinary collaboration with architects, and to communicate design solutions in a professional manner
- is able to assess adverse effects caused by structural vibrations and to design buildings such that they do not lose robustness in accidental design situations, making use of creative problem-solving and appropriate digital tools

[Official course record: 4851115](#)

488214S | Air Pollution Control Engineering - Practical Solutions

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Satu Pitkääho

Content

Principles of air pollution control equipment and their use in real applications. Emission control case studies in industry and energy production sector. Air pollution related regulations and laws.

Learning outcomes

Student is able to explain what kind of air emissions originate from different industrial and energy production sectors. Student understands essential regulations and laws concerning emission control. Student deepens knowledge obtained in 488213A course and is able to apply it to different practical emission problems. She/he is able to comprehensively describe and choose emission control technologies for different emissions. The student can identify the generic skills they have learned related to analytical, critical and creative thinking - analyzing information and examining and criticizing sources, and related to communication, interaction and digital skills - clear and concise expression, collaboration and group skills and presentation skills in English.

[Official course record: 488214S](#)

080925A | Anatomy and Physiology for Biomedical Engineering

5 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Eveliina Seppälä

Content

The course acquaints the student to human physiology and anatomy. Areas covered include:

- Cells and tissues,
- Skin, blood, blood circulation and the fluids of the body
- Musculoskeletal organs
- Defense reactions of the body
- Respiration
- Digestion
- Urine secretion
- Metabolic regulation, heat regulation
- Reproduction
- Sensory functions
- Nervous system

Learning outcomes

After completing the course, student will

- understand the structure and function of human organ systems
- be able to describe how human anatomical structures and physiological functions can be investigated using different imaging methods and measurement systems
- be able to identify key elements related to one's own well-being and self-management
- be able to describe their competence, develop their own professional identity and promote group learning and development

Official course record: 080925A

521388S | Antennas

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Jack Soh

Content

Introduction to different antenna types. Fundamental parameters of antennas. Antennas as a part of a radio system. Radiation of an antenna from the Maxwell's equations. Typical linear wire antennas. Loop antennas. Microstrip antennas. Antenna arrays. Antennas for wireless devices. Antenna - human body interaction. Base station antennas. 3D electromagnetic simulation.

Learning outcomes

After completing the course, student will

1. know antenna terminologies and understands the role of antennas as a part of different radio systems.
2. be familiar with the theories explaining the electromagnetic radiation of generic antenna types and antenna arrays.
3. be able to design wire antennas, microstrip antennas and antenna arrays for different radio systems.
4. be able to design and analyze various antenna types and arrays using 3D electromagnetic simulation software.
5. be able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
6. be able to work in international cooperation and take the international operating environment into account in their activities
7. be able to communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks

Official course record: 521388S

450543A | Archicad Advanced

1 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Asko Leinonen, Mika Syren

Content

User-created objects, complex elements, schedules, add-ons, and view management in Archicad.

Learning outcomes

The student is able to model complex building components and generate quantity schedules within a Building Information Model. The student can also manage various project views and use a range of software add-ons.

Official course record: 450543A

TA00AT21 | Architectural Competition I

2-10 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi

Content

The course enables the student-oriented architecture competitions organized by the Oulu School of Architecture alone or together with its partners, as well as the evaluation of the student's independently prepared proposals for national or international architecture competitions.

[Official course record: TA00AT21](#)

TA00AT22 | Architectural Competition II

2-10 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Janne Pihlajaniemi

Content

The course enables the student-oriented architecture competitions organized by the Oulu School of Architecture alone or together with its partners, as well as the evaluation of the student's independently prepared proposals for national or international architecture competitions.

[Official course record: TA00AT22](#)

TA00BA49 | Architectural Economics

5 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Janne Pihlajaniemi

Content

After completing the course the student understand how architecture and the profession of an architect is part of the society. The student has gained understanding of the architectural economics, public regulation related to architecture, the business activities, designing contracts and offers, the implementation of building projects and the organization of the design process.

Learning outcomes

The aim of the course is to provide students with diverse competencies for professional practice as an architect, primarily within the context of building design.

[Official course record: TA00BA49](#)

TA00BA69 | Architectural History and Restoration Planning, Project Studies

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anu Soikkeli

Content

The content and timing vary; any potential offering of the course will be announced separately.

Learning outcomes

The content and timing vary; any potential offering of the course will be announced separately.

[Official course record: TA00BA69](#)

455517S | Architectural Lighting

5 ECTS | Architecture | Advanced Studies | English

Person in charge: Henrika Pihlajaniemi

Content

The objective of the course is to study the relationship between architecture and light. The studies cover both natural and artificial light. The lectures deal with architecture and light, concepts of light, modes of lighting as well as different sources of artificial light and types of light fixtures. Both indoor and outdoor lighting solutions are studied. Aspects of sustainability and energy efficiency are included in the contents of the course, in connection with designing and controlling natural light, as well as in relation to selection of light sources and designing controllable and intelligent lighting solutions, using artificial lighting. The project work comprises a lighting analysis of a selected interior and a concept level CAD-visualized lighting design, which is connected to the exercise work in contemporary architecture. The course includes visits to places and interiors of interest within lighting design.

Learning outcomes

After completing the course the student commands the concepts of natural and artificial lighting, in order to be able to analyze the relationship between architecture and light, using basic concepts of lighting. The student can prepare a lighting scheme for his/her own design project and make a CAD-visualized lighting design based on the scheme, utilizing both natural light and various artificial light sources. The student is able to study the lighting solution with lighting calculations. The student is able to apply the principles of sustainability in his/her design solutions, in utilizing natural light and in selection of light sources as well as with intelligent lighting applications and with other design solutions.

[Official course record: 4555175](#)

TA00BC43 | Architecture 1A

10 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Janne Pihlajaniemi, Veli-Matti Sanaksenaho

Content

The course introduces the historical development and life-cycle aspects of the key materials used in buildings. The lectures illustrate the evolution of manufacturing processes for the materials most commonly used in contemporary construction, their life-cycle considerations, and related emerging research initiatives. The lectures also address fundamental concepts of architecture, the development of architectural thinking, and the nature of artistic work. Guest lectures, known as the Monday Matinéés, form part of the lecture programme. The coursework consists of composition and design assignments that focus on exploring the basic elements of architecture.

Learning outcomes

After completing the course, the student will be able to:

- Identify and understand the most common materials used in buildings, their historical development, and their life cycle.
- Understand the background of technological development related to materials and become aware of the research associated with it.
- Master the fundamental concepts of architecture, such as place, space, materials, natural light, and human scale, as elements of architectural expression.
- Apply methods of architecture in a free spatial composition.
- Incorporate artistic expression into their design work.
- Name examples of the works of a few key architects of the 20th and 21st centuries and evaluate them critically.

[Official course record: TA00BC43](#)

TA00BC44 | Architecture 1B

15 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Veli-Matti Sanaksenaho, Janne Pihlajaniemi

Content

The course introduces the historical development and life cycle issues of the most important building components. The project assignment of the course is connected to the assignment of Contemporary Architecture 1B. In the design task student design independently a small building.

Learning outcomes

After completing the course, the student has become familiar with the most common building components, their historical development and construction principles. The student is also able to define goals related to solving the given design task in this regard and to present the corresponding design documents and justifications. In the design task student will learn independently to design a small building.

[Official course record: TA00BC44](#)

TA00BC45 | Architecture 2A

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Veli-Matti Sanaksenaho, Janne Pihlajaniemi

Content

The exercise is a workshop, design task for a small structure, in which the handling and understanding of the basic themes of architecture are studied.

Learning outcomes

The goal is to guide the understanding of the basics of architecture and to guide creative design work.

After completing the course:

The student will be able to master the basic concepts of architecture, such as the concepts of landscape, place, space, materials, natural light, human scale, shaping and structure as part of architectural expression. The student will be able to master generic skills such as working in a group and performance.

[Official course record: TA00BC45](#)

TA00BC46 | Architecture 2B

15 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi, Veli-Matti Sanaksenaho

Content

The lectures cover the fundamental concepts of architecture, the development of contemporary architecture, and the nature of artistic work. Guest lectures are included as part of the lecture program. The course assignment is a design project for a small-scale building, focusing on exploring and understanding the basic themes of architecture. During the course, students become familiar with the various stages of the building design process, from conceptual design to building permit drawings and working drawings.

Learning outcomes

The aim of the course is to guide students toward an understanding of the fundamentals of architecture, support creative design work, and introduce the key tasks of building design.

After completing the course:

The student will be able to master the basic concepts of architecture—such as landscape, place, space, materials, natural light, human scale, form-giving, and structurality—as elements of architectural expression. The student will be able to apply contemporary architectural methods in designing a small building, taking into account dimensions, spatial composition, the role of light, and their relationship to the architectural whole.

The student will be able to consider users' needs as well as the constraints set by the site and climate in the design process.

The student will understand social perspectives and the relationship between humans and buildings within their design work.

After completing the course, the student will be able to identify and analyze key phenomena and factors in contemporary architecture.

The student will be able to use digital design tools when needed to support the design process.

The student will be familiar with the use of wood in construction to the extent that they can design a timber-framed small house and produce principal, working, and construction component drawings for it.

[Official course record: TA00BC46](#)

TA00BC47 | Architecture 2C

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi

Learning outcomes

The aim is to become familiar with the tasks involved in building detail design.

[Official course record: TA00BC47](#)

TA00BF47 | Architecture 3A

12 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anssi Lassila, Janne Pihlajaniemi

Content

The lectures focus on contemporary architecture and look at the relationship between buildings and their context by analyzing, for example, schools, libraries, exhibition buildings and sacral buildings. There are both domestic and international examples. The lectures also discuss the effect of alternative technical solutions and material choices on the building's architecture, as well as reflect on current phenomena in architecture. Guest lectures are part of the course program.

Learning outcomes

The objective of the course is to familiarize the students with the architecture and design principles of public buildings through lectures and exercises. Learning outcomes: After completing the course the student understands the basics of designing public buildings, such as functionality, site-specificity, and the general principles of the architectural approach. After completing the course, the student can present a design for a small public building with the help of drawings and a scale model.

[Official course record: TA00BF47](#)

TA00BF48 | Architecture 3B

12 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anssi Lassila, Janne Pihlajaniemi

Content

The content of the course will be specified in connection with the lectures and the assignment. The aim of the course is to introduce students to the key issues of building design and to prepare them to work as an architectural designer of a residential apartment building.

Learning outcomes

After completing the course, the student recognizes the key legislation related to building design and knows the construction principles of multi-story buildings. The student knows how to design a residential apartment building that meets the building regulations and produces working and construction drawings for it.

[Official course record: TA00BF48](#)

TA00BC51 | Architecture 4

15 ECTS | Architecture | Intermediate Studies | Finnish, English

Person in charge: Anssi Lassila, Janne Pihlajaniemi

Content

The course is a studio course with emphasis on the design exercise. The lectures deal with current features of architecture and specific issues related to the topic of the design exercise. The task of the exercise is to design a medium-size public building, including the principles of fire safety, acoustics, load bearing structures and technical installations. Guest lectures are an integral part of the course program.

Learning outcomes

The objective of the course is to initiate the students through lectures and exercises into the architecture and design of public buildings.

After completing the course the student has the skills to sketch a medium-size (approx. 1000–8000 m²) public building, taking into account the structural, technical and important security requirements (exercise). Furthermore, the student recognizes the social and technical background, as well as trends of contemporary architecture related with public buildings (lectures).

[Official course record: TA00BC51](#)

AY00BD37 | Architecture 5

5 ECTS | Architecture | Advanced Studies | Finnish, English

Person in charge: Anssi Lassila, Matti Lakkala

Content

- Structural systems of wood, wood products, prefabricated elements and manufacturing of these
- Design guidelines and central sources of information in industrial wood construction
- The characteristics of wood construction from the viewpoint of architectural design

Learning outcomes

After completing the course, the student can:

- Name established timber construction systems and compare their suitability for different types of buildings, considering the typical objectives set for architectural design
- Recognize the most common wood products used in timber construction, their manufacturing process from the forest to the finished building, and the most common uses of wood products as part of timber construction systems.
- On a schematic level, understand and independently seek additional information necessary for design regarding the principles of bracing structural systems and their components, established structural dimensions, and spans.
- Describe the most common prefabrication methods used in timber construction, the significance of prefabrication for timber construction, and the impact of these on architectural design.
- Comprehend the impact of the experiential, structural, acoustic, and fire technical characteristics of wood on architectural design and seek additional information needed during the proposal and general design phases, especially regarding fire regulations.
- Evaluate and recommend design solutions justified from the perspective of timber construction that could serve as a basis for the overall design of a building in the general planning phase.

Official course record: [AY00BD37](#)

TA00BC52 | Architecture 5

15 ECTS | Architecture | Advanced Studies | Finnish, English

Person in charge: Anssi Lassila, Matti Lakkala

Content

- The role, aims and process of architectural design as part of the design team in preliminary design
- Structural systems of wood, wood products, prefabricated elements and manufacturing of these
- Design guidelines and central sources of information in industrial wood construction
- The characteristics of wood construction from the viewpoint of architectural design

Learning outcomes

After completing the course, the student can:

- Name established timber construction systems and compare their suitability for different types of buildings, considering the typical objectives set for architectural design
 - Recognize the most common wood products used in timber construction, their manufacturing process from the forest to the finished building, and the most common uses of wood products as part of timber construction systems.
 - On a schematic level, understand and independently seek additional information necessary for design regarding the principles of bracing structural systems and their components, established structural dimensions, and spans.
 - Describe the most common prefabrication methods used in timber construction, the significance of prefabrication for timber construction, and the impact of these on architectural design.
 - Comprehend the impact of the experiential, structural, acoustic, and fire technical characteristics of wood on architectural design and seek additional information needed during the proposal and general design phases, especially regarding fire regulations.
 - Evaluate and recommend design solutions justified from the perspective of timber construction that could serve as a basis for the overall design of a building in the general planning phase.
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- Work as part of an architectural design team to create a proposal for a wooden building that corresponds to the design brief, is presented appropriately, and takes into account the specific characteristics of timber construction in line with the expected learning outcomes of the course
 - Organize their own work as well as that of their group in a manner appropriate to the preliminary design phase, justify the group's decisions regarding the organization of the design process, and evaluate the success and significance of these choices for the quality of the design solution.

TA00BA44 | Architecture of Structures

5 ECTS | Architecture | Advanced Studies | English, Finnish

Person in charge: Janne Pihlajaniemi

Content

Lectures present contemporary examples of concrete-, steel- and wood-structured buildings. The design studio consists of forming a building frame and design principles of the materials in question.

Learning outcomes

Upon completion of the course the student identifies the qualities of concrete, steel and wood as structural material and is able to use these materials to design the frame of a middle sized public building. One of the aims of the course is also rehearse co-operation in a multidisciplinary design team.

Official course record: TA00BA44

488051A | AutoCAD and Matlab in Process and Environmental Engineering

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Pekka Rossi

Content

Properties of the AutoCAD program, planning exercises (e.g. process flow chart, map planning, instrumentation layout). Basic use, plotting, programming structures, functions and least squares solution with Matlab.

Learning outcomes

The student is familiar with the user interface of AutoCAD and its most essential features for drawing, 3D modelling, sizing and printing.

The student can produce exact technical drawings typical to process and environmental engineering.

The student can find the information needed to improve AutoCAD skills independently.

The student knows the user interface of Matlab software and its most essential features.

The student can enter mathematical operations and variables, use functions, compile simple programs and draw different graphs in Matlab.

The student can interpret Matlab code.

The student schedules workload to finish continuous evaluation tasks in time.

Official course record: 488051A

477051A | Automation Engineering

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Aki Sorsa,

Content

The course discusses the basics of process automation. The major concepts are:

Part 1:

- Basics of process control
- PI charts and instrumentation
- Industrial measurements
- Mathematical tool sin automation

Part 2:

- Process automation systems structure and modules
- Typical process automation system types: PLC, DCS and SCADA
- Configuration of automation systems
- Data communication and networks in industrial automation

Learning outcomes

After completing the course, student understands the role of process automation in industry.

The course is organized in two parts:

Part 1: Student knows the basics of typical process measurements and can read and interpret PI charts.

Student understands the basic principles and terminology of process control. Student familiarizes with general mathematical tools needed in automation.

Part 2: Student familiarizes with the basic philosophy, terminology, technology and practices of process automation. After completing the course, the student is aware of the basic functions of automation, such as instrumentation, human interface and control subsystems, and data communication in automation.

Official course record: 477051A

464125S | Automotive development project

10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Perttu Niskanen

Content

Suspension systems and basis of automotive vehicles and construction machines; Steering and power transmission systems of automotive vehicles; Modeling of vehicle dynamics of automotives and vehicle combinations; Automotive technical measurements in automotive laboratories; An industry design exercise assignment.

Learning outcomes

The aim of this course it to familiarize the student with the product development of automotive vehicles and construction machines, dimension principles of vehicles and structural systems, driving stability of automotive vehicles, and railway vehicle technology. The student will learn how to perform measurements in automotive laboratories and based on road conditions. The student is capable of applying the methods of life cycle design and product development of automotive vehicles and construction machines. The student is able to determine the structure loads of machinery and endurance and is capable of designing steering and power transmission systems of automotive vehicles. The student is capable of dimensioning suspension and damping equipment for automotive vehicles and is capable of determining models of vehicle dynamics on road condition cases. Finally, the student is capable of determining driving stability.

Official course record: 464125S

464121A | Automotive engineering principles

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Perttu Niskanen

Content

Road legislation for vehicles; Type approval; Periodic technical inspections; Structural systems of automotives; Driving resistances and mobility maps for on-road and off-road vehicles; Tire categories and standards; Force mechanism of pneumatic tire on road surface; Steering geometry of automotives; Engine and transmission systems; Automotive electrical systems; Fuel consumption; EU, EPA and apan exhaust gas emission legislation, Steering and drivetrain systems of the tracked Vehicles.

Learning outcomes

The goal of the course is to provide the student with basic concept of vehicle mechanics and mobility, motor vehicle regulations and technical inspections, structural systems of automotives, vehicle design principles, environmental effects of vehicles and exhaust gas emission treatment methods. The student is capable of identifying requirements of type approval and periodic technical inspections. The student will know the functions of steering, brake and electronic systems, axles and wheels support mechanisms. The student is capable of determining tires for vehicles and the force mechanism of pneumatic tire on road surface. The student will know the provisions concerning exhaust gas emission limit values and measuring methods for motor vehicle and construction machines. The student is able to determine mobility maps and fuel consumption for on- and off road vehicles accordingly and is capable of determining the capacity of engine and transmission systems as well as steering geometry and performing technical measurements in automotive laboratories and road conditions.

Official course record: [464121A](#)

485980A | Bachelor's Thesis

8 ECTS | Civil Engineering | Intermediate Studies | Finnish

Content

The student chooses the theme for the thesis in cooperation with his/her supervisor.

Learning outcomes

Upon completion of the thesis the student can create a research plan, and define a research problem and research questions. She/He is able to manage her/his own work according to the project plan. The student can also utilize different information sources and critically evaluate the information obtained. The student is able to produce clear and finalized text, in line with technical and scientific writing practices.

Official course record: [485980A](#)

455990A | Bachelor's Thesis / Architecture

8 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio, Helka-Liisa Hentilä, Janne Pihlajaniemi, Anssi Lassila, Anu Soikkeli

Content

The student elaborates one of the compulsory design exercises of the 3rd year bachelor's courses completed for the respective teaching unit (Contemporary Architecture 3, Urban Design and Planning 3, Housing Design, Building Design 3 or History of Architecture 3) according to the bachelor's thesis instructions provided by the school.

Learning outcomes

The student is able to utilize the acquired knowledge and apply learned skills in practical design work. The student is able to solve design problems and visualize solutions on different scales and implement various possibilities of visual expression in independent creative work.

Official course record: [455990A](#)

523990A | Bachelor's Thesis / Electronics and Communications Engineering

8 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Marko Neitola

Learning outcomes

After completing the course the student

- * is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems.
- * is able to compare the differences and similarities between their own field of study and related disciplines
- * is able to recognize the need for lifelong learning.

[Official course record: 523990A](#)

488990A | Bachelor's Thesis / Environmental Engineering

8 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Satu Pitkääho

Content

The student chooses the theme for the thesis in cooperation with his/her supervisor.

Learning outcomes

After completing the bachelor's thesis, the student has the ability to complete an independent writing project. Student is able to manage the preparation of the plan and the use of time for its implementation. Student is able to search, select, and use sources and refer to them. Student is able to follow layout instructions and write scientific text. The student finds relevant information in the source materials and is able to comprehensively select the information needed for the work. Student is also able to draw conclusions based on the data of their own field of education and evaluate the results obtained.

[Official course record: 488990A](#)

555200A | Bachelor's Thesis / Industrial Engineering and Management

8 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Osmo Kauppila

Content

The research topics are presented in the bachelor's thesis seminar. The student can also propose an appropriate topic for the thesis.

Learning outcomes

Upon completion of the course, the student will be able to:

- solve small problems in organisations independently
- create a research plan, define a research problem and research questions and manage his/her own work according to the research plan
- propose a justified solution to a problem
- utilise the latest research information in the field and can critically evaluate the information obtained
- create a written report according to instructions

[Official course record: 555200A](#)

469081A | Bachelor's Thesis / Mechanical Engineering

8 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 469081A](#)

477990A | Bachelor's Thesis / Process Engineering

8 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

The student chooses the theme for the thesis in cooperation with his/her supervisor.

Learning outcomes

After completing the bachelor's thesis, the student has the ability to complete an independent writing project. Student is able to manage the preparation of the plan and the use of time for its implementation. Student is able to search, select, and use sources and refer to them. Student is able to follow layout instructions and write scientific text. The student finds relevant information in the source materials and is able to comprehensively select the information needed for the work. Student is also able to draw conclusions based on the data of their own field of education and evaluate the results obtained.

[Official course record: 477990A](#)

555201A | Bachelor's Thesis Seminar

2 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Juuso Kivijakola

Content

The course's goal is to support the bachelor's thesis work by practicing research planning, the writing process, and evaluation. The course includes information retrieval for one's own thesis, covering aspects such as research implementation, scientific writing, presentation of the work, and peer review.

Learning outcomes

Upon completion of the seminar, student is able to:

- set and define research problem and objectives
- conduct a minor research as a literature review or empirical research
- apply the selected research methods and write an academic report
- evaluate and review academic reports and act as an opponent.

[Official course record: 555201A](#)

555268P | Basic Course in Well-being and Safety at Work

5 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Arto Reiman

Content

Safety, occupational health and safety, well-being at work, productivity, legislation and standards, occupational safety and health cooperation and supervision, occupational safety and health responsibilities and obligations, risks, workload factors, risk assessment, accidents at work and their investigation, corporate safety, risk management in shared workplaces, integrated HSEQ management, participation

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the basic terms of well-being and safety at work
- to identify and manage workload and risk factors both at individual and organizational levels
- understand the links between well-being at work and occupational health and safety
- understand the cost factors of well-being and safety at work
- understand the principles of well-being and safety management as well as risk management practices and tools

[Official course record: 555268P](#)

AY555268P | Basic course in well-being and safety at work (OPEN UNI)

5 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Dosentti

Content

Safety, occupational health and safety, well-being at work, productivity, legislation and standards, occupational safety and health cooperation and supervision, occupational safety and health responsibilities and obligations, risks, workload factors, risk assessment, accidents at work and their investigation, corporate safety, risk management in shared workplaces, integrated HSEQ management, participation

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the basic terms of well-being and safety at work
- to identify and manage workload and risk factors both at individual and organizational levels
- understand the links between well-being at work and occupational health and safety
- understand the cost factors of well-being and safety at work
- understand the principles of well-being and safety management as well as risk management practices and tools

[Official course record: AY555268P](#)

041201A | Basics in eHealth

5 ECTS | Medical Technology | Intermediate Studies | English

Person in charge: Jarmo Reponen

Content

Terms and concepts

- societal dimensions
- delivery of health services
- electronic patient records
- data transfer within the health care system
- data transfer between the health care professionals and the citizens
- citizens providing their own health data, mHealth-solutions
- national healthcare information exchange in Finland
- remote consultations, examples like teleradiology, remote physician appointments, telerehabilitation
- economical and functional assessment
- remote education in health care
- future visions of health care information systems
- changing current topics in connected health like artificial Intelligence, knowledge based medicine, cybersecurity etc according to availability
- Most presented examples in the course are based on information system installations in Northern Finland.

Learning outcomes

Upon completion of the course:

- The student is able to describe key information and communication technology (ICT) terms and solutions used in healthcare, and identify corresponding applications in healthcare services and education.
- The student is able to critically evaluate digital health information, technologies and research evidence (e.g. their societal and economic significance).
- The student understands the role of digital health services and telemedicine solutions as part of the national healthcare information system.
- The student gains an initial understanding of future trends in healthcare ICT from the perspective of patient care, and is able to apply this understanding in practical environments.
- The student is able to communicate clearly and purposefully in digital learning and working environments, including giving and receiving constructive feedback.
- The student learns to identify digital and AI applications relevant to their field and to use them appropriately, safely and responsibly in their studies.

Official course record: 041201A

AY041201A | Basics in eHealth (OPEN UNI)

5 ECTS | Medical Technology | Intermediate Studies | English

Person in charge: Jarmo Reponen

Content

Terms and concepts

- societal dimensions
- delivery of health services
- electronic patient records
- data transfer within the health care system
- data transfer between the health care professionals and the citizens
- citizens providing their own health data, mHealth-solutions
- national healthcare information exchange in Finland
- remote consultations, examples like teleradiology, remote physician appointments, telerehabilitation
- economical and functional assessment
- remote education in health care
- future visions of health care information systems
- changing current topics in connected health like artificial Intelligence, knowledge based medicine, cybersecurity etc according to availability
- Most presented examples in the course are based on information system installations in Northern Finland.

Learning outcomes

Upon completion of the course:

- The student is able to describe key information and communication technology (ICT) terms and solutions used in healthcare, and identify corresponding applications in healthcare services and education.
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- The student gains an initial understanding of future trends in healthcare ICT from the perspective of patient care, and is able to apply this understanding in practical environments.
- The student is able to communicate clearly and purposefully in digital learning and working environments, including giving and receiving constructive feedback.
- The student learns to identify digital and AI applications relevant to their field and to use them appropriately, safely and responsibly in their studies.

Official course record: AY041201A

521384A | Basics in Radio Engineering

5 ECTS | Communications Engineering | Intermediate Studies | Finnish, English

Person in charge: Kimmo Rasilainen, Nuutti Tervo

Content

Introduction to radio waves and radio engineering. Maxwell's equations. Fundamentals of electromagnetic fields. Transmission lines and waveguides. Impedance matching. Microwave circuit theory. Passive transmission line, waveguide devices and resonators. Circuits based on semiconductor devices. Antennas. Propagation of radio waves. Radio system. Applications of radio engineering.

Learning outcomes

Student

1. can define what radio engineering is and list its separate areas and applications from FM-radio to 5G systems.
2. can describe Maxwell's equations and solve EM-fields at an interface of two lossless media.
3. recognizes the most common transmission line types and can explain typical properties of these transmission lines.
4. can utilize the methods based on the Smith chart for the impedance matching of microwave circuits and antennas.
5. understands the meaning of Y-, Z-, and S-matrix and can use S-parameters for solving characteristics of microwave circuits.
6. can describe the operation of typical passive transmission line devices, resonators and circuits based on the semiconductor devices.
7. recognizes the terms to describe antenna characteristics and can define radiation patterns of simple antennas and antenna arrays.
8. knows different propagation phenomena and can evaluate, which phenomena are relevant in different frequency bands and in different environment.
9. can describe the structure of a typical radio system and can calculate the S/N-ratio link budget for a radio system on a free-space radio link.

Generic skills:

1. The student can identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
2. The student can identify and be able to describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities

[Official course record: 521384A](#)

460020A | Basics of computing and programming in mechanical engineering

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Yrjö Louhisalmi, Jouko Lumijärvi

Content

Mathcad, Matlab, as well as Python instruction programming languages.

The use of mathematical software/programming languages in solving problems in mechanics.

Automotive Engineering, Mechatronics and Machine Diagnostics: Matlab and Simulink.

Production technology: Company ERP on a general level. Focus on the company's production control and Advanced Planning and Scheduling (APS). The topic is linked to LEAN activities and principles and, where applicable, to the industrial economy. Getting to know the use of Advanced Planning and Scheduling software ASPROVA, as an example.

Learning outcomes

After completing the course, students are able to use mathematical software as aids for solving problems in mechanics. In addition, students know how to use software in simple programming projects.

Automotive Engineering, Mechatronics and Machine Diagnostics: Students can use measuring data for machine design and control.

Production technology: The student gets an basic understanding of the ERP (Enterprise Resource Planning) of a production company, its different levels and systems. The course focuses on production control and especially on APS (Advanced Planning and Scheduling) of load. After completing the course, the student knows the possibilities of Advanced Planning and Scheduling as part of the company's operations and production control.

[Official course record: 460020A](#)

465106A | Basics of corrosion in metals

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jussi Paavola

Content

Corrosion mechanisms in metal alloys and corrosion protection techniques of metal alloys.

Learning outcomes

After the course, the student is able to apply his/her knowledge of corrosion when analyzing possibilities of corrosion in certain environments. In addition, he/she is able to classify corrosion modes occurring in different metals and to select a suitable corrosion protection method for iron based metals.

[Official course record: 465106A](#)

464127A | Basics of electric- and hybrid vehicle powertrain design

5 ECTS | Mechanical Engineering | Intermediate Studies |

Person in charge: Perttu Niskanen

Content

Basic of model based design of hybrid and electric powertrains, safety and practical considerations.

Learning outcomes

Student understands the basics of hybrid and electric powertrain design.

[Official course record: 464127A](#)

485301A | Basics of Geotechnics

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Aleks Wallin

Content

Introduction to Geotechnics, Basic Structure of Finland's Soil and Bedrock, Soil Types and Classifications, Physical and Technical Properties of Soil Materials, Groundwater and Seepage Flow, Frost and Frost Heave, Geostatic Stresses, Soil Strength and Deformations, Ground Investigations.

Learning outcomes

Upon completing the course, the student will 1) understand the basic terminology of geotechnics, 2) be able to describe the basic structure of Finland's soil and bedrock from a geotechnical perspective, 3) know the soil types and their geotechnical properties, and be able to classify soil types based on grain size distribution curves, 4) know the most common ground investigation methods and be able to interpret individual ground investigation results, 5) be able to describe the physical and technical properties of soil materials and the laboratory methods used to determine these properties, 6) be able to describe the significance of groundwater from a geotechnical perspective and perform simple calculations related to seepage flow, 7) be able to describe the effects of frost and frost heave as phenomena and calculate the frost penetration depth, 8) be able to calculate the geostatic stresses in soil layers and 9) be able to describe the formation of soil strength.

Official course record: 485301A

555225P | Basics of Industrial Engineering and Management

5 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Päivi Kekkonen

Content

Operations and productivity, operations strategy, forecasting, accounting and cost accounting, investments and financial planning, sustainability, capacity management, location decisions, layout strategies, human resources management, supply chain management, subcontracting, inventory management, production planning, MRP & ERP, production scheduling, Just-in-Time & Lean operations, maintenance.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe what industrial engineering and management (or operations management) means
- explain the core concepts of business operations and utilise these concepts in describing and analysing operations of an organisation
- explain in general terms the factors that affect economic performance of organisations
- utilise the terminology used in industrial engineering and management (operations management), describe the financial processes of companies and based on this describe the use of cost accounting in organisational decision-making
- calculate unit costs in various simplified settings, calculate various alternatives, as well as perform planning and goal oriented calculations based on given data, and draw conclusions based on the calculation results

Official course record: 555225P

AY555225P | Basics of industrial engineering and management (OPEN UNI)

5 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Päivi Kekkonen

Content

Operations and productivity, operations strategy, forecasting, accounting and cost accounting, investments and financial planning, sustainability, capacity management, location decisions, layout strategies, human resources management, supply chain management, subcontracting, inventory management, production planning, MRP & ERP, production scheduling, Just-in-Time & Lean operations, maintenance.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe what industrial engineering and management (or operations management) means
- explain the core concepts of business operations and utilise these concepts in describing and analysing operations of an organisation
- explain in general terms the factors that affect economic performance of organisations
- utilise the terminology used in industrial engineering and management (operations management), describe the financial processes of companies and based on this describe the use of cost accounting in organisational decision-making
- calculate unit costs in various simplified settings, calculate various alternatives, as well as perform planning and goal oriented calculations based on given data, and draw conclusions based on the calculation results

[Official course record: AY555225P](#)

488208A | Basics of production and use of energy

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Mika Huuhtanen

Content

Basics on combustion technologies and equipment, boiler units, turbine techniques, energy markets, and emissions from energy production.

Learning outcomes

After completing the course the student recognizes traditional energy production technologies and their operation principles. He/she can define the most relevant parameters and processes, and is capable to evaluate the variables required for operation of the technologies. He/she manages the basics on the energy production in industry and municipalities, such as steam power technique, fuels used, as well as the environmental aspects. The student is able to justify how the course contents relate to e.g. the UN Sustainable Development Goals

[Official course record: 488208A](#)

485412A | Basics of Road Engineering I

2 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Veikko Pekkala

Content

If you are interested in the construction industry, and in particular in road design and construction, this course is a good place to start, whatever your level of education. The course is self-study online in just two weeks. By the end of the course, you will understand the importance of roads to society. You will also learn about the road life cycle from design to construction and maintenance through practical project examples. You will also gain an understanding of how climate change is taken into account in road design.

The main contents of the course area: road network and its importance, road structure, road design process, road cross section and geometry.

Learning outcomes

After completing the course, the student understands the importance of the road network to society. The student recognizes the structures of the road and their function. The student is able to determine the steps of the road planning process. The student knows the basic principles of road cross-section and geometry design. In addition, students will learn to plan their time and search for information independently in order to acquire a basic understanding of technology concepts.

[Official course record: 485412A](#)

485413A | Basics of Road Engineering II

3 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Veikko Pekkala

Content

This course is a continuation of course Basics of Road Engineering I and will deepen your knowledge of road structure and design. The course includes the dimensioning of the road cross-section and structure and the design of the road leveling using the design software (Autodesk Civil 3D/AutoCAD).

The main contents of the course area: planning, sizing and drainage of the road structure. Road management and maintenance, ground-building basics.

Learning outcomes

The student understands the basic principles of road structure design and is able to dimension a road structure and draw a road alignment. The student understands the importance of road maintenance and upkeep for the life cycle of roads. The student understands how technical design documents are prepared and how to communicate using technical terminology.

[Official course record: 485413A](#)

485410A | Basics of Traffic Engineering I

2 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Virve Merisalo, Valtteri Ahonen

Content

The course consists of video lectures covering the central themes of the course. In addition to the lectures, students complete assignments individually or in groups during the course. The assignments are defined at the start of the course and may include, for example, media products (video, podcast) and essays.

Core course content: Modes of transport, transport and society, transport system.

Through the exercises and assignments, students also develop the following generic skills: analytical, critical and creative thinking skills; wellbeing and self-development skills; sustainability, responsibility and ethical skills; multidisciplinary and interdisciplinary skills; communication, interaction and digital skills.

Learning outcomes

After completing the course, the student can classify the components of the transport system. The student can explain how the transport system functions and its significance to society. The student can define different modes of transport and list their key characteristics.

[Official course record: 485410A](#)

485411A | Basics of Traffic Engineering II

3 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Virve Merisalo, Valtteri Ahonen

Content

The course includes lectures on key themes in transport engineering. In addition, students complete individual and group assignments during the course. These assignments are defined at the beginning of the course and may include, for example, a group seminar presentation, a junction design exercise, and a learning diary.

Core course content includes: Traffic flow; Traffic studies, models and forecasts; Transport system planning; Smart mobility; Traffic safety; External effects of transport.

During the assignments and exercises, students also develop generic skills such as analytical, critical and creative thinking; wellbeing and self-development skills; sustainability, responsibility and ethical skills; multidisciplinary and interdisciplinary skills; and communication, interaction and digital skills.

Learning outcomes

After completing the course, the student is able to classify research methods used in transport engineering and explain how they can support transport planning. The student can classify current and future mobility solutions (public transport, micromobility, automation, demand-responsive transport, Mobility as a Service) and identify suitable applications for them within the transport system. The student is also able to define the principles of sustainable mobility and identify the main economic, environmental and social external effects of the transport system.

Official course record: [485411A](#)

TE00AK59 | Battery Fabrication and Testing

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Rafal Sliz

Content

Regardless of the application, batteries are ubiquitous—starting with portable devices, smartphones, and laptops, moving through electric vehicles of various sizes, and ending at large energy storage systems to support smart grids and renewable energy generators. Battery producers use different fabrication technologies and testing methods to determine their performance. This course offers students both theoretical and practical principles of battery cell fabrication and testing.

- Introduction to various battery architectures and chemistries
- Battery components and cell fabrication methods
- Overview of battery cells testing (electrochemical and EIS)
- Testing protocol design and good practices

Learning outcomes

After completing the course, the student will be able to:

- identify and classify battery cells' architectures and chemistries
- list and explain different methods of battery cell fabrication
- classify and compare various methods of battery cell testing methods
- interpret and assess the results of battery testing
- design basic test protocols for different battery cells

Official course record: [TE00AK59](#)

080931S | Biomaterials and Tissue Engineering

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Mikko Finnilä

Content

Biomaterials and tissue engineering terminology, production and characterization methods, surface modification, sterilization, biomaterial types (metals, ceramics, polymers and composites), biocompatibility (biological systems, cell and tissue interaction with biomaterials, biocompatibility evaluation methods), foreign body reaction, immune response, drug delivery, organ-on-chip, bioprinting, clinical applications.

Learning outcomes

Upon completing this course, a student will understand the key terminology and definitions of biomaterials and tissue engineering. A student knows different production and characterization methods of biomaterials. A student can list different material types used in biomaterials and tissue engineering and is able to understand how material characteristics affect biocompatibility.

A student can explain biomaterial-tissue interactions and is familiar with immune reactions related to implants. A student gains basic information on drug delivery, organ-on-chip, as well as bioprinting.

A student is familiar with the legislation and required testing methods related to medical biomaterials. A student can name clinical application areas and indications for different types of biomaterials. A student can do aseptic work and basic cell culture.

Official course record: 080931S

080916S | Biomechanics of Human Movement

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Ulla Salmi

Content

Musculoskeletal biomechanics. Motion sensors and motion analysis. Kinetic and Kinematic analyses. EMG Measurements and error sources. Biomedical modelling. Data Analysis and Interpretation.

Learning outcomes

Upon completion of the course, the student can explain the principles and challenges of movement biomechanics and motion analysis, apply biomechanical measurement and modeling methods, analyze and interpret biomechanical data, and use problem-solving and creative approaches to develop new solutions.

Official course record: 080916S

580202S | Biomedical Engineering Project

5-10 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Anna Maijala

Content

Performing a small-scale research or development project in the field of biomedical engineering.

Learning outcomes

Upon completion of the course, the student will be able to solve a research or development problem and report it in writing and in oral presentation.

Official course record: 580202S

080928S | Biomedical Engineering Research Methods and Seminar

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Victor Casula

Content

Principles of scientific work. Ethical principles. Lectures, seminars, and scientific literature. Publication forums in the field and characteristics of scientific articles. Popularization of science.

Learning outcomes

Upon completion of the course, student will be able to:

- Understand the principles of scientific work, research ethics, and the importance of building professional academic networks.
- Identify and describe the essential features of scientific publications.
- Present the central content of a scientific article.
- Communicate expert knowledge in a suitable way to both academic and public target audiences, also in a foreign language
- Critically analyze scientific arguments and argue properly, and present critical questions related to scientific presentations.
- Give and receive constructive feedback, development suggestions, and guidance to peer students.

Official course record: 0809285

521093S | Biomedical Instrumentation

5 ECTS | Electrical Engineering | Advanced Studies | Finnish

Person in charge: Erkki Vihriälä

Content

Diagnostic instruments (common theories for medical devices, measurement quantities, sensors, amplifiers and registering instruments). Introduction to medical imaging and monitoring methods and instruments and physical therapy devices. Electrical safety aspects.

Learning outcomes

After the course the student is

- capable to explain principles, applications and design of medical instruments
- can describe the electrical safety aspects of medical instruments
- can present the physiological signals commonly measured on humans
- able to explain medical instrumentation development process and the factors affecting it
- recognizes typical measurands and measuring spans
- able to plan and design a biosignal amplifier.

Official course record: 521093S

OH00AQ38 | Biomedical Measurements

5 ECTS | Medical Technology | Intermediate Studies | English

Person in charge: Teemu Myllylä

Content

In this course students will learn how to design experiments, conduct measurements, and develop analytical skills for the interpretation of data. Students will get hands on experience on measuring various physiological signals including, such as, blood pressure, pulse oximetry, cardiac, respiration and brain activity signals. Emphasis have been given to understand a real life problem, conceptualization, testing, perform controlled measurements and relevant analysis in biomedical data acquisition. This course also aims to emphasize the importance of meticulous biomedical measurements in research, and scientific report writing in a professional way.

Learning outcomes

Students learn to apply basic biomedical engineering principles to design and conduct experimental investigations on living systems.

Learn how to use modern engineering tools and software (LabVIEW and MATLAB) for data acquisition and analysis. Apply analytical skills to interpret experimental data and appreciate the limitations of measurements in experimental investigation.

[Official course record: OH00AQ38](#)

521240S | Biophotonics and Biomedical Optics

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Aliaksander Bykau

Content

Finland has been a consistent and successful innovator in the field of lasers and optics through its unique optical engineering solutions, miniaturization, and modern wireless technologies. This area is collectively known as 'photonics' since it has many parallels to electronics. A more recent trend has been the mapping of these technologies in the life sciences and medicine, commonly known now as 'biophotonics'. Biophotonics is proving to be a fast-moving and very exciting area of research, which has a very strong potential to offer new tools and diagnostic methods for medicine and biology, fundamental clinical studies, food sciences, environmental diagnosis, as well as in pharmaceutical, healthcare products and cosmetic industries.

The course includes in-depth coverage of state-of-the-art optical imaging, spectroscopy, and sensing systems for advanced biomedical research and clinical diagnosis. In particular, Optical Coherence Tomography (OCT), Laser Doppler Flowmetry (LDF), Laser Speckle Imaging (LSI), Photo-Acoustic Tomography (PAT), Tissue polarimetry, Optical and Near-Infra-Red Spectroscopy (NIRS), Confocal and Fluorescence Microscopies will be discussed in details. The use of fundamental properties of light such as coherence, phase, polarization, and angular momentum for sensing and diagnostic purposes will be considered. Significant attention will be paid to the details of the light-tissue interaction (tissue optics) including refraction, reflection, absorption, Mie and Rayleigh scattering, as well as Monte Carlo modeling and computational biophotonics.

Learning outcomes

Upon successfully completing the course, the students will be able to categorize the basic principles of modern optical and laser-based diagnostic modalities and instruments used for advanced biomedical research and clinical medicine. They will be able to demonstrate a detailed understanding and evaluate the key biophotonics techniques underlying the day-to-day clinical diagnostic, therapies, and industrial applications in pharmacy, health care, and cosmetic products.

Together we will study the principles underlying the future emerging technologies that will appear on the market next 7-10 years and consider the success stories of technology transfers from the lab bench to clinic and day-to-day use.

[Official course record: 521240S](#)

TP00AQ74 | Bioprocess engineering laboratory course

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Johanna Panula-Perälä

Content

During the course, a biotechnological production process is carried out as a group project under the supervision of researchers. The course introduces microbiological laboratory safety, the fundamentals of microbial cultivation, and bioreactors and their automation. Laboratory work includes practicing key biotechnological methods used in fermentation processes as well as process analysis. At the end of the course, a laboratory report is prepared in which the results of the laboratory work are analyzed and evaluated with reference to relevant literature.

The course develops students' analytical and critical thinking skills in the planning and interpretation of experimental work and strengthens communication and digital skills through the processing of measurement data and reporting. In addition, the course supports responsible and safe working practices in a microbiological laboratory and develops students' time management, diligence, and readiness to work in laboratory settings.

Learning outcomes

After completing the course, the student will be able to work in a biosafety level 1 microbiological laboratory while taking biosafety considerations into account. The student will be able to handle and cultivate microorganisms, monitor microbial growth, and maintain a laboratory notebook. In addition, the student will be able to apply aseptic techniques in laboratory-scale biotechnological research. The student will be able to critically analyze experimental data and research results and report them in written form.

[Official course record: TP00AQ74](#)

488321S | Bioreactor technology

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Johanna Panula-Perälä

Content

The course introduces the fundamental principles of biotechnological processes and the operation of bioreactors. The course covers batch, fed-batch, and continuous processes, the functioning of biocatalysts, and reactor design, instrumentation, and sterilization, and examines scale-up and scale-down issues in bioprocesses. The topics learned are further deepened through group work. The course integrates biochemical and microbiological phenomena and models with process engineering tools, thereby strengthening interdisciplinary thinking and collaboration.

Biotechnological process: batch, fed-batch and continuous processes, biocatalysts and raw materials. Reactor design and instrumentation. Sterilization: kinetics of heat inactivation and practical implementation of sterilization methods. Mathematical description of the function of biocatalysts. Monod and Michaelis-Menten models, reaction rates and their determination. Cellular maintenance, cell death. Kinetics of product and by-product formation. Kinetics of oxygen and heat transfer. Oxygen and heat balances: significance and calculations. Mixing and power consumption. Scale-up and scale-down.

Learning outcomes

Upon successful completion of the course, the student will be able to verbally describe the key equipment, materials, and methods related to biotechnological processes, such as microbial cultivation in a bioreactor, microbial growth, and sterilization. The student will be able to mathematically describe microbial growth, product formation, enzyme catalysis, and bioreactor performance, as well as analyze the operation of bioprocesses using mathematical models and material balance calculations. The student will be able to critically evaluate the applicability and limitations of the models and assumptions used in the description and design of bioprocesses. In addition, the student will be able to clearly present phenomena and computational results related to bioreactor technology and bioprocesses in written form, work purposefully in a group, and report solutions in accordance with established practices in the field.

[Official course record: 488321S](#)

477224S | Biorefineries

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Juha Tanskanen

Content

Historical background. Fossil and biomass raw material resources for energy production. Production of transportation fuels. Technology generations. Biorefineries and their categorisation. Lignocellulosic biorefineries. Production of biochemicals. Development phase of biorefineries: technical, economical and environmental considerations. Commercialisation state of novel biorefineries.

Learning outcomes

By completing the course the student understands the state-of-the-art technology level of the processing of biofuels and biochemicals from lignocellulosic biomass. She/he can conclude technological and economical challenges facing the development work of biorefineries. She/he is able to apply performance criteria considering sustainable development.

[Official course record: 477224S](#)

485202S | Building information modeling

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Ilpo Niskanen

Content

Modeling concrete and steel structures. Connections. Macros, Drawings.

Learning outcomes

The student will be able to model load-bearing structures and their connections in three dimensions. The student can set up a design project and organize information in such a way that model-based downstream utilization is possible. The acquired skills can be applied to different types of structural solutions and materials. Through practical exercises, the student gains routine in the use of modeling software. At the same time, the student develops analytical and critical thinking by evaluating modeling solutions, practices digital and model-based communication in project work, and recognizes the principles of sustainable construction when making structural design decisions. In addition, the student understands the role of the building information model as part of a multidisciplinary and internationally used design environment.

[Official course record: 485202S](#)

485201A | Building information modeling and CAD

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: 60%, 40%

Content

Principles of geometric and data modeling. Representation of curves and surfaces. Properties of CAD and modelling applications and exercises. Basic algorithms related to geometric and data modelling.

Learning outcomes

Upon completion of the course, student will know the basics of computer-aided modeling and design. The course enables application and development of modeling and design applications and further development as an independent user of various modeling systems and platforms.

[Official course record: 485201A](#)

485103A | Building physics

5 ECTS | Civil Engineering | Intermediate Studies | English

Person in charge: Filip Fedorik

Content

The course covers the fundamentals of building physics with a focus on thermal, moisture, and acoustic aspects of buildings. Topics include heat storage and heat transfer in buildings through conduction, convection, and radiation; heat transfer in homogeneous and inhomogeneous building components; thermal bridges and heat losses. The course also addresses moisture behaviour in building components, including moisture storage, water vapour diffusion, capillary transport, convection-driven moisture transfer, and interstitial condensation and evaporation. In addition, the basics of building acoustics are introduced, covering sound and hearing, sound insulation, and room acoustics.

Learning outcomes

The objective of this course is to provide students with a fundamental understanding of building physics and its role in the design of energy-efficient, durable, and comfortable buildings. The course introduces the basic physical phenomena governing heat, moisture, and sound behaviour in buildings, including heat transfer mechanisms, moisture transport, and principles of building acoustics. Students learn to recognise the influence of environmental conditions on buildings, understand human requirements related to the built environment, and identify key factors affecting building performance, energy efficiency, and indoor comfort. The course also supports the development of generic academic skills, such as problem-solving, logical reasoning, and independent study skills. Students practice presenting solutions clearly and applying theoretical knowledge to practical engineering problems.

[Official course record: 485103A](#)

555289A | Business case problem solving

6 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Petteri Annunen

Content

Problem solving tools and processes, team work, presentations skills, topical challenges related to business strategy and operations.

Learning outcomes

Upon completion the student can systematically analyse the challenges related to a company's business as a part of a group, apply problem solving tools and processes to develop and present alternative solutions to business challenges related to strategy or operations. The student is able to analyse and develop the functioning of a group. The student is able to evaluate and improve his/her presentation skills.

[Official course record: 555289A](#)

485206S | C# programming in Building Information Modeling

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Tanja Kolli

Content

Basic programming structures, variables, conditional statements and loops. Classes and inheritance. Processing of data and data models using classes, data storage formats and transfer formats. Coordinate systems and transformations. Definition of three-dimensional model objects, triangular meshes, surface models, parametric geometry, and geometric Boolean operations. Applications, frameworks and libraries required for programming.

Learning outcomes

The course provides elementary skills for object-oriented programming with C#-language. The student will learn the basic ideas and techniques of programming and tools used in software engineering. The student adopts the basic understanding about data storages, schemas and models, as well as data transfers, used with software for the building information modelling. The course introduces the specifications and methods of 3D geometry on software engineering for the student.

The course will not be held in autumn 2026.

[Official course record: 4852065](#)

555397S | Capstone Project in Process Improvement

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Osmo Kauppila

Content

Solving a practical problem posed by a case company or organization by applying appropriate analytical tools and IEM methods.

Learning outcomes

Upon completion of the course, the student:

- apply the knowledge acquired during studies to analyze and to solve a practical process improvement case
- has increased insight on the process being solved and on practical problem solving teamwork

[Official course record: 555397S](#)

555393S | Capstone Project: Project Management in Different Industries

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Jaakko Kujala

Content

The course focuses on project management challenges in different project-based industry contexts (such as construction industry, ICT industry, and industrial engineering sector). The students may select one specific industry as a context in which they apply project management knowledge and skills to solve practical project management problems. In addition, the course introduces students to the management practices and distinctive features of different industries and discusses their recent project management developments.

Learning outcomes

Upon completion, the student is able to:

- * Describe the distinctive features and project management practices of different project-based industries
- * Identify and solve project management problems in practice
- * Communicate the solutions efficiently and effectively

[Official course record: 555393S](#)

463105A | Casting techniques

8 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jussi Paavola, Jaakko Hannula

Content

Different types of models and molds, shaping methods, casting methods, melting technology, cast metals and plastics, post-casting treatments, design of casting parts and systems. Basic types, properties and uses of technical plastics. Injection molding and its special applications. Other methods of manufacturing plastic parts. Design of the product to be cast. Design and manufacture of tools, and the use of computerized design tools. Use of rapid manufacturing methods.

Learning outcomes

After completing the course, the student will be able to assess which metal and plastic products can and should be manufactured using casting methods. The student will be able to analyze the opportunities and limitations offered by casting methods in product design. He/she will be able to explain the main principles of the most common casting methods and their suitability for different types of products, materials and production quantities, as well as the main principles of the casting process and casting system design. The student will know the most common metal and plastic materials used in different casting methods. In addition, he/she will be able to choose the tools and materials used to manufacture the products.

Official course record: 463105A

555392S | Change Project and Programme Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Kirsi Aaltonen

Content

Process perspective to change: recognizing the need for change and starting the change process, diagnosing what needs to be changed and formulating a vision of a preferred future state, planning how to intervene in order to achieve the desired change, implementing plans and reviewing progress, sustaining the change, leading and managing the people issues, learning. Idiosyncrasies of change projects: project management vs. change management.

Learning outcomes

Upon completion, the student is able to:

- * Explain the key concepts and features of organizational change, and change projects and programs
- * Evaluate the role of change projects and programs in driving organizational change and managing transformational processes
- * Evaluate different approaches and processes to managing real-life change projects and programs in different contexts
- * Utilize practical approaches, tools, frameworks, and processes for managing change projects and programs

Official course record: 555392S

521391S | Channel Coding and Modulation

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Premanandana Rajatheva

Content

Introduction: Groups, Rings, Fields, Construction of higher level Galois Fields, Factoring Linear, Cyclic and Convolutional codes – Viterbi and Sequential decoding
Golay code, Reed Muller, Non binary BCH, Reed Solomon (RS) Codes and Decoding with Berlekamp Massey (BM) Algorithm
Lattice Codes: Introduction to Coded Modulation, Ungerboeck and Forney Constructions, Packing, Covering, Voronoi Constellations
Turbo Codes: BCJR Algorithm, Extrinsic Information, EXIT Chart
Soft-input Soft-output (SISO) Decoding, Serial and Parallel concatenated codes, Application in 3G and 4G systems
LDPC Codes: Low density parity check matrices, encoding, Decoding in a graph, QC-LDPC, Application in WiFi and enhanced mobile broadband (eMBB) in 5G
Polar Codes: Successive Cancellation decoding, List decoding, Short frame codes, Control channel in 5G
Applications and Developments: Satisfying latency and reliability in 5G through coding, Application of coding in Distributed Computing, Storage, Application of learning methods in coding

Learning outcomes

- * Student is fully conversant with commonly used error control coding techniques – block, convolutional, TCM, Lattice, Turbo, LDPC, Polar: code construction and decoding algorithms.
- > * Student is able to evaluate the performance of a given code by analytical or computational-simulation methods.
- > * Student is able to read and understand peer reviewed publications in Coding.

Objective: Comprehensive course on coding techniques, including non binary constructions based on higher level Galois Fields, codes based on graphs and new applications The course will start on Galois field constructions based on integer rings and continue with detailed Berlekamp-Massey Algorithm, Lattice Codes based on David Forney papers, Turbo, LDPC and Polar Codes as applied in 4G and 5G.

Generic skills to be achieved:

is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge.

is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.

Course will be given every second year in odd years.

Official course record: [5213915](#)

477426S | Characterisation methods of inorganic materials

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eetu-Pekka Heikkinen

Content

Typical analytical methods used to characterize material composition (chemical and mineralogical) and properties (e.g. structure, particle size, etc.).

Learning outcomes

Students passing the course are familiar with the most important analytical methods used in the characterisation of inorganic materials relevant in metallurgical and other process industry (i.e. raw materials, residues, products, etc.). They know the possibilities and restrictions of different methods and can identify their role as a part of metallurgical research and development.

Official course record: [477426S](#)

477131S | Characterisation of biobased materials

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisa Koivuranta

Content

Chemical and physical measurement used with lignocellulose-based materials. Continuous measurement used in bioproduct industry. Reliability of results. Research design.

Learning outcomes

Upon completion of the course, a student is familiarized with the most important characterization methods used in the lignocellulose materials. The student is also able to consider the reliability of analysis results. The student can identify the role of characterization methods as a part of research and development in bioproduct technology.

The student learns to search for, evaluate, and process academic information and to apply the principles of academic writing in their own work.

[Official course record: 4771315](#)

493302A | Chemical Phenomena in Mineral Processes

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | Finnish

Person in charge: Reetta Jääskeläinen

Content

Reaction equilibria, basic equations in thermodynamics; chemical interactions especially at interfaces; electrochemical interactions, effects of chemical phenomena on the unit operations of mineral processing.

Learning outcomes

After completing the course, the student understands the physicochemical phenomena that affect the key unit processes in mineral processing and is able to evaluate the factors influencing them. The student is able to analyze the most common mineral processing operations and unit processes based on the principles of physical chemistry. The student can also compare the differences and similarities between their own field of study and closely related disciplines, as well as recognize the significance of these interfaces when examining mineral processing operations.

The course develops following generic skills: analytical, critical and creative thinking skills, multidisciplinary and interdisciplinary skills.

[Official course record: 493302A](#)

477209S | Chemical Process Simulation

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Ville Tuppurainen

Content

Steady state simulation. Material and energy balances and phase equilibrium of fluid streams in simulation. Basic unit operation models in flowsheet simulations, with a deeper emphasis on reactor and distillation unit operation models. Property methods and databanks. Estimation methods for thermodynamic properties. Sequential modular and equation-oriented approaches in simulation. Numerical solving methods and typical convergence problems in simulation calculations. Sensitivity analysis and optimization with a simulation software.

Learning outcomes

Upon completion of the course, the student will be able to:

- * construct process flowsheet models for typical fluid-phase chemical processes using appropriate unit operation models in a process simulation software
- * make informed input specification choices in a simulation model to achieve process level target outputs
- * justify a selection of an appropriate property method, a prerequisite for obtaining accurate simulation results
- * identify and troubleshoot common simulation problems related to poor specifications and numerical convergence issues
- * evaluate the process system level performance and discuss the benefits and drawbacks of the studied processes based on the obtained simulation results data
- * communicate the simulation basis, the most important results and findings and conclusions in a structured and readable report, including the identification, structuring and intuitive presentation of the relevant simulation results data for the task at hand (*communication, interaction and digital generic skills*)
- * critically evaluate the validity and potential incompleteness of simulation results with respect to underlying physico-chemical phenomena in the system and real-life chemical processes, while retaining transparency and criticism of sources applied (*analytical, critical and creative thinking generic skills*)

[Official course record: 4772095](#)

477123S | Chemical processing of biomasses

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisa Koivuranta

Content

Fundamentals of sulphate pulping and other chemical processing methods, recovering of chemicals and fiberline in sulphate pulping, fiberline in kraft pulping, side products and environmental aspects.

Learning outcomes

Upon completion of the course, a student should be able to explain the chemical kraft pulping of lignocellulose. The student also identifies the unit operations of chemical pulping processes, can explain their operational principles and their objectives. A student is familiarized with the main side streams and environmental impact of chemical pulping process. A student knows also other chemical processing methods of lignocellulosic biomass.

[Official course record: 477123S](#)

IE00BC37 | Circuit Boards

5 ECTS | Electrical Engineering | Advanced Studies | English, Finnish

Person in charge: Jari Hannu

Content

- PCB materials
- PCB Manufacturing
- Principles of PCB design
- Component interconnection technologies
- DfX (Design for testing, design for manufacturing, design for reliability)
- Flexible PCBs
- Layout design, Signal integrity, Power design and thermal issues
- RF and EMC in layout design

Learning outcomes

Learning Outcomes

1. After completing the course, the student will be able to explain the structures of printed circuit boards (PCBs), select appropriate PCB materials for different applications, and describe PCB manufacturing technologies and interconnection methods
2. The student will be able to design PCBs with modern design tools and understand their principles of operation.
3. The student understands the significance of artificial intelligence in PCB design and future solutions.
4. The student is familiar with the current state of PCBs from an industrial perspective.
5. The student can apply analytical and critical thinking skills appropriately within their field, taking into account interdisciplinary interfaces and new knowledge.
6. The student is able to work in international collaboration and considers the international operating environment in their work.

Official course record: [IE00BC37](#)

521302A | Circuit Theory 1

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Timo Rahkonen

Content

Equation of basic circuit elements, circuit laws and systematic building of network equations. Calculation of time and frequency responses. Use of complex phasor arithmetics. Basics of the use of circuit simulators.

Learning outcomes

After the course the student can

1. write and solve the equations describing the operation of a given electrical circuit
2. solve the sinusoidal steady-state solution using complex phasor arithmetics
3. solve time responses of electric circuits
4. simplify electrical circuits e.g. using equivalent circuits
5. simulate simple circuits and choose an appropriate circuit simulation method

Official course record: [521302A](#)

521303A | Circuit Theory 2

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Timo Rahkonen

Content

Use of Laplace transform in network analysis. Properties of network functions, poles and zeros, Bode magnitude and phase plots. 2-port parameter models. Basics of modeling physical systems.

Learning outcomes

After the course the student can:

1. use Laplace transform for solving time and frequency response of electric circuits;
2. derive continuous-time transfer functions.;
3. solve their poles and zeros and understand the meaning of those;
4. draw the pole-zero map and Bode plots of any given transfer function;
5. construct 2-port parameter models of a given circuit

Official course record: [521303A](#)

485307S | Cold Climate Engineering

5 ECTS | Civil Engineering | Advanced Studies | English

Person in charge: Taha Karasu

Content

Permafrost and seasonally frozen ground. Frost heave and ground frost insulation. Winter conditions related road, street and water supply design criteria. Geothermal energy. Energy efficient structures.

Learning outcomes

After the course the student knows how permafrost and seasonally frozen ground affect different aspects of construction. The student can perform frost heave calculations and evaluate the need for ground frost insulation. The student knows how winter conditions are considered in road and street design. Student knows the basics of geothermal energy and energy efficient structures.

Official course record: 485307S

488138S | Cold climate hydrology

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Pertti Ala-Aho

Content

Hydrological processes, evapotranspiration, climate variability and extreme events, rainfall-runoff modeling, snow hydrology, soil frost and ice, environmental tracer hydrology, isotope hydrology.

Learning outcomes

After completing the course, the students have deepened their knowledge of hydrological processes at global and local scales with capacity for analytical, critical and creative thinking. Generally, the student will gain advanced knowledge in hydrology; however, particular emphasis will be placed on hydrological features of cold climates: snow accumulation, melting and runoff processes, and frozen ground hydrology. Understanding climate change and its influence on water resources and hydrological processes will be an integral part of the course. Students will gain methodological expertise in applying computational methods and numerical modeling to analyze rainfall-runoff processes, thereby strengthening their digital competencies. The students will be able to apply hydrological tracer methods, such as stable water isotopes, for hydrological analysis in multi-disciplinary contexts. Building on the advanced process understanding and state-of-the-art hydrological analysis methods, the students deepen their knowledge in hydrological analysis and find sustainable and responsible solutions to future challenges in cold climate hydrology.

Official course record: 488138S

521340S | Communications Networks I

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Mika Ylianttila

Content

Communications architecture in mobile, wireless local area and personal area networks. Introduction to cloud and edge computing, network function virtualization and software defined networking. Basic principles of mobility management, network security, network management and orchestration. The goal is to present the basics of the modern communications architectures, and examples of their technical implementation.

Learning outcomes

- Students understand how the modern communications networks have evolved and how the architecture has changed through the recent paradigm shift towards software-centric communications.
- Students are able to describe the basic system architecture elements of mobile networks, and understands the significance of network function virtualization, software defined networking, and core network functionalities.
- Students can describe the main principles of mobility management, network management and orchestration, and network security, and can apply and solve related engineering problems.
- Students know the basic properties of routing algorithms, and can use graph theory to solve network routing problems.
- Students are able to simulate different types of networks in simulation environments and solve basic network programming problems.

Generic skills:

- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- is able to use digital and AI applications relevant to their field in their studies appropriately, safely, and responsibly

Official course record: 5213405

521377S | Communications Networks II

7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Mika Ylianttila

Content

Introduction to the concepts of Software Defined Networking (SDN): the OpenFlow based SDN architecture, SDN control plane and data plane (OpenFlow switches), Software Defined Monitoring, SDN and Network Function Virtualization (NFV) integration in cellular systems. Introduction to Multi-Access Edge computing (MEC), and the use cases of MEC in 5G, and MEC-IoT integration. Introduction to queueing theory and queueing systems and application of queueing theory to model software defined mobile network or virtualized networks (Jackson network). Furthermore, the course discusses the significance of network security, network load-balancing and network slicing in modern and emerging communications networks. Course provides hands-on experience on virtual networks using SDN with Mininet network emulator.

Learning outcomes

- Upon completing the required coursework, the students understand basic principles of programmable networking. The students have knowledge of how different control plane architectures can be developed or used for different networked environments.
- Students understand the novel features in the 5G architecture and their benefits for mobile networks. Students understand the importance of edge computing and virtualization techniques in achieving the low-latency and reliability requirements of 5G standard. Students know the planned use cases of multi-access edge computing in 5G systems and can describe some of the system architecture components.
- Students understand the idea of SDN network control and data planes, and what it means in practice. The students learn how the network control-data plane separation is possible with SDN.
- Students understand the dynamics of simple programmable networks, the importance of queuing systems in the current model of programmable networks such as OpenFlow-based SDNs. The student is also able to design a queuing system for SDN-based network control plane to provide services in a balanced way to the underlying data plane the control plane is responsible for.
- Students understand the significance of network security, network load-balancing and network slicing in modern and emerging communications networks and how they need to be taken into consideration in the network design.
- Students understand the basic principles of queueing theory, such as Birth and Death Process, the M/M/1, M/M/c, M/M/c/K and queueing networks models. Students understand concept of Markov model and its application in communication network analysis. Students can apply queueing theory to model SDN or virtualized networks.
- Students learn skills to design and implement simple SDNs and analyze performance in network emulation and simulation environments.

Generic skills:

- identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- is able to use digital and AI applications relevant to their field in their studies appropriately, safely, and responsibly

Official course record: 5213775

521325S | Communications Signal Processing

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Markku Juntti

Content

Wireless transceiver functional split, digital parts and architecture, transceiver digital front-end architecture and design, synchronization and channel estimation, equalization and soft detection.

Learning outcomes

Upon completion the student

1. knows the functional structure of communications transceiver and understands the requirements for various wireless systems for the transceiver.
2. knows the architectural and functional design of (all-)digital transceiver with synchronization, channel estimation, encoding/decoding, multiantenna processing and connection establishment.
3. understands the requirements of the current wireless communications standards and related multiplexing and multiple access on transceiver design.
4. can use statistical signal processing tools to derive digital domain algorithms for separate functionalities and match them to operate together via agreed interfaces.
5. can model the operation of the algorithms and the whole transceiver using Matlab to assess their performance by computer simulations.

Also, during the course, the student will solve timely design problems in projects developing the problem-solving skills. The results will be presented both in written and orally developing the presentation and documentation skills. The course participants are usually from multiple countries with multicultural audience or co-students.

[Official course record: 521325S](#)

477525S | Computational intelligence in automation

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish, English

Person in charge: Aki Sorsa

Content

Fuzzy logic and fuzzy set systems, fuzzy modelling and control, neural computation, other selected methods for regression, classification and clustering.

Learning outcomes

After the course the student understands the basic concepts of intelligent systems and aims of their use. The student understands the basic principles and basic use of the methods taught. The student has skills to construct and tune fuzzy models in Matlab environment and to explain the operation of these models. The student is able to explain the principle concepts of neural computing and construct neural network models in Matlab environment.

[Official course record: 477525S](#)

464105S | Computer aided design

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Lassi Keränen

Content

The course includes product design and product validation on a computer-aided basis. During the course, you will get acquainted with the possibilities of product design and validation of design using CAD/CAE systems. Product parametrization and customization play an important role. In addition, students learn what special tools design software offers.

Learning outcomes

After completing the course, the student will know modern CAD/CAE tools, simulation and virtual validation possibilities with CAD/CAE systems and be able to apply these methods in various tasks in accordance with good practices. In addition, the student is familiar with the theory behind CAD systems related to the geometry of models and their modification. In addition, the student also has basic knowledge for product data management and the use of PDM/PLM systems.

463109S | Computer aided manufacturing

7 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jyri Porter

Content [Finnish source]

Digitaalisen konepajatuotannon eri osa-alueet ja niiden rajapinnat. Valmistuksessa käytettävien numeerisesti ohjattujen (NC) työstökoneiden tietokoneavusteiset ohjelmointi- ja simulointimenetelmät sekä ohjaustiedon luonnin ja käsittelyn eri vaiheet. Työstökoneiden liittäminen NC-ohjelmointijärjestelmiin ja valmistusjärjestelmiin. Teollisuusrobotit ja konepaja-automaatio. Työstövirheiden analysointi ja ohjelmallinen korjaaminen. Pinnan ja muodon mittausten menetelmät. Pikavalmistuksen menetelmät ja niiden käyttö.

Learning outcomes [Finnish source]

Opintojakson tavoitteena on perehdyttää opiskelija tietokoneavusteisessa valmistuksessa (Computer Aided Manufacturing; CAM) käytettäviin menetelmiin ja järjestelmiin. Kurssin jälkeen opiskelija tuntee tietokoneavusteisia menetelmiä ja järjestelmiä konepajojen eri valmistusprosessien yhteydessä. Opiskelija osaa kuvata menetelmien ja järjestelmien pääpiirteet, mahdollisuudet ja rajoitteet, sekä alan kehitystrendit.

Official course record: 463109S

485105A | Concrete technology

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Liedes

Content

Cements and cementitious materials, aggregates for concrete, concrete mix design, properties of fresh and hardened concrete, laboratory tests, specification testing and compliance, environmental exposure classes.

The course includes the practice of the following generic skills:

*Analytical, critical and creative thinking skills

Learning outcomes

After completing the course the student is able to specify concrete and the materials from which it is made. They can design normal concrete mixes and identify, describe and carry out the main laboratory tests relevant to the use of concrete on site.

Official course record: 485105A

485205S | Construction automation and robotics

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Tomi Makkonen

Content

The course consists of three modules, which will be supplemented as necessary. The course is designed to be completed primarily online. a) Lectures and exercises on articulated robotics (online) b) Oulu Smart Excavator – development environment for an autonomous excavator c) Special topic lectures and company visits

The course book is Construction Robots by Thomas Bock, used in relevant parts. Whenever possible, site visits to industry locations will be arranged during the course. Demonstrations and project work are scheduled so that multiple tasks can be completed during a single participation session.

Learning outcomes

After the course, you will be able to program robotic arms in practice. You understand the special needs of construction robotics, which stem from working in terrain as well as from control requirements arising from construction planning. You know about specialized construction automation systems, such as drilling robots and 3D-printed houses. You also have an understanding and vision for the future beyond what is practically possible right now. In addition, you will develop core engineering competencies: the ability for critical and creative problem-solving, teamwork, and the capacity to guide and utilize intelligent machines in ways that support sustainable construction and human well-being.

[Official course record: 4852055](#)

485024S | Construction Consulting

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

The structural designer treats each construction project as an independent project. Written documents are made about the work, such as project-specific working time monitoring (eg Excel) and a short written description (study diary) of the project and the participation of the structural designer in the project. It would be desirable for the structural designer to have two projects at the same time (one in Finnish and one in English).

Learning outcomes

In the course, Master's students from different degree programs solve multidisciplinary projects in multidisciplinary groups based on working life and requirements. The course deals with a construction project in which the architect works as the chief designer / building designer and the structural designer works as the designer of the load-bearing structures. The purpose of the course is to improve students' working life skills by studying cooperation skills already during their studies.

[Official course record: 485024S](#)

485021A | Construction Contracting

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Liedes

Content

Societal effects of construction. Management and regulation of construction. Building cluster. Construction project life cycle economy and cost control, design control and target price. Implementation and chore formats. Project economy fundamentals, operating networks and schedules. Fundamentals of cost and investment calculation. Bid price, energy calculations, building maintenance and ecology in construction. Project site operations, work site design and design tendons, target estimate. Occupational safety and quality management. The main functions of the construction movement. General contract terms and contract of construction works. Acquisition act, Lean thinking in construction. Basics of Employment Law. Business Introductions and Software Applications.

The course includes the practice of the following generic skills:

*Analytical, critical and creative thinking skills

*Communication, interaction and digital skills

Learning outcomes

The student knows the national economic importance of construction, the life cycle stages of the construction project, cost control, and production planning and control tasks. He is able to obtain methodology, prospectus and cost information on construction and calculate the offer price for the construction project. Students are familiar with the basics of investment profitability and can draw up the project's financing plans, energy and life cycle reviews and rent calculations.

The student is familiar with the basics and forms of contract activities and can describe how the construction company and the builder work in contracting. The student knows the basics of human resources and business management and production guidance. Students are able to draw up the overall project schedule, area plan, weekly schedule, mission plan and site procurement and fleet schedule.

Official course record: [485021A](#)

477320A | Construction materials and indoor air

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Minna Tiainen, Satu Pitkääho

Content

Building materials and the resulting chemical indoor environmental factors. Methods of measuring and sampling indoor air, interpretation of measurement results.

Learning outcomes

The student understands key chemical factors that impact indoor air quality, including their sources, measurement techniques, and action limits for pollutants. They can interpret measurement results and are familiar with the indoor air quality assessment process and the roles of relevant specialists. Student is able to present and justify their views clearly, collaborate constructively in group work, and give and receive feedback in discussions and joint assignments.

Additionally student is able to recognize key factors related to their own learning and wellbeing, assess their competencies, and understand the importance of lifelong learning.

Official course record: [477320A](#)

461111S | Continuum mechanics

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Hannu Koivurova

Content

Fundamentals of tensor computation, concepts and theory of deformation and stress states in both linear and nonlinear cases, objectivity and time derivatives of quantities, survival theorems of continuum mechanics, methods of describing material properties, and introduction to nonlinear elastic materials and three-dimensional plastics.

Learning outcomes

The aim of the course is to provide the student with the basic knowledge, concepts and mathematical methods of modeling the behavior of a solid body under load that enables them to apply nonlinear models in elemental method analysis. The student is able to apply tensor computation and knows the most important characteristics of a symmetric second order tensor. The student can explain the difference between linear and non-linear deformation and Euler and Lagrange's presentation. The student is able to calculate the deformation of a part using the most important measures of the deformation state and can calculate the time derivatives of the measurements. The student recognizes stress measurements in different configurations, is able to convert them to different configurations and to calculate their objective velocity quantities. The student is able to explain objective observation and objective quantities. The student can explain and present the concepts and mathematical representations of the second main rule of equilibrium and balance equilibrium and thermodynamics: mass balance, momentum and momentum balance, energy balance and entropy equation. The student is able to apply elastic and plastic material models to structural analysis and understands the related concepts.

Official course record: 4611115

TI00AN22 | Contracting and Contracts in Construction Projects

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Petteri Annunen

Content

- * Project life-cycle
- * Implementation methods for multi-stakeholder projects
- * Contract models for multi-stakeholder projects
- * Contract negotiation and interpretation
- * Collaboration and argumentation skills

Learning outcomes

Upon completing the course, the student will be able to:

- * Describe the importance of contracting and contracts throughout the project life cycle
- * Identify the impacts of different contract models on construction projects
- * Negotiate and prepare a contract related to a multi-stakeholder project
- * Apply and interpret the contract in resolving situations that arise during the project
- * Constructively argue in support of their own position
- * Work in a multidisciplinary team

Official course record: TI00AN22

477621A | Control System Analysis

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Enso Ikonen

Content

The course covers basics of classical control design. Major contents:

- Laplace transform as a tool for control
- closed loop
- PID control

Learning outcomes

The student masters basics of classical control theory, especially control system analysis and design methods based on transfer functions.

After the course, the student

- understands the basics of classical control design and the related process control design procedures;
- can construct a PID control for a process and tune it according to the given specifications;
- is familiar with the Matlab software as a tool for classical control design.

The course develops analytical, critical and creative thinking common generic skills.

[Official course record: 477621A](#)

477622A | Control System Design

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Enso Ikonen

Content

The course covers basics of classical control design. Major contents:

- control system analysis and design in frequency space;
- filter design;
- industrial process control design.

Learning outcomes

The student masters basics of classical control theory, especially control system analysis and design methods based on frequency domain tools.

After the course, the student

- can examine the stability of closed loop systems using frequency domain methods;
- masters the use of control design tools in process control design;
- can exploit Matlab software as a help in control design.

The course develops analytical, critical and creative thinking common generic skills.

[Official course record: 477622A](#)

477624S | Control System Methods

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Istvan Selek

Content

(1) Linear algebra and preliminaries (walk-through): linear dependence and independence, vectors, matrices, inner product, eigenvalue-eigenvector, matrix similarity, spectrum. Least-squares problems and matrix decompositions (Eigen, SVD), pseudoinverse. Calculations using MATLAB.

(2) Control theory of linear time-invariant (LTI) systems in discrete-time (digital control). State-space representation, system analysis, and control design in the time domain. Controllability, observability, and related concepts. Relation of the static state feedback with PID control. Stability in Lyapunov sense. Control design and simulations using MATLAB.

Note: It is the student's responsibility to acquire the necessary mathematical foundations prior to or alongside this course. Topics such as linear algebra, differential equations, and system theory are not covered within the scope of the course.

Learning outcomes

This course introduces the fundamental principles of time-domain digital control design, integrating theoretical foundations with practical implementation. The focus is on controlled Linear Time-Invariant (LTI) systems, complemented by representative real-world applications. Particular emphasis is placed on developing problem-solving skills through hands-on work with MATLAB. Upon successful completion of the course, students will understand the significance and core components of model-based digital control design and system analysis.

Official course record: 4776245

521392S | Convex Optimization

7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Italo Atzeni

Content

- Convex sets.
- Convex functions.
- Convex optimization problems:
 - > - Linear problems;
 - > - Quadratic problems;
 - > - Second-order cone programming;
 - > - Geometric programming;
 - > - Semidefinite programming.
- Duality.
- CVX and disciplined convex programming.
- Optimization algorithms:
 - > - Unconstrained optimization (Newton's methods);
 - > - Equality-constrained optimization;
 - > - Inequality-constrained optimization (interior-point methods).
- Applications:
 - > - Approximation and fitting;
 - > - MIMO precoding;
 - > - Decomposition methods;
 - > - Sparse and low-rank optimization;
 - > - Classification and support vector machine.

Learning outcomes

Learning outcomes:

- The students will be able to recognize, formulate, reformulate, and solve various engineering problems as convex optimization problems, both analytically and algorithmically.
- The students will be able to identify convex sets, convex functions, and different types of convex optimization problems.
- The students will learn the necessary and sufficient conditions for optimality as well as the essential concepts of duality.
- The students will be able to write basic MATLAB solvers based on CVX and disciplined convex programming.
- The students will learn high-level algorithmic optimization aspects and will be able to write basic MATLAB solvers.
- The students will be able to recognize the role of convex optimization in various engineering applications from wireless communications, signal processing, and machine learning.

Generic skills:

- The students will be able to apply analytical and critical thinking skills in a manner appropriate to their discipline.
- The students will be able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.

485507S | Coordination of moisture control

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Joonas Härkönen

Content

Tasks of moisture control control and monitoring at different stages of the construction project. Humidity control setting and Kuivaketju 10 operating model. Moisture-critical structures and moisture engineering design control. Methods of weather protection in construction site implementation, management of drying conditions and methods of thermo-moisture measurements of conditions and structures. Risks in the design, implementation and maintenance phases. The importance of building services in humidity control, as well as instructions and maintenance manual for moisture control in maintenance.

Learning outcomes

After completing the course, the student knows the role and tasks of the moisture control coordinator at different stages of the project. He has an overview of moisture control and good practices in a construction project. The student is able to prepare a humidity control report with appendices and is able to participate in the coordination of moisture control in the design, site implementation and commissioning phases.

The student learns analytical and critical thinking and learns to form and justify their own views. They understand the key aspects of responsibility and ethics in the role of a coordinator. The student recognizes the importance of communication and interaction in collaboration.

Official course record: 485507S

465117A | Corrosion of Steels and Steel Applications

5 ECTS | Mechanical Engineering | |

Person in charge: Timo Kauppi

Content [Finnish source]

Korroosiomuodot. Sähkökemialliset mittausten menetelmät (potentio- ja galvanostaattiset mittaukset, permeaatiomittaukset), herkistymisen testaus, raerajakorroosion testaus, jännityskorroosion testaus ja pistekorroosion testaus. Korroosioympäristöjen luokittelu, ilmastorasitusluokat. Lujien ja erikoislujujen rakenneterästen korrosio. Ruostumattomien vakio- ja erikoisterästen korrosio. Vety-ympäristön aiheuttama haurastuminen (HEE), vedyn aiheuttama jännitysmurtuma (HSC), vedyn aiheuttama murtuma (HIC) ja jännityksen suuntaama vedyn aiheuttama murtuma (SOHIC). Korroosiomuodot. Sähkökemialliset mittausten menetelmät (potentio- ja galvanostaattiset mittaukset, permeaatiomittaukset), herkistymisen testaus, raerajakorroosion testaus, jännityskorroosion testaus ja pistekorroosion testaus. Korroosioympäristöjen luokittelu, ilmastorasitusluokat. Lujien ja erikoislujujen rakenneterästen korrosio. Ruostumattomien vakio- ja erikoisterästen korrosio. Vety-ympäristön aiheuttama haurastuminen (HEE), vedyn aiheuttama jännitysmurtuma (HSC), vedyn aiheuttama murtuma (HIC) ja jännityksen suuntaama vedyn aiheuttama murtuma (SOHIC).

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee terästen eri korroosiomuodot ja osaa valita niiden testaamiseen soveltuvan standardisoidun testimenetelmän. Hän tunnistaa erilaisia teollisuuden korroosioympäristöjä ja tietää minkä tyyppiset teräkset soveltuvat käytettäväksi näissä. Opiskelija omaksuu perustiedot lujien ja erikoislujujen rakenne- ja kulutusterästen sekä ruostumattomien terästen korroosiosta teollisissa ympäristöissä. Opiskelija tuntee vedyn teräksille aiheuttamat haurausilmiöt. Opiskelija saa käsityksen mm. kuparin, alumiinin ja titaanin korroosionkestävyydestä.

Official course record: 465117A

477425S | Current and future status of process industry

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

Contents vary each year. Focus is on current issues and features e.g. availability and price of raw materials and energy, available technologies, juridical restrictions, environmental issues, digitalisation as well as research and development.

Learning outcomes

Student can estimate how national and global trends influence process industry now and in the future. Students are able to recognize the dependencies between the dimensions of sustainability in their own field and are able to assess the impacts of their own field's activities on them. Furthermore, they are able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate of their own field.

[Official course record: 477425S](#)

488145S | Data analysis for Water Resources

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Hannu Marttila

Content

During the course, students will learn both traditional and the latest statistical and data analysis methods. With the help of software tools, students can present their results using various plots and analyses that are typical in statistical hydrology and water resources management. Throughout the course, students will also become more familiar with scientific writing and reporting, as well as the use of the R language. The course includes several assignments to be submitted.

Learning outcomes

By completing the course, students will be able to understand and apply the most common data analysis methods used in hydrology and water resources. Students will gain experience in using statistical and data analysis software to solve problems for large hydrological datasets.

[Official course record: 488145S](#)

477509S | Data-driven modelling

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Aki Sorsa, Mika Ruusunen

Content

Systematic data acquisition, data preprocessing, variable transformations through mathematical operations and data validation. Data-driven regression modelling, variable selection, model structure selection, model identification and model validation. Model implementation and maintenance. Examples of real-world cases where data-driven approach is used.

Learning outcomes

The course gives basics for all data-driven modelling. After the course, student understands the significance of different aspects of data-driven modelling, importance of data quality, basic modelling steps and model implementation and maintenance. Student can also evaluate data quality, carry out data preprocessing and variable selection and identify and validate a data-driven model.

TA00AK06 | Design

5 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Aulikki Herneoja

Content

The aim of the course is to introduce students to the basics of architectural design and detailed design. The lectures will cover the basics of architectural design from a sustainable development perspective. The topics covered include the basics of detail design, an overall view of materials, light and colour, an introduction to the design of fixed furniture and stairs, and an introduction to the design of freestanding furniture from the perspective of an informed user. The practical work is related to a residential design project that the student has completed in the contemporary architecture course.

Learning outcomes

After completing the course, the student can do a design exercise using the basics of design and detailed design close to architecture in their work. The work will apply the basics of design and detailed design in practice. The student can consider sustainable development perspectives when making material choices and solutions.

Official course record: TA00AK06

463106S | Design and manufacture of sheet and plate metal products

8 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jyri Porter

Content [Finnish source]

Ohutlevytuotteen ja paksun levyrakenteen valmistuksessa käytettävien prosessien, laitteiden ja järjestelmien ominaisuudet, mahdollisuudet ja rajoitukset. Levystä valmistetun tuotteen suunnittelun perusteet ja menetelmät sekä tietokoneavusteiset suunnittelutyökalut. Levytuotteelle ominaiset virheet valmistuksessa sekä levytuotteen vaurioitumistavat staattisen ja väsyttävän kuormituksen alla. Lujien ja ultralujien terästen ominaispiirteet levytuotteessa. Lopuksi opiskelija voi soveltaa oppimaansa suunnittellessaan valmistusystävällisiä levyosia ja/tai tarvittavia työkaluja.

Learning outcomes [Finnish source]

Opintojakso antaa perustiedot levystä valmistetun tuotteen suunnitteluun ja valmistukseen. Kurssin jälkeen opiskelija osaa kuvata levystä valmistetun tuotteen suunnitteluprosessin ja tärkeimmät valmistusprosessit. Opiskelija osaa suunnitella levyosia ja osien valmistuksessa tarvittavia työkaluja hyödyntäen myös alan tietotekniikkaa. Hän osaa ottaa huomioon osien ja rakenteiden toimivuuden sekä materiaali- että valmistettavuusnäkökohdat. Hän osaa myös arvioida tuotteen vaatimia valmistusmenetelmiä ja niille ominaisia rajoituksia.

Official course record: 463106S

485106A | Design of concrete structures

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Antti Niemi

Content

Mechanical properties of concrete and reinforcing bars, time dependent material properties of concrete. Limit state design of concrete beams, columns, walls and foundations. Service life design. Fire design. Limit state design of concrete slabs and flat slabs.

Learning outcomes

Upon completion of the course, the student

- knows the basic properties of concrete and reinforcement materials from the design point of view
- knows the design principles of reinforced concrete structures
- can design typical reinforced concrete structures according to the EN standards.

[Official course record: 485106A](#)

464102A | Design of machine elements

10 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Lassi Keränen

Content

Joint elements (screws, welds, etc.); Rotating machine elements (shafts, bearings, clutches, brakes); Power transmission elements (gears, chains, belts, etc.); Basic principles of mechanisms used in machines

Learning outcomes

Upon completion of this course, the student will know operating principals, material selection and dimensioning of most common machine elements and the student is able to calculate dimensions of the machine elements.

[Official course record: 464102A](#)

485118S | Design of Steel Structures

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

The following topics are covered during the course:

Design of difficult steel structure under base loading cases and loading combinations.

Structural fire design.

Buckling, lateral torsional buckling, and torsion.

Fatigue.

Design of joints in steel structures.

Learning outcomes

in the Land Use and Building Act specified difficult steel structures designer knowledge.

[Official course record: 485118S](#)

485110A | Design of Timber Structures

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Liedes

Content

Mechanical properties of wooden materials. Design of columns and beams. Stability. Phenomena in joints and connections. Design of connections.

Learning outcomes

Ability to design and dimension conventional load-bearing structures made of wood according to the requirements of the EN standard. In addition, the student understands the behaviour of wood as a structural material.

485108A | Desing of Steel Structures and Steel Construction

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Santeri Schroderus

Content

The following topics are covered during the course: Ferrous metals and their properties. Principles of Eurocodes. Corrosion. Design of joints in steel structures. Typical steel frames. Verification of simple steel structure using Eurocode.

Learning outcomes

After completing the course, the student is capable of explaining the crystalline structure of steel material and he understands elasto-plastic material model. He is able to explain the effect of inclusions, heat treatment and welding process to the mechanical properties of a steel material. He is able to explain common types of corrosion. The student is able to design the most typical steel frame and its joints. He/She can analyze simple steel structures using Eurocode.

Official course record: 485108A

493608S | Development of beneficiation processes

10 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio, Diego Poblete Moya

Content

Lectures:

- Module 1 Mineral liberation case study
- Module 2 Ore Characterization for comminution circuit design
- Module 3 Process Circuit Design
- Module 4 Comminution Circuit Design
- Module 5 Batch And Locked cycle tests for the design of flotation circuits
- Module 6 Flotation Circuit Design and Scale-up (HSC)
- Module 7 Rules for selection of operation and processes
- Module 8 Pulp potential and other components in flotation in control and design
- Module 9 Design of beneficiation circuits (BFD or BFS, PFD, P&ID and symbols of the circuit
- Module 10 Mass balance using HSC and scale-up from batch kinetic tests
- Module 11 Mass balance using HSC and scale up from continuous batch flotation
- Module 12 Design and start-up of mine water treatment plants

Laboratory practice

- Practice 1 Optical microscopy and MLA (trial mineral characterization)
- Practice 2 Bond test
- Practice 3 Kinetic Test to optimize parameter
- Practice 4 Continuous cycle test one component
- Practice 5 continuous cycle test for two minerals (optimization)
- Practice 6 Analysis and scale-up from laboratory to plant

Learning outcomes

Upon completion of the course student is able to

- Describe the development of the mineral processing chain starting from mineralogy and laboratory scale tests, proceeding to pilot and industrial scale process
- Select the correct lab tests for the selected ore
- Describe the essential parameters from process development and optimization points of view.
- Analyze the reasons for the selection of processes based on raw material properties
- Select the appropriate combination of methods for a particular application
- Design the flowsheet and develop a process for the selected raw material
- Integrate various processing techniques to elaborate a complete flowsheet to recover valuable minerals and metals from a particular ore
- Design and size equipment appropriate to the flow rate of the material to be treated
- Evaluate and report the results obtained from the experimental and fieldwork
- Use specialized software for modelling and simulation applied to process design

Official course record: [4936085](#)

080920S | Diagnostic Imaging

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Mikael Brix

Content

The course acquaints the students to the basic physics related to imaging modalities used in hospitals. Covered topics include e.g. x-ray imaging, computed tomography, magnetic resonance imaging, nuclear medicine and ultrasound.

Learning outcomes

The student is able to define the physical principles on which various medical imaging devices are based upon.

Official course record: [080920S](#)

TA00AS60 | Digital Design 1 A

2.5 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Asko Leinonen

Content

The course is offered in two teaching groups. During autumn periods 1–2, students learn 3D modelling with SketchUp. In the second half of the autumn semester, students complete an independently guided assignment and present it at the course's final critique session. At the end of the course, the works are compiled into an exhibition and displayed as a slideshow on a large screen in the unit's facilities.

Learning outcomes

The course is completed during the autumn semester. The student is able to model 3D objects using the surface-modelling techniques of the 3D software used in the course, add surface materials to the objects, create 3D views and render digital prints from them.

Official course record: [TA00AS60](#)

TA00AS61 | Digital Design 1 B

2.5 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Asko Leinonen

Content

The course takes place during the spring semester. In Keper 1, students practise the basics of AutoCAD and page layout using Adobe InDesign. In Keper 2, students independently produce conceptual-level architectural drawings of a small building as their course assignment.

Learning outcomes

The student is able to:

- produce 2D drawings with AutoCAD and print them at the required scale
- prepare conceptual-level architectural drawings of a small building using AutoCAD
- assemble and lay out images produced with the course software in the Adobe InDesign page-layout application

[Official course record: TA00AS61](#)

TA00BC64 | Digital Design 2A

2.5 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Asko Leinonen

Content

Students are divided into two instructional groups so that Group 1 completes the course Digital Design 2A: Revit Basics during the autumn period and Group 2 during the spring period. (Group 2 completes Digital Design 2B: Archicad Basics in the autumn, and Group 1 completes it in the spring.)

As part of the autumn coursework, the students in Group 1 will use Revit to model a small building that is the assignment for Building Design 2 and will produce master and construction drawings of it in PDF format.

During the spring period, Group 2 students complete Digital Design 2A: Revit Basics. Their assignment, completed in pairs, is to create a model and architectural drawings of the building used as the design project in the course Introduction to Renovation Design. The survey model, i.e. the existing conditions model, is produced during the first half of the spring period under the instructor's guidance. During the second half, the student pair develops repair and renovation plans based on the completed existing conditions model and exports the drawings onto sheets as digital documents (PDF).

Learning outcomes

The student is able to produce master and construction drawings based on a building information model using Revit.

[Official course record: TA00BC64](#)

TA00BC66 | Digital Design 2B

2.5 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Mika Syren, Asko Leinonen

Content

Students are divided into two instructional groups so that Group 2 completes the course Digital Design 2B: Archicad Basics during the autumn period and Group 1 during the spring period. (Group 1 completes Digital Design 2A: Revit Basics in the autumn, and Group 2 completes it in the spring.)

As part of the autumn coursework, the students in Group 2 will use Archicad to model a small building that is the assignment for Building Design 2, and will produce master and construction drawings of it in PDF format

During the spring period, Group 1 students complete Digital Design 2B: Archicad Basics. Their assignment, completed in pairs, is to create a model and construction drawings of the building used as the design project in the course Introduction to Renovation Design. The survey model, i.e. the existing conditions model, is produced during the first half of the spring period under the instructor's guidance. During the second half, the student pair develops repair and renovation plans based on the completed existing conditions model and exports the drawings onto sheets as digital documents (PDF).

Learning outcomes

The student is able to produce master and construction drawings based on a building information model using Archicad.

[Official course record: TA00BC66](#)

521298A | Digital Techniques 1

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Juha Häkkinen

Content

The principle of a digital device; Boolean algebra; representation of the numbers; combinational logic operation, analysis and synthesis; flip-flops; sequential logic operating principle (state machines), analysis and synthesis; physical characteristics of the CMOS logic.

Learning outcomes

After the course the student is able to use the features of the binary number system, and Boolean algebra adapted for switching algebra, to design and analyze simple combinational and sequential logic circuits.

[Official course record: 521298A](#)

521404A | Digital Techniques 2

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Juha Häkkinen

Content

1. Logical and physical properties of digital logic components.
2. Representation of digital designs.
3. Combination logic design.
4. Sequential logic design.
5. Digital arithmetics.
6. Semiconductor memories.
7. Register transfer level architecture design.
8. Register transfer level modeling and synthesis.
9. Timing design.
10. Digital interface design.
11. Design verification

Learning outcomes

1. knows the common architectures of synchronous digital logic circuits, and the building blocks they consist of, and can design digital circuits that realize complex data and signal processing functions.
2. knows most common combinational and sequential logic based building blocks, and can use them to design and realize complex digital circuits.
3. knows digital logic design methods, such as use of hardware description languages, functional verification using simulation, realization of logic with a logic synthesis program, and functional and timing verification of gate-level models.

Official course record: [521404A](#)

521406S | Digital Techniques 3

7 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Juha Häkkinen

Content

1. Digital systems design process.
2. Assertion-based verification.
3. Universal verification methodology (UVM)
4. ASIC design and verification (technology choice, logic synthesis, physical synthesis, timing analysis, power analysis, design for testability).
5. Use of SystemC language in the modeling of digital circuits.
6. Architecture-level synthesis of digital circuits.

Learning outcomes

After completing this course, the student

1. knows the phases of the design process of hardware parts of digital system implemented in FPGA or ASIC technologies, and understands their purpose, and the problems and aims associated with different design tasks
2. is able to use the tools needed in industrial design projects.

Official course record: [521406S](#)

OH00AQ42 | Digitalization in Healthcare

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Anna Maijala

Content

The course includes the following main content elements:

- Digital health today - What do we have now? What kind of development trends can be recognized, for example, on sustainability and global health?
- Digital enablers - What components and elements are needed in digital health solutions?
- Innovation, design, development and implementation methods - What drives innovation in digital health? How are digital health solutions developed and designed for optimal impact? How to acknowledge privacy and security in digital health?
- Digital health stakeholders - Who do we design for and with?

Learning outcomes

Upon completion of the course, student will be able to:

- investigate and explore the concepts of Digital Health, such as digital infrastructures and mHealth
- demonstrate they can apply European data sharing and interoperability principles in health data
- apply analytical and critical thinking skills in digitalization in healthcare sector, taking into account the interfaces between fields and new knowledge
- apply creative thinking and problem solving in their work in order to develop new concepts, methods and knowledge in digital health
- identify and describe key digital health assessment frameworks and outcome measures

Official course record: [OH00AQ42](#)

461106A | Dynamics

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Mari Åman

Content

Introduction; Kinematics of a particle; Plane kinematics of a rigid body; Kinetics of a particle; Basics of mechanical vibrations; Kinetics of a system of particles; Plane kinetics of a rigid body.

Learning outcomes

The aim of this course is to provide students with the ability to examine the relationship between the forces on a solid body and the resulting motion, position, speed and acceleration of the body. Learning outcomes: Upon completing the required coursework, the student knows and is able to explain the fundamental quantities and the base laws of the classical mechanics. He/she is able to choose an appropriate coordinate system and analyze the motion - position, velocity, and acceleration - of the parts of a device. The student is able to draw a free body diagram of a moving system, and compose and derive the equations of motion for a system using the direct momentum method, the work-energy method, and the impulse-momentum method.

Official course record: [461106A](#)

494601S | Electrical and EM-methods I

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio

Content

This course introduces the principles and applications of geophysical electrical methods for near-surface geophysical investigations. Students will learn how to design, implement, and interpret surveys using techniques such as electrical resistivity, induced polarization, and self-potential.

Learning outcomes

By completing this course, students will gain the ability to explain the principles of electrical methods, understand their applications and limitations, and also develop different transferable skills.

Upon completion, students will be able to:

- Explain the theoretical basis, limitations, possibilities and practical applications of electrical methods.
- Collect, process and interpret geophysical data using digital tools and software, examine data critically, draw analytical and critical conclusions from the results including available multidisciplinary knowledge and produce new information based on the results.
- Communicate and report results in written and oral formats
- Collaborate and interact effectively in multicultural group.
- Manage and allocate time to specific tasks, take responsibility for their actions and learn self-management.

Official course record: [494601S](#)

494602S | Electrical and EM-methods II

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Elena Kozlovskaya, Kari Moisio

Content

This is a second part of the course Electric and Electromagnetic Methods devoted mainly to theory and application of geophysical methods that aim to determine variations in the electric properties of the Earth's subsurface using

propagation of electromagnetic waves.

- The basic techniques of EM methods (time-domain and frequency domain EM methods, magnetotelluric sounding etc.) are introduced and explained with application to typical problems arising at different stages of mine-life cycle: prospecting, exploration, development, planning, operation, closure and reclamation of open-pit and underground mines.

The ground-based and airborne EM methods are considered.

- For each method, the theoretical background, instrumentation, field procedures, interpretation and case studies are discussed.

Learning outcomes

The course is intended for students specialising in geophysics and for geology students who are interested to get up-to-day knowledge about electromagnetic methods used in exploration and mining. The course could be useful also for mining engineering students.

Learning outcome: The students understand theoretical background of electromagnetic methods of applied geophysics, they are familiar with main types of instrumentation and they can apply the EM methods at different stages of mine life circle, including mineral exploration and environmental studies.

By introduction to the student the up-to-day EM methods of applied geophysics, the course develops the following generic skills: digitalization, ethics, internationality, sustainability and responsibility, critical thinking, identification and development of one's own expertise, as well as interaction and communication skills.

[Official course record: 494602S](#)

521038A | Electrical Engineering Project Studies

1-5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Marko Neitola

Content

The content of the course varies and completing the course has to be discussed with the responsible teacher.

[Official course record: 521038A](#)

521039A | Electrical Engineering Project Studies 2

1-5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Marko Neitola

Content

The content of the course varies and completing the course has to be discussed with the responsible teacher.

[Official course record: 521039A](#)

520001J | Electrical Engineering, thesis

0 ECTS | Electrical Engineering | Post-graduate Studies | Finnish, English

Person in charge: Harri Oinas-Kukkonen

No description supplied in the collected record.

[Official course record: 520001J](#)

521109A | Electrical Measurement Principles

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Christian Schuss

Content

Units of measures, standards of measures, analysis of errors, most commonly used analog and digital measuring methods, equipment and electrical safety regulations.

Learning outcomes

After completing the course, the student

1. is able to measure basic measurements with a multimeter,
2. is able to measure basic measurements with an oscilloscope,
3. is able to operate signal and function generators.
4. is able to estimate the validity of their measurements.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

[Official course record: 521109A](#)

521169A | Electromagnetics Engineering

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Joonas Kokkonen, Jani Peräntie

Content

Electromagnetic field theory and its applications. Basics of electrostatics, their laws and applications. Electrostatics in insulators and dielectrics. Basics of magnetostatics, their laws and applications. Electromagnetics and magnetostatics of materials. Basics of electromagnetic induction. Maxwell's equations and boundary conditions. Nature and basics of electromagnetic waves. Electromagnetic waves in materials and boundaries of materials. Application of Maxwell equations.

Learning outcomes

Learning outcomes:

- Student is familiar with the basic physics concepts related to electromagnetic fields and is able to apply them for electromagnetic problems.
- Student is able to describe the behavior and properties of electromagnetic fields in different conditions.
- Student understands the basic properties and behavior of conductors, dielectrics, and magnetic materials in electromagnetic fields.
- Student is familiar with derivation and form of Maxwell equations and is able use them for solving and modelling simple electromagnetic problems and phenomena.
- Student has basic understanding on how the electromagnetism can be applied in technology.
- Student can identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities.
- Student is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems.

[Official course record: 521169A](#)

521206A | Electronic Circuit Design Theory, Methods and Tools

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Marko Pakaslahti

Content

The main contents of Circuit theory courses (521302A and 521303A) and Principles of Electronics Design (521431A) and Electronics Design I (521432A). The course will give ability for the advanced courses of Electronics Design.

Learning outcomes

After the course students have the main learning outcomes of Circuit theory courses (521302A and 521303A) and Principles of Electronics Design (521431A) and Electronics Design I (521432A), and students are able to simulate different circuits and parameters related to Electronic circuits and analyze the results. The course will give ability for the advanced courses of Electronics Design.

[Official course record: 521206A](#)

521092A | Electronic Measurement Techniques

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Christian Schuss

Content

Broad view to electronic measurements.

Learning outcomes

After completing this course the student

1. remembers the electrical measurement technique terminology associated to measurement systems, sensors and buses.
2. can name most important analog signal conditioning structures
3. can plan and implement basic measurements with electrical thermometers
4. can plan and implement basic measurements with optical meters
5. can name common sources of noise and interference and means to control them
6. can name methods to realize electrical quantities
7. develops and applies cognitive, digital, information-management, and self-leadership skills throughout the different phases of the course.

[Official course record: 521092A](#)

521124S | Electronic Sensors

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Anton Sdobnov

Content

Methods for measuring displacement, velocity, acceleration, torque, liquid level, pressure, flow, humidity, sound and temperature. Ultrasound, optical and nuclear measurement techniques and applications, material analyses such as pH measurement and gas concentration, smart sensors. Comsol Multiphysics will be used to develop and characterize a sensor for your individual assignment.

Learning outcomes

Upon completion of the course, the student will be able to:

- * explain the operating principles of different electronic sensors;
- * select the right sensor for each measuring target;
- * identify requirements that affect sensor selection;
- * recognize and evaluate the main factors affecting the accuracy and uncertainty of a measurement;
- * select appropriate sensor signal conditioning circuits, connection strategy and shielding;
- * perform calculations of the main static and dynamical characteristics.

Official course record: [5211245](#)

521405A | Electronic System Design

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Jaakko Huikari

Content

1. Power Supplies
2. Power Distribution Networks, PDN
3. Grounding
4. Thermal Design
5. Transmission Lines
6. Crosstalk
7. Differential Transmission Lines

Learning outcomes

1. Student is able to choose the optimum method of the choices presented in the course in the field of power supply, thermal design, grounding, and routing of the high speed signals.
2. Student is able to calculate problems, caused by electrical disturbances, crosstalk and non-idealities of electrical components.
3. The aim of the course is to expand the knowledge of electronics design from the design of individual blocks to the design of complete devices and systems.

Official course record: [521405A](#)

521362S | Electronics and Communications Engineering Seminar

0 ECTS | Electrical Engineering | Advanced Studies | English, Finnish

Person in charge: Johanna Vartiainen

Content

The content is determined by the diploma work topics and other current research topics.

Learning outcomes

1. Student can prepare a presentation of predetermined length of her/his thesis.
2. Student has experience on presenting her/his topic.
3. Student has experience on evaluating other students' presentations.
4. Student has a general view of other completed diploma thesis.
5. Student is able to communicate as an expert in a way suitable for the target audience, and to build professional networks.

Objective: Students get practice in preparing and giving an oral presentation. At the same time they learn about current research and development projects going on in the university and in the industry.

Official course record: [521362S](#)

521300S | Electronics Design and Construction Exercise

6 ECTS | Electrical Engineering | Advanced Studies | Finnish

Person in charge: Jaakko Huikari

Content

Design and construction of an electronic device according to the given specifications. Device development can be part of an industrial research or product development project. It may also be related to an ongoing research project at the Faculty. Students' own construction project related to electronics can also be accepted as a work topic.

Learning outcomes

1. Is able to carry out all the stages needed to develop an electronic circuit or device starting from independent creation and design work to realization, testing and technical documentation.
2. Is able to use independently without any help professional methods, software packages, measurement devices and tools.
3. Objective: To familiarize the student with independent electrical circuit and system design and with the methods and tools used in the design process. The course prepares the student for the diploma work in the area of circuits and system design.

Also:

- * Independent and large design project trains into analytical, critical thinking and handling with uncertainty.
- * In general, electronic design targets in reducing energy consumption.

[Official course record: 521300S](#)

521432A | Electronics Design I

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Ilkka Nissinen

Content

Frequency response of a transistor amplifier, differential amplifier, feedback, power amplifiers, oscillators and tuned amplifiers, non-idealities of an operational amplifier, applications of operational amplifiers.

Learning outcomes

1. should be able to recount the principles covering the design of multistage amplifiers
2. should be able to analyze and set the frequency response of a transistor amplifier
3. should be able to make use of feedback to improve the properties of an amplifier in the desired manner
4. should be able to analyze the stability of a given degree of feedback amplification and to dimension an amplifier correctly to ensure stability
5. should be able to describe the principles governing the design of power amplifiers
6. should be able to make widespread use of operational amplifiers for realizing electronic circuits and to take account of the limitations imposed by the non-idealities inherent in operational amplifiers
7. should be able to design low-frequency oscillators, to explain the operating principles of radio frequency oscillators and tuned amplifiers

[Official course record: 521432A](#)

521401S | Electronics Design II

6 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Ilkka Nissinen

Content

Modeling of MOS transistors, CMOS building blocks especially as IC-realizations, noise and analysis of noise, internal structure of operational amplifiers, critical parameters, comparators, S/H-circuits, structures and properties of A/D and D/A converters.

Learning outcomes

1. should be able to explain the structures and operating principles of the passive and active (MOS) components available for use in modern IC technologies
2. should be able to analyze and design integrated electronic blocks based on these components, such as operational amplifiers, comparators and sampling circuits
3. should be able to estimate and minimize the effects of noise in electrical circuits
4. should be able to explain the terminology used with DA and AD conversion and converters
5. should be able to analyze and outline the main architectural principles and also to evaluate the characteristics of DA and AD converters

Also, during the course, student

1. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge,
2. is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures,
3. knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being,
4. is able to work in international cooperation and take the international operating environment into account in their activities,
5. is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.

Official course record: 5214015

521435S | Electronics Design III

6 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Ilkka Nissinen

Content

Advanced operational amplifier topologies, especially differential ones, bandgap and PTAT bias circuits and references, problems related to the design of multi-stage amplifiers (output stages, LP/LV implementations), signal sampling and error sources related to it, SC-techniques (especially in filters), implementation principles of continuous time IC filters, DS techniques in general and particularly in AD/DA converters, operations with frequency/phase domain signals, design of IC layout, operation, and design principles of phase-locked loops.

Learning outcomes

1. On completion of the study module students should be able to detail the advantages of differential signal processing in IC realizations and
2. to analyze and design differential amplifiers and other electronic blocks for implementation in an IC environment.
3. They should be able to explain how an SC (switched capacitor) technology functions and to apply such a technology to sampling and filtering.
4. They should also be able to describe the principles for realizing continuous time filters in IC technologies, to explain the principles of the delta-sigma technology
5. and to apply it for realizing integrated DA and AD converters.
6. They should be able to account for the functioning, use and architecture of a phase-locked loop,
7. to explain the functioning of an MOS transistor in the area of weak inversion and to indicate how use can be made of this functional area in circuit design.
8. Knows the basic principles of a layout design and IC packaging

Also, during the course, student

1. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge,
2. is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures,
3. knows how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being,
4. is able to work in international cooperation and take the international operating environment into account in their activities,
5. is able to promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns.

Official course record: 5214355

521210A | Electronics Materials

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Maria Väättäjä

Content

Introduction to basic terminology in materials science and technology. Basics of the structure of solid materials. Electrical and thermal conductivity, semiconductors, dielectric, magnetic and optical properties and typical materials which express these properties. Other viewpoints to electronics materials, such as use in the industry and sustainability. Use of artificial intelligence tools in studying.

Learning outcomes

After completing the course, the student is able to

1. name the most important material groups used in electronic components,
2. explain the basic properties of the most important material groups and the physical phenomena behind them,
3. recognize sustainability-related perspectives of electronics materials,
4. identify some factors that influence material choices in the electronics industry,
5. utilise artificial intelligence tools in studying,
6. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline
7. recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study,
8. is able to apply the UN Sustainable Development Goals in their own professional activities,
9. is able to utilise and critically evaluate AI technologies in their own area of expertise appropriately, safely and responsibly.

Official course record: 521210A

521115S | EMC Design

5 ECTS | Electrical Engineering | Advanced Studies | Finnish

Person in charge: Erkki Vihriälä, Sadegh Moradi

Content

EMC standards for emission and susceptibility, interference coupling, circuit design and grounding, connections, filtering, shielding, EMC testing laboratories, EMC tests and their background.

Learning outcomes

After completing this course, the student

1. is able to name common EMC standards
2. is able to use EMC testing equipment and methods
3. can explain the noise coupling mechanisms
4. is able to use good design practices related to analogue and digital electronics design
5. is able to use good design practices related to analogue and digital electronics grounding
6. is able to use good design practices related to analogue and digital electronics filtering
7. is able to use good design practices related to analogue and digital electronics shielding

[Official course record: 521115S](#)

488508S | Energy Economics

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eva Pongracz

Content

Basics of economics. What is a natural monopoly and why transmission and distribution are such? Economics of natural monopolies. Liberalization and deregulation of the electricity market. Regulation of electricity transmission and distribution sector in Finland. Costs related to electricity production. The role of electricity markets, balancing and reserve markets. Market based flexibility solution in the energy system. Economics of variable renewable energy, value factor, cannibalization. Carbon pricing, Emission Trading System, carbon leakage.

Learning outcomes

The purpose of the course is to provide an understanding of the economics of the supply and use of energy. The course will help students to understand the role of economics in shaping the energy system and will provide with knowledge of the functioning of the electricity markets, the price formation in electricity markets, the impact of renewable energy integration and the economics of decarbonization.

After the course, the student will know the cost structure of different energy generation technologies, the price formation in power markets and how the electricity price is formed for consumers. The student will also understand natural monopolies and their economics. The student will also know how the electricity transmission and distribution sector is regulated in Finland. The student will gain fluency in market-based solutions of flexibility, such as demand-side management. The student will also understand the economic consequences of the large-scale integration of renewables, and the support schemes for renewable energy sources. The student will know what externalities are, and how to internalize externalities. The student will know the expectations from incentive-based instruments to reduce pollution, including carbon pricing, marketable emission permits and the EU Emission trading system. The student will also gain understanding of the concepts of carbon leakage and the social cost of carbon.

The course is relevant for those interested in the energy industry or any energy intensive sector.

[Official course record: 488508S](#)

IE00AG66 | Energy Harvesting Technologies

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Yang Bai

Content

- Definitions and boundaries of power generation and energy harvesting
- Materials for energy harvesting technologies
- Solar, kinetic and thermal energy harvesting technologies
- Structures and power sources for wireless sensor networks
- Energy storage for wireless sensor networks
- Hybrid and multi-source energy harvesting solutions
- Industrial and practical use cases of energy harvesting systems
- Guest lecture from industry for ultralow-power electronics

Learning outcomes

- Students will understand the fundamental and advanced concepts and designs of self-sufficient, autonomous electronic systems for various sensing applications.
- Students will learn the materials, devices and working mechanisms of different energy harvesters and corresponding self-powered systems.
- Students will learn advanced energy storage options used for self-sufficient, autonomous sensing systems.
- By learning this course, students may start to develop towards qualified designers and coordinators of R&D projects for energy harvesting systems in both academia and industry.

Also:

- Students will be able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.
- Students will be able to recognize the dependencies between dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and able to assess the impacts of their own field's activities on them.
- Students will be able to seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group.

Official course record: [IE00AG66](#)

488507S | Energy Systems Engineering

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eva Pongracz

Content

The role of energy in the society. The structure and domains of the power, system types of power plants, transmission and distribution networks. Energy production measures and dimensions, seasonality and intermittancy, forecast and unit commitment. Hybrid systems, the merit order. Basics of electricity pricing and EROI. District heating and gas networks.

Learning outcomes

After the course, the student will know the infrastructures of energy, such as the power system, district heating and gas networks. The student will also know the portfolio of power supply, and the factors influencing the dispatch of power generators to match demand. The student will know the energy measures and able to apply correctly the units of energy. The student will also know how to find and process energy statistics. The student will also understand the intermittence of energy generation from renewable energy sources as well as the need for and basics of forecast and unit commitment. The student can also correctly apply EROI calculations for different energy generation and storage technologies.

461117S | Engineering optimization

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Hannu Koivurova

Content

Formulation of an optimization problem; Linear and non-linear optimization in the design of load-bearing structures; Computer software for optimization of structures; Optimization as a part of a computer aided design system.

Learning outcomes

The aim of this course is to familiarize students with the principles of optimization of structures and their applications in the design of machine parts, welded plate structures, trusses and frames. Upon completing the required coursework, the student knows the fundamental concepts of the optimization and recognizes the different mathematical definitions of the optimum, so called Kuhn Tuckers conditions. The student is able to formulate the optimization problem mathematically and knows the most important solution methods for the linear and the nonlinear problem both in the constrained and unconstrained cases. The student knows the steps and the structure of the most widely used algorithms, the pros and cons of the different methods, and their suitability in the different problem types. The student is able to use a commercial computer software for the application in the optimization of machine parts.

Official course record: 461117S

488053A | Enviromental monitoring and analysis

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Jaakko Nissilä

Content

During the course, typical nutrients and pollutants that have impacts on environment are studied as well as ways to sample and monitor them. During the course, students are calculating environmental loads (discharge, concentration, annual variation etc.) and studying commonly used estimation methods for them (unit hydrograph, specific load etc.)

Learning outcomes

The aim of the course is to give comprehensive understanding on nutrient and pollutant loads to the environment (soil, water and air) and how to monitor and analyze them.

After completing the course, student

- * knows what pollutants and nutrients caused by industries, land use, and communities there are.
- * can take various samples, analyze them qualitatively and quantitatively, and can interpret the results critically
- * can plan and execute official soil, air and water quality monitoring
- * can work efficiently independently and in a group
- * can present research results literally and orally

Official course record: 488053A

488142A | Environmental legislation and EIA

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Heini Postila

Content

Knowledge of environmental legislation is important for people working in a wide variety of jobs, for example authorities, consultants, environmental engineers and managers, and researchers. The course introduces the Finnish legal system, environmental legislation (e.g. Water Act, EIA Act, YSL, Mining Act), regulations and guidelines, and especially the environmental impact assessment process.

Learning outcomes

After completing the course, the student will master the basics of environmental legislation. The student knows the basic principles of the Water Act affecting the water environment and water resources, the Environmental Protection Act affecting the state of the environment, and the Mining Act. The student will also be familiar with the law on environmental impact assessment. The student will recognize the guiding effects of environmental laws in various environmental projects and understand the principles of various planning processes and permit procedures and impact assessment, and will be able to understand and critically analyze the environmental impact assessment report and thereby also have an impact on society. The student is able to search for information and instructions related to environmental legislation and knows how to apply them in planning and research projects.

Official course record: [488142A](#)

488210A | Environmental science and technology

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Virpi Väisänen

Content

The current state of the environment, future perspectives and factors affecting. Major emissions to the atmosphere, water bodies and soil, and their impacts in the environment. Key global and regional environmental problems. Life-cycle thinking. Sustainability and responsibility. Engineering, environmental and research ethics.

Learning outcomes

After completing the course, the student is able to describe the current state of the environment as well as future perspectives. The student can identify the most important emissions to the atmosphere, water ways and soil caused by human activities. The student is also able to describe the impacts emissions have on the environment, and the student can explain the most significant global and regional environmental problems. In addition, the student is able to describe what is meant by life-cycle thinking, and is able to apply it when studying the impacts of various human activities on the environment. The student is also able to justify why sustainable solutions based on life cycle thinking are important for the future. After completing the course, the student is also able to identify ethical issues related to work tasks in the environmental sector. The student is also able to work constructively and responsibly in a team and contribute to the achievement of the team's goals.

Official course record: [488210A](#)

450502A | Excursion Abroad

2 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi, Anssi Lassila, Veli-Matti Sanaksenaho, Anu Soikkeli, Petri Aarnio

Content

The excursion program includes visits to top-quality architectural sights in the target city or country. The excursion program may include individual buildings, housing estates or urban spaces and surroundings. Visits to local architecture schools and architects' offices may also be included in the program. The course includes preparing a detailed excursion program together with the excursion leader, as well as all the practical arrangements for the trip in the springsemester of the 1st year of the master' program.

Learning outcomes

The purpose of the study trip is to complement the student's ability to identify architectural sights known from the theoretical courses in architecture, their three-dimensional and empirical character as well as relation to place and history. After attending the study trip the student has a better understanding of the features of internationally significant architecture.

[Official course record: 450502A](#)

465114S | Exercises in physical metallurgy

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jaakko Hannula

Content

Physical metallurgy

Learning outcomes

This course aims at giving the student the skills to find and use of materials engineering literature and to write a clear, well arranged report. The student also will become familiar with some topic areas of physical metallurgy on a deeper level. After the course, the student is capable of finding relevant and reliable literature on the topic of his/her research work. In addition, he/she is able to use this literature for solving his/her research problem and for preparing a well arranged research report. In the future, the student will be able to go deep into essential matters of his/her research subject of physical metallurgy.

[Official course record: 465114S](#)

477502A | Experiment design and analysis

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Aki Sorsa

Content

Design of experiments, graphical and statistical analysis of data, hypothesis testing, correlation analysis, variance analysis, regression analysis, model performance evaluation, basics of dynamic data-driven models, use of Excel

Learning outcomes

After completing the course, the student understands the goals and basic principles of systematic data collection, data analysis, and data-driven modelling. The student knows different experiment design methods and their applicability for different problems. The student can also design experiments for multi-variable processes and analyze the results. The student understands the stages of data analysis and can visualize and analyze data. The student can form a linear regression model and evaluate model performance.

[Official course record: 477502A](#)

461116S | Experimental methods in engineering mechanics

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Hannu Koivurova

Content

Strain gage and vibration measurements. Modal analysis tests.

Learning outcomes

The course focuses on experimental methods in engineering mechanics, where the student becomes familiar with measurements principles, application potentials and constraints.

Learning outcomes: Student can make strain gage and vibration measurements in engineering mechanics field of know-how. With modal analysis tests, student can prepare measurements, make tests and estimate accuracy of the results and compare them to calculated results. The student can find out characteristic magnitudes from the measurements. The student can independently make strain gage measurements and estimate the inaccuracies.

Official course record: 461116S

477428S | Experimental methods of high temperature research

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Timo Fabritius

Content

Typical experimental and analytical methods used to research the high temperature modification and behaviour (oxidation, reduction, melting, surface phenomena, kinetics) of materials. Determining and separating research problems to reasonable pieces, making the background research, selecting suitable methods, reporting and presenting the results.

Learning outcomes

Students passing the course are familiar with the most important experimental methods used in the laboratory scale research of materials and high temperature processes. Students can determine and separate research problems to reasonable pieces, collect the background information, select the reasonable methods and make the research and reporting on planned schedule. Additionally, students can observe the high temperature phenomena and their interconnections and consequences. It should also be noted that the contents of the course are under continuous development and therefore more detailed learning outcomes are given each year at the beginning of each course.

Official course record: 477428S

454560S | Extension Course / Urban Design

10 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Helka-Liisa Hentilä, Aale Luusua

Content

In the study unit, the basics of reporting are introduced through seminar work and written assignment. The in-depth themes of the reports are related to a current social phenomenon, such as the resource wisdom of communities, healthy living environments or the changing rural environment, also linking to the scientific research conducted at the Oulu School of Architecture.

Learning outcomes

After completing the course, the student will be able to identify various current phenomena affecting land use and their connection to land use planning. The student is able to prepare analytical research reports needed in land-use planning and recognizes different ways of preparing reports. The student will understand the basics of interpreting and reporting survey and research data. The student can argue their position expertly and communicate the results of their research convincingly to the target audience, both in writing and orally.

Official course record: 454560S

521907S | Fab Lab Digital Fabrication

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Jani Ylioja

Content

The student learns, theory and hands-on, small-scale digital fabrication techniques and prototyping for 2D, 2.5D and 3D: 3D-scanning and printing, CNC-machining, casting and moulds and one elective digital technique (embroidery, composites, etc.).

- 3D scanning and printing
- computer-controlled machining
- molding and casting
- wildcard week

Learning outcomes

The student can:

1. demonstrate 2D design development for CNC production
2. describe workflows for CNC production
3. design appropriate objects within the limitations of 3 axis machining
4. demonstrate workflows used in mould design, construction and casting
5. identify the advantages and limitations of 3D printing and scanning technology
6. apply design methods and production processes to show one's understanding of 3D techniques
7. demonstrate workflows used in the chosen, changing process
8. select and apply suitable materials and processes to create one's project with selected process

Official course record: [5219075](#)

521905A | Fab Lab Electronics

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Jani Ylioja

Content

The course gives basic knowledge of small scale digital fabrication and prototyping of printed circuit boards including design, fabrication and testing and gives examples of fabricating and using sensors and signaling devices or actuators with an embedded device.

- electronics production
- electronics design
- input devices
- output devices

Learning outcomes

The student can

1. describe the process of milling, stuffing, de-bugging and programming of self made printed circuit board with microcontroller
2. demonstrate correct workflows and identify areas for improvement if required
3. select and use software for circuit board design
4. demonstrate workflows used in circuit board design and fabrication
5. implement and interpret programming protocols

Official course record: [521905A](#)

521906A | Fab Lab Programming

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Jani Ylioja

Content

Student learns to build machine-to-machine networks using self fabricated embedded devices. Student also learns networking between embedded and commercial devices such as personal computers or mobile phones. Student learns to program graphical interfaces for such systems.

- embedded programming
- interface and application programming
- applications and implications
- networking and communications

Learning outcomes

The student can:

1. identify relevant information in a microcontroller data sheet.
2. implement programming protocols
3. Define the scope of a project and develop a project plan
4. demonstrate workflows used in network design
5. implement and interpret networking protocols
6. interpret and implement design and programming protocols to create a Graphic User Interface (GUI)

[Official course record: 521906A](#)

521904A | Fab Lab Project Management

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Jani Ylioja

Content

The course gives basic knowledge of managing digital fabrication processes. Subjects, from point of view of digital fabrication include version control, project management, computer aided design, computer controlled cutting using parametric design methods, intellectual property, inventions and income.

- principles and practices, presentations, introductions
- project management
- computer-aided design
- computer-controlled cutting
- invention, intellectual property, and income

Learning outcomes

The student can:

1. communicate an initial project proposal
2. Explore and use website development tools
3. identify and utilise version control protocols
4. evaluate and select 2D and 3D software
5. demonstrate and describe processes used in modelling with 2D and 3D software
6. demonstrate and describe parametric 2D modelling processes
7. identify and explain processes involved in using the laser cutter
8. develop, evaluate and construct the final prototype of parametric design
9. identify and explain processes involved in using vinyl cutter
10. design and create the final object using vinyl cutter

[Official course record: 521904A](#)

521908S | Fab Lab Project Work

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Jani Ylioja

Content

The student learns to work in a team to digital fabrication. The group learns to make moc-up of a robot or a machine. The student also learns to apply suitable time management techniques for one's project and to integrate different skills to one functional product.

- mechanical design and machine design
- project development
- project presentations/Final project

Learning outcomes

The student can:

1. work and communicate effectively in a team and independently
2. design, plan and build a system
3. analyse and solve technical problems
4. recognise opportunities for improvements in the design
5. implement project plan
6. apply time management techniques
7. summarise and communicate the essence of one's project development
8. create one's own integrated design
9. demonstrate 2D & 3D modelling capabilities applied to one's own designs
10. select and apply appropriate additive and subtractive techniques
11. demonstrate competence in design, fabrication and programming of your own fabbed microcontroller PCB, including an input & output device
12. implement methods of packaging
13. design your final project to look like a finished product
14. plan and document system integration

Official course record: 5219085

465113S | Failure mechanisms in metals

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Olli Nousiainen

Content

Failure mechanisms at low and high temperatures under static and dynamic loading. Failures caused by corrosion. Macroscopic and microscopic features of fracture surfaces. General principles and approaches to failure analysis. Failures induced by hydrogen. Practical examples of failure cases.

Learning outcomes

After completion of the course, the student will be able to explain the effects of mechanical and environmental loads on the possible failure mechanisms in alloys. The student will be able to avoid unsuitable choices of materials in various applications. The student will be able to list the stages involved in a typical failure analysis. The student will be able to determine the most likely failure mechanism on the basis of the macroscopic and microscopic features of fracture surfaces. The student will be able to give rational instructions for avoiding failures.

Official course record: 465113S

488127S | Field measurements, site investigations and geotechnical tests

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Ali Torabi Haghighi

Content

The course includes several lectures and three main parts:

- Site investigation,
- Field measurement and
- Geotechnical engineering tests.

In the lectures: The students will get familiar with units of measurements, errors, and mistakes, random and systematic errors, precision and accuracy in laboratory work, and field measurements. Planning field works, description of measuring site, securing results and material, sample preservation, subsoil exploration, direct & indirect exploration methods, disturbed and undisturbed soil samples, safety in fieldwork, introduction on surveying, leveling, map and scale, different tests in soil mechanics laboratory.

In the field measurement: Students work with GPS and Drone and prepare a topography map based on the leveling. They take soil, surface water, and groundwater sampling, measuring the velocity and discharge of the river.

The soil mechanics and geotechnical engineering tests include the sieving, hydrometer, Atterberg limits, proctor, direct shear box, and oedometer tests.

Learning outcomes

Upon completion of the course, students will be able to design field measurement procedures and assess the quality of sampling and measurements in water and environmental engineering. They will also develop teamwork skills, collaborating effectively with peers to share expertise and execute tasks efficiently. Students will gain proficiency in various field measurement and sampling methods related to water and geotechnical engineering. They will understand laboratory testing procedures and the key parameters essential for evaluating soil mechanics and geotechnical properties. Additionally, they will be equipped to prioritize safety during both laboratory work and field measurements. By the end of the course, students will be capable of writing detailed and professional engineering reports

[Official course record: 4881275](#)

521304A | Filters

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Timo Rahkonen

Content

Filter types and prototypes, component scaling. Synthesis of active and passive filters. Sensitivity analysis and scaling of the dynamic range.

Learning outcomes

After the course the student can:

1. draw a pole-zero map for a given transfer function;
2. perform impedance and frequency scaling for component values;
3. choose an appropriate prototype filter and filter degree;
4. synthesize passive RLC filters;
5. synthesize active opamp based filters;
6. can compare various filter technologies;
7. understands the basics of scaling the dynamic range of active filters

Also:

- * Making exercises and design tasks trains in analytical, critical thinking and handling with uncertainty.
- * In general, electronic design targets in reducing energy consumption.
- * Student population is generally international.

[Official course record: 521304A](#)

492602S | Financial and Project Valuation of Mining

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Adeyemi Aladejare, Kari Moisio, Jyrki Salmi

Content

(1) Introduction to financial and project valuation; (2) time value of money; (3) inflation; (4) behaviour of costs; (5) capital investment decisions; (6) financing of projects; (7) depreciation and equipment replacement; (8) taxation; (9) analysis of financial statement, (10) risk assessment in project valuation.

Learning outcomes

Upon completion of the course students should: (1) be able to analyse inflation and taxation and their influences on decision making; (2) make decision on capital investment; (3) determine the best possible method for financing projects under prevailing economic conditions; (4) understand how to prepare financial statements for mining industries and others; (5) perform risk assessments of mining projects.

[Official course record: 492602S](#)

461107A | Finite Element Methods I

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jouko Lumijärvi

Content

The basic idea of FEM and its use in static analyses of bars, beams and plane structures. Some general principles of the use of FEM.

Learning outcomes

The aim of this course is for students to gain an understanding of the basic idea and restrictions of FEM. After this course, the student can explain the basic idea of the FEM. The student can analyze simple truss-, frame- and plane structures and explain the theoretical background of the calculations.

[Official course record: 461107A](#)

461109A | Finite element methods II

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jouko Lumijärvi

Content

Shell and solid elements. 3D-truss and -frame structures. Buckling and modal analyses. Dynamic analyses. Heat and moisture transport. An introduction to nonlinearities.

Learning outcomes

The aim of this course is for students to gain an understanding of the basic idea and restrictions of FEM in dynamic and buckling analyses and the preparedness to use commercial FE-programs.

After this course, the student can explain the basic idea of the FEM in the case of two- and three dimensional, geometrically complicated structures. In addition to the linear displacement and heat transfer problems, the student is able to critically utilize the ready to use FEM-programs in the analysis of buckling-, modal- and dynamic problems. Also, the student knows the basic types of nonlinearity and recognizes their effect on the computations.

[Official course record: 461109A](#)

461113S | Finite element methods III

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jouko Lumijärvi

Content

Static and dynamic non-linear phenomena in engineering mechanics: Geometric nonlinearity, buckling, contact problems and non-linear material models.

Learning outcomes

The aim of the course is to give students an enhanced understanding of the finite element method and to familiarize students with the analysis of non-linear problems. Upon completion of this course, the student is able to apply the finite element method in analyzing the most important non-linear phenomena in engineering mechanics. He/she is able to choose suitable modeling and solution methods for different phenomena.

Official course record: 461113S

477305S | Flow Dynamics

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Ari Vuokila

Content

In the Flow Dynamics course, students become familiar with phenomenon-based modeling of industrial processes. The course provides the foundations for creating models and helps students understand the principles behind computational fluid dynamics.

Equations of fluid dynamics. Computational grids and their transformations. Classification of flows. Boundary layer. Control volume method. Discretization. Boundary conditions. Graphical presentation of results. Turbulence modeling. Molecular dynamics. Experimental fluid dynamics.

Learning outcomes

After completing the course, the student is able to explain the principles of mathematical modelling of flow phenomena and analyse the structure of the equations describing fluid flow. They understand the significance of the different terms for the behavior of the flow. The student is capable of discretising a simple flow situation and converting partial differential equations into algebraic form. The student is familiar with the most common turbulence models and can select an appropriate model for different types of flows. They are able to construct computational models that account for heat transfer in addition to fluid flow. The student can use digital tools for computational fluid dynamics in a purposeful and effective manner. The student is able to form well-grounded conclusions about the strengths and limitations of numerical methods. They can critically evaluate the reliability of simulation results by comparing them with experimental data (validation). The student can design technical computational tasks and assess the quality of their own work as well as the development of their competence as part of the technical process. The student can report the input data, assumptions, and results of CFD modeling clearly in a technical format. The student is able to present and justify the chosen solution methods and modeling results both graphically and in written form.

After completing the course, the student

- Is able to analyse the structure of the equations describing fluid flow and assess their suitability for different flow phenomena.
- Is able to draw well justified conclusions about the limitations and strengths of selected numerical methods.
- Is capable of critically evaluating simulation results and their reliability by comparing them with experimental data.
- Is able to plan their own work and schedule computational fluid dynamics tasks.
- Recognises the development of their own competence and can assess the quality of their work as part of the technical computation process.
- Is able to report the input data, assumptions, and results of CFD modelling clearly in a technical format.
- Can use digital tools applied in computational fluid dynamics appropriately, safely, and responsibly as part of their studies.
- Is able to utilize artificial intelligence as part of simulation planning and results analysis.
- Is able to present modelling results both graphically and in written form, justifying the choices of solution methods.

[Official course record: 477305S](#)

477120A | Fluid and Particle Engineering

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Elisa Koivuranta

Content

Particle properties (particle size and particle size distribution, particle shape, specific surface area), basics of size reduction, particle size control and particle separation methods (e.g. screening, classification, filtration), fluid mechanics (pumping).

Learning outcomes

After the course, the student recognizes the different properties of particles and the mechanical unit processes and phenomena that belong to them. The student can explain the purposes and operating principles of mechanical unit processes and equipment.

[Official course record: 477120A](#)

461110S | Fluid mechanics

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Hannu Koivurova

Content

Special features of fluids, statics of fluids, application of the ideal flow or Bernoulli equation, global equations of flow, ie flow rate equations, local flow equations and viscous flow, tube flow and its special features and dimensional analysis.

Learning outcomes

The aim of the course is to get acquainted with the basic concepts of flow technology, terminology, techniques for solving the main flow phenomena and flow problems and their application. After completing the course, the student will be able to use the terminology of flow mechanics and will be able to explain what the basic concepts of flow mechanics mean, what principles are the basic equations of flow mechanics and how the equations can be simplified. The student can explain the basic idea of dimensional analysis and apply it in flow mechanics, for example, to scale test results. The student will be able to solve simple flow problems, such as determining the volume flow, pressure drop or pump lift height of the piping and determining the forces and moments affecting the parts based on the flow velocities.

Official course record: 4611105

477052A | Fluid Mechanics

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Kaisu Ainassaari

Content

Viscosity. Mechanism of momentum transfer. Creating and solving differential momentum balances. Friction factor. Flow in pipes and open-channels.

Learning outcomes

After the course the student is able to determine the viscosity of pure substances and mixtures and to estimate the effect of temperature and pressure on viscosity. The student is able to recognise the interactions between a solid body and flowing fluid and to distinguish the forces, their directions and to calculate their magnitudes. The student is able to formulate momentum balance equations and to solve these in order to calculate velocity distribution, flow rate and pressure drop. The student is able to distinguish laminar and turbulent flow regimes from others and is able to use the correct equations according to flow regime. After the course the student is able to design pipelines and other simple flow mechanical process equipment.

The student is able to recognize the generic skills they have learned related to analytical, critical, and creative thinking – analyzing information and distinguishing the essential, as well as problem-solving and drawing conclusions – and related to skills for well-being and self-development – time management and self-direction.

Official course record: 477052A

485302A | Foundation Engineering

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Minna Mäki-Asiala

Content

During the course, the student develops communication, interaction, and digital skills through group work and collaborative learning. The assignments enhance multidisciplinary and interdisciplinary competence, as the student learns to examine issues related to foundation engineering from different perspectives. The exercises also emphasize sustainability, responsibility, and ethical skills, particularly through group work, where mutual respect and shared responsibility are central. The course supports the development of analytical, critical, and creative thinking through problem identification and the justification of solutions. In addition, the student practices skills related to well-being and self-development, such as time management and coping with uncertainty in the context of project-based work.

Learning outcomes

The course provides students with the skills required to understand the fundamentals of geotechnical design and to apply design principles in accordance with the Eurocodes. The student learns to identify the limit states considered in the design of foundation structures and to apply both overall stability and partial safety factor methods. The course introduces the most common foundation types, piling techniques, excavations, and principles of risk management. In addition, the significance of radon protection, frost protection, and drainage in foundation engineering is addressed, and the need for ground improvement is evaluated. After completing the course, the student is able to apply their knowledge, for example, in the preparation of a foundation design proposal.

Official course record: 485302A

485308S | Foundation Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Minna Mäki-Asiala

Content

During the course, the student develops communication, interaction, and digital skills through group work and collaborative learning. The assignments promote multidisciplinary and interdisciplinarity, as the student learns to examine issues related to geotechnical engineering from different perspectives. The exercises also emphasize sustainability, responsibility, and ethical skills, particularly through group work in which respect and shared responsibility are central.

The course supports the development of analytical, critical, and creative thinking through problem identification and the justification of solutions. In addition, the student practices skills related to well-being and personal development, such as time management and tolerance of uncertainty in the context of project-based work. Self- and peer-assessment are used in the course to support learning.

The course is demanding and requires a weekly effort throughout its duration. The topics covered in the course are further deepened through submitted assignments that are oriented toward real-world professional practice.

Learning outcomes

After completing the course, the student is familiar with the Eurocodes from the perspective of geotechnical structures, understands the factors affecting excavation safety and the selection of excavation types, and knows the design process of retaining walls and the factors influencing it. The student is able to design a single level supported retaining wall by hand calculations using the limit equilibrium method with an overall safety factor as well as in accordance with the Eurocodes, and calculate the safety against uplift and hydraulic fracture of the excavation base using traditional calculation formulas.

The student is familiar with the design process of steel retaining walls and support structures and understands the specific characteristics of steel materials from the perspective of excavation design. In addition, the student is familiar with pile design limit states and the principles for determining geotechnical bearing capacity, knows the methods of pile load testing, is able to take into account the long-term performance of geotechnical structures, and understands how geopolymers can be utilized in geotechnical engineering.

Official course record: 485308S

461115S | Fracture mechanics

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Mari Åman

Content

Fracture mechanisms. Influence of material properties. Linear elastic fracture mechanics. Advanced fracture mechanics. Energy principles. Fatigue crack growth. Experimental methods.

Learning outcomes

The aim of the course is to familiarise students with the fracture of materials and with the use of fracture mechanics in design, which has become popular in machine construction and especially in the design of welded steel structures.

Learning outcomes: Upon completion of the course, a student should be able to know the fracture mechanisms and influence of material properties to them. The student is also able to solve linear elastic fracture mechanics problems using tablebooks. Moreover the student is able to solve fatigue crack growth problems. The student is able to use finite element method to solve fracture mechanics problems. After the course the student has the basic skills to use fracture mechanics in design.

Official course record: [4611155](#)

485022A | Fundamentals of built environment

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Vuokko Lappalainen

Content

The Finnish legal system. Environmental legislation (e.g. Land Use and Construction Act, YSL, Mining Act, Health Protection Act, Occupational Safety and Health Act), regulations and guidelines, contract techniques, international agreements and EU guidance, where applicable. The hierarchy of zones and zoning, process, as well as the legal effects of zones, the permit procedures, the environmental impact assessment process, and the assessment of the health hazard.

Learning outcomes

After completing the course, the student:

- masters the basics of environmental legislation
- is familiar with the zoning process governing land use, the regulations related to construction, regulations relating to living environment, health protection, and occupational safety, the basic principles of the Water Act, which affects the water environment and water resources, the Environmental Protection Act and the Mining Act
- identify the building effects of environmental laws in various environmental projects and understand the principles of different planning process and permit procedures and impact assessments
- is able to seek information and guidance on environmental legislation and is apply it to planning and research projects
- knows and is able to apply, on a case-by-case basics, legislation, regulations and guidelines relating to the indoor environment and the construction of different eras
- understand and recognize perspectives, differences and similarities between sciences, and be able to work in multidisciplinary teams
- be able to work in a group constructively and through discussion, and give and receive feedback constructively, be able to develop their own professional identity, promote group learning and recognize the need for lifelong learning
- recognize the key skills and importance of analytical, critical and creative thinking, and be able to observe them in their own activities

Official course record: [485022A](#)

488212A | Fundamentals of catalysis

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Esa Turpeinen

Content

Principles of heterogeneous catalysis. Preparation and characterization of catalysts. Catalytic materials. Kinetic fundamentals of heterogeneous catalysis. Deactivation of catalysts. Applications of heterogeneous catalysis.

Microbes and enzymes as biocatalysts, production of biocatalysts, and the use of them in industry. The structure and function of enzymes, enzymatic reactions and basics of enzyme kinetics.

Learning outcomes

After completing this course, a student understands fundamentals of heterogeneous catalysis and biocatalysis. The student understands phenomena occurring in catalysis. The student knows the most important preparation and characterization methods. The student recognizes deactivation mechanisms. The student will be able to define what biocatalysts are, is able to describe how they are produced and give examples how biocatalysts are applied. The student can also explain the basic principles of enzymatic reactions and enzyme kinetics.

The student is able to recognize the generic skills they have learned related to analytical, critical, and creative thinking – analyzing information and distinguishing the essential, as well as problem-solving and drawing conclusions – and related to skills for well-being and self-development – time management and self-direction.

Official course record: [488212A](#)

485304S | Fundamentals of Civil Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Minna Mäki-Asiala

Content

During the course, the student develops communication, interaction, and digital skills through group work and collaborative learning. The assignments strengthen multidisciplinary and interdisciplinary competences, as the student learns to examine issues in municipal and community engineering from multiple perspectives. The exercises also emphasize sustainability, responsibility, and ethical skills, particularly through group work in which mutual respect and shared responsibility play a central role. The course supports the development of analytical, critical, and creative thinking through problem identification and the justification of proposed solutions. In addition, the student practices skills related to well-being and self-development, such as time management and coping with uncertainty in the context of project-based work. Self-assessment and peer assessment are used to support learning throughout the course. The course is demanding and requires a weekly commitment throughout its duration. The topics covered in the course are deepened through submitted assignments that are oriented toward real-world professional practice.

Learning outcomes

Upon completion of the course, the student is able to take into account key geotechnical aspects in urban land-use planning and understand the diverse scope of geotechnical engineering. The student understands the significance of different ground improvement methods and can evaluate the factors influencing the selection of an appropriate method. The student can identify the specific characteristics of various types of sites with regard to structural layers, understand the main principles of drainage design for yard and outdoor areas, and is familiar with the geotechnical characteristics of railway infrastructure. In addition, the student is able to utilize recycled materials in design, understand the geotechnical requirements of special structures, comprehend the requirements of municipal engineering in geotechnical design, and is able to account for vibration in design as well as understand the principles of monitoring.

Official course record: [485304S](#)

488504S | Fundamentals of nuclear energy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Antonio Calo

Content

The first part of the course focuses primarily on the introduction of basic concepts of nuclear power production science and technology. The second part capitalizes on the information provided in the first part of the course, allowing students to fully appreciate inputs provided by available guest lecturers from nuclear energy related companies, agencies, and research institutes. Furthermore, during the second part of the course, students will have the possibility to operate an International Atomic Energy Agency (IAEA) desktop simulator for Small Modular Reactors (SMRs). This provides insight and understanding of the designs as well as a better appreciation of the operational characteristics of nuclear reactors.

Topics discussed during the course include: basics of nuclear physics, nuclear fission and fusion; introduction to nuclear power technology and components of a nuclear power plant; history of nuclear power production; nuclear fuel cycle, uranium mining, extraction and enrichment; fuel temporary and permanent disposal; introduction to nuclear power plant design, safety and auxiliary system design; principles of nuclear safety and strategy of accidents prevention and management; principles of health physics, monitoring safety and prevention; introduction to nuclear power safety and safety culture; nuclear energy and international law.

The course is designed to be accessible to attendees with the broadest background, making it a valuable option to students from other programs and faculties, as well as international and exchange students.

Learning outcomes

Upon completion of the course, students can define the basic elements of nuclear power production and technology. They are thus able to describe the physical processes as well as different components of nuclear power plants and reactors. Students can also describe different elements of nuclear power technology deployment such as regulatory, safety, environmental, sustainability and health related issues.

[Official course record: 4885045](#)

TI00AY82 | Fundamentals of Project Planning

1 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Kirsi Aaltonen, Elina Jääskä, Jaakko Kujala

Content

The concept of a project, the characteristics of projects and different types of projects, the goal and objectives of a project, the breakdown of work in a project, the project schedule and resourcing, project costs, project risks, the project team and responsibilities, project communication.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the key characteristics of projects
- define project goals and objectives
- identify project stakeholders
- break down the project into phases and tasks
- identify dependencies between project phases and tasks
- schedule the project
- plan project resourcing
- estimate project costs and budget
- recognize project risks and manage risks
- identify the different roles and responsibilities of the project team members
- plan project communication

[Official course record: TI00AY82](#)

AY00AW76 | Fundamentals of Project Planning (OPEN UNI)

1 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Kirsi Aaltonen, Elina Jääskä, Jaakko Kujala

Content

The concept of a project, the characteristics of projects and different types of projects, the goal and objectives of a project, the breakdown of work in a project, the project schedule and resourcing, project costs, project risks, the project team and responsibilities, project communication.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the key characteristics of projects
- define project goals and objectives
- identify project stakeholders
- break down the project into phases and tasks
- identify dependencies between project phases and tasks
- schedule the project
- plan project resourcing
- estimate project costs and budget
- recognize project risks and manage risks
- identify the different roles and responsibilities of the project team members
- plan project communication

Official course record: [AY00AW76](#)

485306S | Geoenvironmental Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Anne Tuomela

Content

Environmental legislation and national guidelines related to contaminated soil remediation projects; preparation of a preliminary remediation plan for a case study site; familiarisation with environmental engineering solutions that restore soil quality or prevent contamination and with their practical implementation; soil as a medium and contaminant transport in soil; waste management areas and their structures; industrial by-products and their beneficial use; structures of dams and mining ponds; environmental challenges in mining areas; and the use of remote sensing in geoenvironmental engineering applications.

The course includes written and oral communication exercises aimed at developing students' skills in searching for and utilising information in the field, as well as preparing them to present as experts to various stakeholders. Students work in pre-assigned groups, practising team formation, division of tasks and presenting results within the team. The course also includes the study of current research topics in the field, the preparation of written assignments related to these topics, and an expert presentation based on the same themes. During class sessions, students participate in discussion exercises and practise expressing their opinions.

Through the exercises, students also develop generic skills such as communication, interaction and collaboration skills, problem-solving abilities and text analysis. The course also makes use of peer assessment, which aims to help students identify the strengths and areas for development in others' work as well as in their own.

Learning outcomes

After completing the course, the student can assess the need for remediation of contaminated soil and select appropriate remediation methods. The student can design and dimension the structures of landfills and industrial disposal areas in a way that ensures environmental protection objectives are achieved. The student is able to make by-product-based material choices in geotechnical and environmental construction that conserve non-renewable natural resources. Upon completing the course, the student can also evaluate technical solutions for waste management areas and the beneficial use of industrial by-products in earth structures.

[Official course record: 485306S](#)

485023A | GIs and geoinformatics

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: 50%, 50%

Content

The course provides basic knowledge of geospatial data representation methods and geographic information systems. The course covers topics such as coordinate systems, map projections and map coordinate grids, satellite positioning, geospatial data processing and visualization, as well as the creation of thematic maps. The exercises deepen the topics covered in the lectures and introduce students to the practical presentation of geospatial data using computer applications. The exercises develop the student's communication and digital skills, as well as their ability to critically evaluate information in their field and apply it as part of solving complex problems.

Learning outcomes

After completing the course, the student is able to define the basic concepts related to geospatial data and geographic information systems (GIS), such as the most important national coordinate systems, map projections and Finnish plane coordinates, as well as the principles of satellite positioning. The student is also able to present location-based data in various ways using GIS software.

[Official course record: 485023A](#)

494302A | GIS and Spatial Data

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | Finnish

Person in charge: Kari Moisio

Content

Geoscientific observations and measurements are always tied to spatial location of the data. The course provides basic information about the presentation and handling of spatially dependent geoscientific data and geographic information systems (GIS). The course considers the basics of spatial data, coordinate systems, map projections and map coordinates, satellite positioning, processing and visualisation of spatial data. Computer exercises demonstrate preparation and visualisation of geoscientific data in practice.

Learning outcomes

After completion the student collects the basics of spatial data and geographical information systems (GIS) including especially the most important coordinate systems, map projections, Finnish map coordinates and satellite positioning, and knows how to visualise spatial data in various different ways. The exercises develop the student's communication and digital skills, as well as their ability to critically evaluate information in their field and apply it as part of solving complex problems.

[Official course record: 494302A](#)

494603S | GIS applications

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio

Content

This course concentrates on Geographic Information Systems (GIS) as a tool for analyzing, visualizing, and interpreting spatial data. Students learn both conceptual and practical aspects of GIS, including spatial data structures, geoprocessing techniques, and geospatial problem solving across geosciences and environmental contexts. Emphasis is placed on hands on use of modern GIS software and real world datasets to develop practical competence in digital spatial analysis.

Learning outcomes

By the end of the course, students will be able to:

- Understand the key principles of GIS, including spatial data models
- Manage, preprocess, and evaluate spatial datasets from diverse sources.
- Apply a range of spatial analysis techniques (e.g., spatial queries, overlay analysis, raster operations.
- Create informative and professional map products that communicate spatial information effectively.
- Assess uncertainties, limitations, and ethical considerations associated with spatial data and GIS based decision making.
- Use GIS tools to address interdisciplinary spatial problems relevant to environmental assessment, natural resource management, geoscience, and planning.
- Collaborate and interact effectively in multicultural groups
- Manage and allocate time to specific tasks, take responsibility for their actions and learn self-management

[Official course record: 494603S](#)

TY00AQ64 | GIS in Environmental Engineering

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Jaakko Nissilä

Content

The course provides basic information about the presentation and handling of spatially dependent geoscientific data and geographic information systems (GIS). The course considers the basics of spatial data, coordinate systems, map projections and map coordinates, satellite positioning, processing and visualization of spatial data. Computer exercises demonstrate preparation, spatial data retrieval and visualization of GIS data in practice for environmental engineering applications.

Learning outcomes

After completing the course, the student

- * understands the basics of spatial data and geographical information systems (GIS) including especially the most important coordinate systems, map projections, Finnish map coordinates and satellite positioning.
- * knows how to visualize spatial data in various ways.
- * can implement GIS software to environmental engineering datasets and analyses and is able to make critical conclusions based on the data.

[Official course record: TY00AQ64](#)

AY521006P | Glimpse into ICT (OPEN UNI)

2 ECTS | Electrical Engineering | Basic Studies | Finnish

Person in charge: Joni Rajala

Content

Information and communications technology (ICT) has a large effect on our society. This course introduces the many fields of ICT ja teaches how different devices, systems and programs are created. During the course, you can visit the FabLab in University of Oulu and build your own devices there. The course can also be done completely remotely.

Learning outcomes

After passing the course, the student understands the main building blocks of ICT ja know how to use development tools for electronics and software.

Official course record: AY521006P

485501A | Good Indoor Air and Building Health

2 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Ulla Haverinen-Shaughnessy

Content

Indoor air factors and pollutants and their effects on health and well-being. Impacts of building and HVAC solutions and maintenance on indoor air quality and health. Health risks and related research. Legislation. Cooperation between authorities and experts.

The course develops analytical and critical thinking skills through learning diaries. The lectures and weekly assignments address the expert's role and collaboration with authorities, which helps build a professional identity. The course features guest lecturers from diverse professional backgrounds, which supports learning to collaborate with people from different fields and recognizing the strengths and limitations of other disciplines' methods, thereby promoting multidisciplinary collaboration.

Learning outcomes

The student knows the most common effects of various indoor environmental factors on human health. Knows the concepts of adverse health effects under various regulations. Understands the importance of health risk research and the interaction between experts, authorities and health care.

Official course record: 485501A

494607S | GPR soundings

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio

Content

Ground penetrating radar (GPR) is a high frequency (20-2000 MHz) electromagnetic research instrument that is widely used in surficial and environmental geology, geotechnical and geophysical investigations. The course provides students with the basic knowledge and skills on GPR as a geophysical investigation method. The course deals with theoretical background, practical measurement arrangements, data processing, presentation and analysis. The course includes exercises, where basic mathematics and data processing are introduced, and a compulsory practical work, where the students process and interpret GPR data from their own measurements.

Learning outcomes

After completion the student identifies the special characteristics of GPR soundings and can process and interpret GPR data and also develop different transferable skills.

Upon completion, students will be able to:

- Explain the theoretical basis, limitations, possibilities and practical applications of ground penetrating radar.
- Collect, process and interpret geophysical data using digital tools and software, examine data critically, draw analytical and critical conclusions from the results including available multidisciplinary knowledge and produce new information based on the results.
- Communicate and report results in written and oral formats
- Collaborate and interact effectively in multicultural groups.
- Manage and allocate time to specific tasks, take responsibility for their actions and learn self-management

Official course record: 4946075

488140S | Groundwater modelling and management

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Pertti Ala-Aho

Content

Groundwater hydrology, Grid-based numerical modelling theory, groundwater modeling software, solute transport, model uncertainties, groundwater management

Learning outcomes

Upon completing the course, the student is able to analyze and model groundwater systems improving the student's analytical skills. The student will become familiar with groundwater modelling theory and concepts, and build digital skills through basic and advanced modeling software tools. Critical thinking skills are developed by understanding and analyzing uncertainties in numerical modeling. Through project work on different groundwater case studies around the world, students will gain knowledge on ecological, social and economic sustainability of groundwater management with international and multicultural context. Presentation of the project work and online interaction with other students' projects improves communication and interaction skills.

Official course record: 488140S

521329A | Hands-on Course in Wireless Communication

5 ECTS | Communications Engineering | Intermediate Studies | Finnish, English

Person in charge: Kari Kärkkäinen

Content

Students are introduced to the wireless communication systems and their phenomena with the aid of guided laboratory exercises. The course utilizes National Instruments USRP-2900 universal software radio peripheral transceiver. Work assignments introduces the use of USRP radios in both Matlab-Simulink and GNUradio Companion programming languages. Before each week's exercise a rehearsal lecture is organized based on theory of week's work topic. Theory is based on the course content of 521330A Telecommunication engineering.

Learning outcomes

After completing course a student

1. is acquainted with the operation principles of universal software radio peripheral (USRP) technologies and their implementation and understands the basic idea of software radio concept for system testing, and understands their meaning in testing of prototypes and product development. That is obtained with the aid of small laboratory exercise work tasks which require understanding theories of basic analog and digital carrier modulation methods learned before this course.
2. understands the idea of complex-valued I&Q vector-signals, which exist behind software radios and measurement techniques, and understands how such signals are linked to real-valued RF-signals and necessary digital signal processing.
3. has learned how to use universal software radio peripheral transceivers, and how to observe them in laboratory environment. Student also understands how to control these FPGA-based (field-programmable gate array) devices with the aid of control software platforms (e.g. Matlab-Simulink, GNU Radio Companion and LabVIEW) and understands their limitations in real engineering work.
4. has learned especially about the difference between the use of Matlab-Simulink and GNU Radio Companion control languages in controlling USRP radios in laboratory conditions.
5. has implemented and tested various basic modulation methods both in radio channel and coaxial cable channel, and has made real observations and measurements in time-frequency domain using USRP control software.
6. has learned to find and deduct radio signal spectrums and time waveforms with the aid of time-frequency analysis.
7. can test and model in laboratory environment during this course and later in work life various problems and solutions dealing with wireless communication before construction of a prototype device.
8. has learned how to use the Matlab-Simulink and GNUradio Companion simulation languages with USRP radios.
9. understand limitations of control software for control and operation of USRP device (e.g. setup & simulation times, Tx & Rx synchronism).

Official course record: [521329A](#)

485509S | Healthy buildings project work

5 ECTS | Civil Engineering | Advanced Studies | Finnish, English

Person in charge: Oluyemi Toyinbo

Content

Planning, implementing, documenting and presenting a project work

Learning outcomes

After the course the student is able to:

- Plan, implement, document and present project work
- Evaluate and develop features and methods typical of project work
- Apply and evaluate methods suitable for project work
- Describe and analyze own expertise and in project work

Official course record: [485509S](#)

485508S | Healthy buildings, varifying content

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Ulla Haverinen-Shaughnessy

Content

The course covers current topics related to building health, such as ventilation, calculating buildings' heating, cooling, and ventilation requirements, exhaust air heat recovery, and energy consumption. In addition, factors affecting indoor air quality are examined in relation to building occupants' health and comfort.

Learning outcomes

The course applies creative thinking and problem-solving to develop new knowledge and new procedures, and provides practice in working in international collaboration. The course also develops English language skills.

Official course record: 4855085

465104A | Heat treatment and welding of metals

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Timo Kauppi, Olli Nousiainen

Content

Heat treating and welding processes, their applicability.

Learning outcomes

After the course, the student is able to select the most suitable heat treatment process and to give the main characteristics of the heat treating parameters for achieving the required properties such as yield/tensile strength, ductility, toughness, surface hardness and/or fatigue strength. The student is also able to explain the metallurgical phenomena occurring in a sample during heat treatment. In the area of welding technology, the student is able to explain the most essential principles and applications of the conventional welding and cutting processes. The student is able to estimate weldability of different materials and to analyze the factors affecting weldability. The student can also explain the most essential matters regarding weld joint properties, weld defects and their inspection, and a healthy working environment. In addition, the student is generally able to take into account the effects of productivity and costs on the competitiveness.

Official course record: 465104A

485506A | Heating, Ventilation and Air Conditioning Technology

3 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Pentti Kuurola

Content

HVAC markings and interpretation of plans. Settings and instructions for the design and implementation of HVAC systems. HVAC systems and their space requirements. HVAC system installations, serviceability and damage detection, as well as the above-mentioned consideration in the design and implementation of the systems. Air volumes and formation of pressure differences. Impacts of HVAC systems on the energy efficiency, indoor air quality and comfort of buildings. The student is able to measure air volumes, ventilation and pressure differences.

Learning outcomes

After completing the course, the student has gained an overall understanding of HVAC systems and identifies key settings and instructions for HVAC systems. The student is able to interpret HVAC plans and define the rough space requirements required for HVAC systems, and to show how the installation, maintainability and detectability of damage to the systems must be taken into account in the design and implementation. The student has gained an understanding of the importance and operating principles of HVAC systems. The student is familiar with various requirements related to the selection and operation of an HVAC system. The student understands the most common problems related to systems and their prevention. The student is able to find out the cleanliness of the ventilation system and the transport of contaminants in the building. The student knows the research methods of building tightness.

Official course record: 485506A

477417S | High temperature chemistry

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

Models and methods that are used to investigate the chemical reactions in the research and development of high temperature processes. Contents are divided into five categories: 1. Compound and phase stabilities. 2. Thermodynamic modelling of pyrometallurgical solutions. 3. Slag structure and properties. 4. Burning. 5. Interfacial phenomena.

Learning outcomes

Students passing the course are familiar with the most important computational methods used to investigate the most essential phenomena in the research and development of high temperature processes. Students can e.g. calculate thermodynamic equilibria, read and construct phase stability diagrams as well as estimate slag properties and the effect of surface and interfacial phenomena on high temperature processes, etc.

[Official course record: 477417S](#)

477427A | High temperature processes

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

Things that need to be taken into account when considering high temperature processes (e.g. energy, reductants, smelting, refractory materials, slags and ashes as well as waste and emissions). The most important pyrometallurgical unit operations and other high temperature processes as well as their role in Finnish metal industry.

Learning outcomes

Students passing the course are familiar with the pyrometallurgical metal production processes and metallurgical unit operations as well as other processes which involve high temperatures. Additionally, students know how to evaluate high temperature processes from different perspectives (e.g. energy, reductants, refractory materials, slags and ashes as well as waste and emissions).

[Official course record: 477427A](#)

521399S | High-Level Synthesis of Digital Circuits

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Lauri Koskinen

Content

1. ASIC and FPGA Design and Synthesis Flow Overview
2. Theory of High-Level Synthesis
3. HLS Languages, Tools, and Design and Verification Flow
4. Microarchitecture Optimization I: Loop Handling
5. Microarchitecture Optimization II: Array Handling
6. Microarchitecture Optimization III: Data-Path Optimization
7. Interface Synthesis
8. Practical HLS Case Study

Learning outcomes

Upon completion of the course, the students will be able to

- describe the purpose and key quality metrics of high-level synthesis design and synthesis flow of digital circuits
- understand the key phases and optimization goals and methods in automatic register-transfer level synthesis process
- know the main input languages and synthesis tools
- specify microarchitecture constraints
- analyze synthesis results

Official course record: 5213995

451511A | Historic Preservation

15 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anu Soikkeli, Jaana Tiikkaja

Content

The course content is structured as an integrated whole, where the lectures are closely connected to the project work. The lectures cover the history and theory of cultural heritage preservation, legislation, international recommendations, the basics of managing the built environment, and the practical aspects of building conservation. As project work, students will prepare a management plan for a cultural environment as part of a conservation atlas for a historical setting, along with a development proposal on a topic related to the selected site.

Learning outcomes

Upon completion of the course, the student has a solid understanding of the key historical and theoretical foundations of building conservation and the management of the built environment, is familiar with the main practical methods in the field, and is able to apply them in design and planning tasks.

The student is able to observe, analyse, and critically assess the meanings embedded in architectural heritage and the built environment, and to distinguish architectural, cultural-historical, and place-based values, including aspects of identity and integrity.

The student understands the connections between building conservation, the management of the built environment, and the cultural, social, ecological, and economic dimensions of sustainability, and is able to evaluate their own actions in relation to sustainability, responsibility, and professional ethics.

The student is able to apply conservation methods in practice, from documentation and value assessment to conservation and management planning, and to recognise the significance of diverse values, perspectives, and stakeholders in the planning process.

The student is able to communicate clearly as an expert orally, in writing, and visually, and to work interactively and constructively in group-based planning related to the management of the built environment.

Official course record: 451511A

TA00AJ83 | History of Architecture 1A

5 ECTS | History of Architecture | Basic Studies | Finnish

Person in charge: Anu Soikkeli,

Content

The course introduces the history of architecture and construction, as well as the stylistic ideals of different periods, from prehistoric times to the late 18th century, providing basic knowledge of building methods.

Learning outcomes

After completing the course, the student will have an understanding of the historical development of architecture from prehistoric times to the late 18th century and will be able to use the key stylistic vocabulary of architecture. They will be capable of analyzing the interplay between different stylistic periods in European architectural history, advancements in building techniques, and societal changes. The student will be able to distinguish the characteristics of various architectural styles and identify significant buildings and their designers. They will also be able to recognize the historical layers of the built environment and describe its stratifications originating from different periods. Furthermore, the student will be able to present their observations both verbally and visually.

Official course record: [TA00AJ83](#)

TA00AJ84 | History of Architecture 1B

5 ECTS | History of Architecture | Basic Studies | Finnish

Person in charge: Anu Soikkeli

Content

The course examines the history of 19th- and 20th-century architecture and construction, particularly from the perspective of design within the context of societal changes.

Learning outcomes

After completing the course, the student will understand the historical development of architecture from the late 18th century to the early 21st century. They will be able to identify the historical roots of contemporary architecture and explain the developments leading to the present state. The student will also grasp key phenomena of 19th- and 20th-century architecture and be able to reflect on their own perspective on modern architecture. Additionally, they will be able to present their observations both verbally and visually.

Official course record: [TA00AJ84](#)

TA00AK08 | History of Architecture 3

8 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anu Soikkeli

Content

The course examines the basic principles of preparing a building history survey (RHS). As a practical assignment, students will create a restoration plan for a small historical building for a new purpose. The plan will be based on the building's historical survey and value assessment. The assignment is partially completed as group work. If desired, the student may present the practical assignment as their bachelor's thesis.

Learning outcomes

Upon completion of the course, the student is familiar with the basic principles and key methods of preparing a building history survey. The student is able to analyse, observe, and assess the specific requirements of a historic building when its use is changed, and to critically apply disciplinary knowledge to solving complex and partially unpredictable design situations.

The student is able to prepare a repair and renovation plan for a historic building and understands the interrelationships between building use, heritage conservation, and the cultural, social, ecological, and economic dimensions of sustainability.

The student is able to evaluate their own actions in relation to professional ethics, and perspectives in the design process.

The student is able to articulate and reflect on their own competence, develop their professional identity, and communicate clearly in group settings by listening actively, providing constructive feedback, and promoting shared learning.

Official course record: [TA00AK08](#)

555371S | Human Resource Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Päivi Kekkonen

Content

Organisational capability maturity. People management practices in the areas of: Staffing, Communication and Coordination, Work Environment, Performance Management, Training and Development, Compensation, Competency Analysis, Workforce Planning, Competency Development, Career Development, Competency-Based Practices, Workgroup Development and Participatory Culture.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the key concepts of human resource management
- utilise methods in analysing and planning of human resource practices in organisations
- participate in human resource practices planning and implementation in organisations
- apply PCMM (People Capability Maturity Model) framework

[Official course record: 555371S](#)

488134S | Hydrogeology and groundwater engineering

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Pekka Rossi

Content

Based on the course student has knowledge on geological formations that have aquifers and aquifer types and their water balance. Course considers groundwater dynamics thoroughly: 2D and 3D groundwater flow, unsaturated layer flow, water storage and retention, heterogeneity and isotropy. Tools to understand the dynamics as pumping test and geophysical methods for aquifer properties are introduced. Conceptual model of the groundwater systems are discussed. Role of groundwater from several perspectives are considered: groundwater dependent ecosystems and groundwater-surface water interaction, groundwater quality and groundwater resources and their regulation in Finland.

Learning outcomes

Upon completion of the course, the student will have knowledge on groundwater systems and the basic hydrogeological and engineering concepts involved. This includes analysis of flow in porous media, hydraulics of groundwater systems, groundwater quality, groundwater use and legislation/regulation of Groundwater in Finland. After the course students are able to estimate key factors influencing on groundwater recharge, flow and discharge and to use general methods to calculate groundwater flow. Based on the course the student can estimate sustainable use of groundwater resources (SDG6).

[Official course record: 488134S](#)

488102A | Hydrological Processes

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Marttila

Content

Hydrological cycle, physical properties of water, distribution of water resources, water balance, precipitation, evapotranspiration, soil and ground water, infiltration, runoff, snow hydrology, hydrometry, water quality of rivers and lakes.

Learning outcomes

After the course, the student understands and can describe the main hydrological processes, water movements and hydraulics phenomenon quantitatively through mathematical methods. The student also understands and quantifies the relation between state and flow with relation to snowmelt, evaporation, infiltration and groundwater flow.

Official course record: 488102A

485502S | Indoor Environmental Investigations, part 1 (microbiological and chemical contamination)

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Iiris Pulkkinen

Content

- management of the indoor environment research process
- selection of research methods
- preparing a research plan
- carrying out non-destructive indoor environmental investigations
- interpretation of results, reporting and communication

Learning outcomes

The student knows how to draw up an indoor environment research plan, lead the investigation process of the indoor air problem and use the services of special experts. The student is able to interpret the measurement results and summarize the results obtained from the internal environmental studies of the building (non-destructive methods) and can report in writing and orally and communicate about them. The student understands the uncertainties related to the results and knows how to report them.

Official course record: 485502S

485503S | Indoor Environmental Investigations, part 2 (physical conditions)

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Vuokko Lappalainen

Content

Condition investigation. Purchasing, producing and implementing investigations. Evaluation, reporting and interpretation of results from the structures' functionality point of view.

Learning outcomes

The student knows the principles of preparing a condition investigation in such a way that they can order, make, interpret and evaluate a civil engineering condition investigation and report present their results. Regarding generic skills, the emphasis is on learning analytical and critical operating methods as well as practicing communication and interaction. The student also understands the responsibility associated with research, as well as the ethical aspects of research methods and the purpose of research. The student also understands the importance of occupational safety, self-management, and maintaining competence related to fitness research.

Official course record: 485503S

TI00AN21 | Industrial construction

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Petteri Annunen

Content

- * Business models in construction
- * Key solutions in industrial construction, such as prefabrication and modularity
- * Product development process and supply chains in construction
- * Application of Lean principles in the construction industry
- * The role of information systems and building information modeling in construction

Learning outcomes

Upon completing the course, the student will:

- * Understand the key concepts and operating models of industrial construction
- * Identify the key factors influencing the efficiency of industrial construction
- * Be able to apply the acquired knowledge in the construction industry

Official course record: [TI00AN21](#)

477207S | Industrial Water and Wastewater Technologies

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Tiina Leiviskä

Content

Industrial water management. Industrial water quality. Physical, chemical and biological water treatment processes. Pre-treatment of raw water, treatment of process water and water reuse, wastewater treatment.

Learning outcomes

After completing the course student knows water use, quality requirements and water management of water-intensive industrial sectors. He/she knows industrial raw water, process water and waste water treatment technologies and can evaluate optimal usage of water. He/she can select water treatment technologies on the basis of case-specific needs.

Official course record: [477207S](#)

485204S | Information modelling and automation in building construction and maintenance

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Tanja Kolli

Content

The course addresses the use of data modelling, automation, and robotics in the various phases of building construction: acquisition of initial data, product design, construction management, as-built verification, and the management of building operation, maintenance, and facility upkeep. The student becomes familiar with the 3D coordinate systems used in building construction, the establishment of the site control network, and 3D measurement methods and systems (robotic total station, UAS, and rapid 3D measurement techniques). In addition, the course covers least squares adjustment and fitting calculation methods.

The course provides an in-depth examination of model-based design methods and systems (architectural, structural, MEP, and landscape design), coordination modelling, and the features and use of the Solibri software. Key contents also include automation in the manufacturing of construction components and elements, automation processes in foundation construction, and 3D machine control systems for earthwork machinery. The course further discusses automated construction site systems and robots, digital building maintenance logs, as well as cloud-based operation and maintenance methods and applications. Students are also introduced to 3D city models, national and international data modelling guidelines (e.g., YTV2012), and open data exchange formats and their international standards.

The course enhances the student's digital competence and ability to apply advanced technologies in practical construction processes. At the same time, it strengthens critical thinking and problem-solving skills by analysing the effects of automation and data modelling on construction efficiency and quality.

Learning outcomes

The student gains a comprehensive understanding of the possibilities of data modelling and automation in building construction processes and is able to critically evaluate their impacts. They develop the skills needed to use and apply data modelling and automation in building construction, making use of digital competencies and technological solutions. In addition, the student acquires an in-depth understanding of the theory of construction automation, advanced component technologies, and data transfer possibilities, and is able to analyse and solve related problems.

Official course record: 4852045

485203A | Information modelling and automation in infrastructure construction and maintenance

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Tanja Kolli

Content

The course is delivered through remote lectures and aims to teach the theoretical foundations of data modelling and automation in the context of transport infrastructure construction. This includes the use of data modelling and automation in input data measurements, design processes, automated control of machinery and production processes, verification of as-built data, and the management of road and rail network maintenance.

The course also reviews ellipsoidal and geodetic coordinate systems as well as the establishment of a construction site's measurement control network. Measurement methods covered include airborne, vehicle-based, and static laser scanning, as well as ground-penetrating radar.

Students will become familiar with guided, assisted, and autonomous 3D machine control systems, dynamic monitoring and control systems used on construction sites, and the use of Augmented Reality applications in infrastructure construction. The course also covers national data modelling guidelines (YIV2021), open data exchange formats, and relevant international standards.

During the Ouluzone training week (week 40) and through the learning report, the student also develops generic skills, such as teamwork and communication abilities as well as text analysis skills.

Learning outcomes

After completing the course, the student will be able to:

- define what data modelling and automation mean in the construction and maintenance processes of road and transport infrastructures
- apply methods for using data modelling and automation in development work
- explain the theories, methods, and advanced techniques related to infrastructure data modelling and automation, as well as the possibilities for implementing open data exchange.

In addition, the student will be able to search for and evaluate information critically and analytically. They can communicate clearly and effectively in a technical context. They can recognise their own professional strengths and areas for development, work collaboratively in a multidisciplinary environment, develop their professional identity, and manage their own learning.

Official course record: 485203A

030008P | Information Skills for foreign degree students

1 ECTS | Industrial Engineering and Management, Environmental Engineering | Other Studies | English

Person in charge: Ursula Heinikoski, Pertti Martinmäki

Content

Scientific information retrieval process, the most important databases and publication channels of the discipline, evaluation of the reliability of information sources and reference management.

Learning outcomes

Upon completion of the course, the student:

- * can search scientific information,
- * can use the most important databases of their discipline,
- * knows how to evaluate search results and information sources,
- * is familiar with good scientific referencing practices and reference management software

The course develops students' ethical, responsible and critical use of information, as well as their digital and AI literacy.

Official course record: 030008P

462101A | Information technology and machines

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Toni Lienes

Content

History of mechanical engineering and information technology; Information technology as an enabler of the development of automated machines; Requirements and limitations imposed by machines on automation; Concepts of digitality and analogity; Fundamentals of computer and digital technology; Fundamentals of programming and logical reasoning; Examples of the application of information technology in machines and machine systems.

Learning outcomes

Upon completion of the course, the student will be able to explain how information technology is utilized in modern machines. The student will be able to describe how modern machines have evolved from purely mechanical systems into multidisciplinary systems. The student will be able to distinguish the electrical, information technological, and mechanical features of modern machines. The student will also be able to describe the interaction and interfaces of the aforementioned features. In addition, the student will be able to differentiate between digital and analog domains. The student will be able to create a simple computer program for machine control. The student will be able to name the sensors and actuators used in automated machines.

Official course record: 462101A

521390S | Information Theory

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Hirley Alves, Italo Atzeni

Content

Entropy, mutual information, typicality and entropy rate, data compression, basics of source coding, discrete channels and their capacity, the Gaussian channel and its capacity, rate distortion theory, quantization methods, introduction to network information theory, modern topics in information theory.

Learning outcomes

Upon completing the required coursework, the student is able to use the basic methodology of information theory to calculate the capacity bounds of communication and data compression systems. He can estimate the feasibility of given design tasks before the execution of the detailed design. What is more, she can independently search for information and knowledge related to communication engineering, system design and signal processing.

Objective: To learn the information theory as a discipline and its most important applications in information technology in general and in communications engineering.

Official course record: 521390S

TP00AG94 | Inorganic materials in circular economy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisa Koivuranta

Content

Properties, processing, and utilization potential of industrial residues in various applications. Specific focus in novel high-volume applications in construction materials. Basics of cementitious binder chemistry. An overview of regulatory aspects related to waste utilization. Environmental and safety aspects of materials. Product development in the context of industrial residues and the potential business models.

Learning outcomes

Upon completion of the course, the student can rationalize the main incentives and challenges behind the utilization of high-volume, inorganic industrial waste-streams such as steel slags, mining residues, construction and demolition waste, incineration residues and more. The student will understand how to correlate the physico-chemical properties of the waste-stream material with the possible recycling options. The student will gain familiarity with environmental and legislative aspects related to utilization of industrial residues. The student can think about the business models perspectives while taking the limitations set by the environmental and legislative aspects and the industrial residue into account.

Official course record: TP00AG94

488136S | Integrated water resources management

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Ali Torabi Haghighi

Content

Integrated water resources management (IWRM) course typically covers the following topics:

- Overview of IWRM: principles, objectives, and best practices (Global and Nordic perspective).
- Water resources assessment: water regulation, assessing water availability, demand, and use.
- Integrated and interactive water resource planning
- Simulation and optimization in IWRM
- Using remote sensing in water resources management
- Introduction to the water resources economy
- River and lake regulation in Finland – current practices and future directions
- Introduction to the water resources economy, using economic instruments to manage water demand and allocate water resources efficiently
- Flood and drought management- Impact of climate change on water resources
- Water-Food_Energy NEXUS
- Water quality management: protecting water quality and maintaining healthy aquatic ecosystems.
- Ecosystem services: valuing and protecting water-related ecosystems' benefits to society.
- Water pricing and tariffs: using economic instruments to manage water demand and allocate water resources efficiently.
- Water security: ensuring water security in the face of water-related risks and disasters, such as floods and droughts.
- Case studies and practical applications of IWRM principles and practices.

Learning outcomes

The Integrated Water Resource Management (IWRM) course equips students with a comprehensive understanding of sustainable water management principles, emphasizing the interplay between hydrological, environmental, and socio-economic factors at local, Nordic, and global scales. Students will develop the ability to analyze water resource systems, applying mathematical and analytical methods to assess and address challenges. The course fosters skills in designing sustainable water management plans that balance environmental conservation with societal needs while considering the impacts of climate change, land use, and human activities. Additionally, students will gain insight into water governance, legal frameworks, and policy development, recognizing the importance of multi-stakeholder collaboration in decision-making. Through problem-solving exercises and interdisciplinary approaches, students will enhance their ability to critically evaluate complex water resource issues and formulate adaptive management strategies. By the end of the course, they will also be able to communicate water management strategies effectively through well-structured reports and presentations.

Official course record: 488136S

TA00AR84 | Integrative Urban Development

5 ECTS | Urban Design, Architecture | Advanced Studies | English

Person in charge: Sari Hirvonen-Kantola

Content

The lectures of the study unit address the objectives and procedures of integrative urban development, from the city's/municipality's perspective, in the context of smart city. The thematic review focuses on an integrative urban development topic. The student presents the thematic review in interim and final seminars.

Learning outcomes

After successful completion of the module the student is able to state features of integrative urban development, and to describe the roles of urban design and planning in the interaction of the built environment, society, business and innovations, culture, technology, and nature, in the context of smart city. The student is able to describe human-centered urban development principles. The student is able to create a thematic review on an integrative urban development topic.

[Official course record: TA00AR84](#)

TA00BC89 | Interactive Architecture and Virtual Reality

5 ECTS | Architecture | Intermediate Studies | English

Person in charge: Shafa Sabeti Motlagh

Content

This course introduces students to Unreal Engine as a creative and technical platform for architectural representation. It focuses on transforming static designs into dynamic, immersive, and interactive environments. Students will learn how to import architectural models, apply materials and lighting, create animations and cinematic sequences, and develop real-time virtual reality experiences. The course integrates theoretical reflection on perception, atmosphere, and interaction with practical hands-on work, emphasizing how game-engine technology is reshaping architectural visualization and communication.

- Introduction to Unreal Engine for Architecture: interface, workflow, and scene setup.
- Importing and optimizing architectural models from CAD/BIM or 3D software.
- Material systems and physically based rendering (PBR) in Unreal Engine.
- Lighting design for realism and atmosphere: static, dynamic, and Lumen workflows.
- Camera systems and cinematic storytelling: framing, motion, and sequencing.
- Creating animated walkthroughs and cinematic presentations.
- Blueprints for architectural interaction: doors, triggers, and environmental responses.
- Setting up projects for virtual reality (VR) exploration.
- Spatial experience and perception: presence, scale, and atmosphere in virtual environments.
- Exporting and presenting projects as interactive applications or VR experiences.
- Ethical and representational issues in immersive visualization.

Learning outcomes

Upon completion of the course, the student is able to:

- Understand the theoretical and perceptual foundations of interactive and immersive architectural representation.
- Import, organize, and optimize 3D architectural models for real-time rendering in Unreal Engine.
- Design and implement materials, lighting, and atmosphere to achieve expressive and realistic environments.
- Create architectural animations and cinematic sequences using cameras, sequencer, and keyframing.
- Develop immersive and interactive experiences using Unreal Engine's VR and real-time capabilities.
- Design spatial interactions that communicate architectural intent and enhance user experience.
- Critically reflect on how interactivity, immersion, and virtual presence affect perception and communication in architecture.

[Official course record: TA00BC89](#)

TA00AS04 | Interior Design

5-10 ECTS | Architecture | Intermediate Studies | English, Finnish

Person in charge: Aulikki Herneoja

Content

The aim of the course is to provide students with basic skills in interior design and to guide the students to practical design work. When extending the course to 10 ECTS credits, the aim of the lectures and the exercise work of the course is to deepen the student's knowledge of special issues within interior design, particularly designing fixed furniture. Lectures deal with basic concepts of interior design and the connection between architecture and interior design, including aspects of sustainable development. The focus is on materials, colours, and lighting of the space, as well as the basics of fixed furniture design and textiles. The exercise work is a sketch-level design of an interior. When extending the course to 10 ECTS credits, lectures deal with special issues within interior design and aspects of sustainability, with a focus on fixed furniture design. The student is initiated to practice fixture design and quality factors by analyzing two kitchens. The assignment is a work drawing level fixture design. Visits to professionally designed interiors are included in the course.

Learning outcomes

After completing the course, the student can analyze space and make sketches for an interior, creatively utilising various interior design sectors. The student can implement the basic interior design concepts when presenting his / her design work. The student can apply sustainability principles in his / her design solutions and material selection. When extending the course to 10 ECTS credits, after completing the course, the student can prepare working drawings and identify quality factors, displaying his / her command of the basics of designing fixed furniture. The student can apply sustainability principles in his / her design solutions and material selection, e.g. taking into account waste sorting and life-cycle housing principles.

Official course record: [TA00AS04](#)

464124A | Internal combustion engines

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Juho Könö

Content

Structural systems and basics of piston engines; Mixture formation and cylinder filling; Engine fuels; Exhaust gas emission formation; Ignition, fuel and control systems; Main dimensioning methods for piston engines; Theoretical work cycles and efficiencies; Charging methods; Technical measurements for engines Measuring and data acquisition systems of engine laboratory; Measurements of experimental room conditions; Engine braking units; Engine load cycles; Power; torque and speed of rotation; Measuring air quantity; Measuring fuel mass; Determining the air coefficient; Lambda sensor; Exhaust gas emission analyzers; Combustion pressure sensor of a cylinder; Experiments: determining engine load cycles; Characteristic fuel consumption with various loadings; Determining exhaust gas emissions with various tests cycles.; Testing exhaust gas catalytic converter; Reporting experimental measurements.

Learning outcomes

The aim of the course is to provide students with general conception of vehicle and machinery engines, operating principles, main dimensioning methods, thermodynamic work cycles, environmental issues and maintenance. The other main aim of this course is to familiarize the student with experimental research methods in engine laboratory, measuring and data acquisition methods, measuring technology, systematic planning and implementation of measurements, discussion of experimental results, reporting and quality systems of laboratory measurements as well as product development activities. The student is capable of accounting for working principles of a piston engine. The student is able to explain mixture formation, factors affecting cylinder filling and burning processes, exhaust gas emission formation and methods of maintenance. The student is able to perform basic dimensioning of charged and naturally aspirated piston engines and thermodynamic calculations as well as draw up characteristic drawings.

The student is capable of using international standards related to measurements of internal combustion engines and quality systems with expertise. The student is able to account for operating principles and requirements of engine load device, measuring device and data acquisition system. The student is able to draw up measurement plans, perform measurements, write measuring reports and perform a critical evaluation of the results.

TI00AH12 | International Cross-Disciplinary Product Development Project

10 ECTS | Industrial Engineering and Management | Basic Studies | English

Person in charge: Kari-Pekka Heikkinen

Content

The course provides an overview of the specific characteristics of international product development and innovation activities, and involves the implementation of product development projects based on scientific research. The course focuses on developing solutions for the needs of society, industry, and business, grounded in scientific principles. As part of an international team, students will produce, during the course, the following components: 1) a prototype of a scientifically-based new solution., 2) a presentation of the solution. 3) a product presentation to be held at the end of the project. 4) final report detailing the group's solution. The final report will include information on the genesis, implementation, technological and scientific background of the solution, as well as a potential path for commercialisation. Additionally, students will reflect on their own learning during the course of the project.

Learning outcomes

The student deepens his / her understanding and skills in product development and prototyping and develops the following skills:

- 1) Negotiation skills with experts related to one's own innovation project,
- 2) To acquire information about technology and other know-how related to one's own development project,
- 3) To direct one's own team's innovation activities and product development project in order to achieve the desired result,
- 4) Understand the basics of using demanding prototyping tools and how computer and mechanical tools, such as 3D printing, modeling, laser cutting, and programming can be used to build different level of prototypes.
- 5) Is able to use various user-centered product development methods for development testing, forecasting and ideation,
- 6) Is able to work as part of a self-directed and decentralised global product development team and has the needed interaction and cultural skills.

Official course record: TI00AH12

TI00AV57 | International Cross-Disciplinary Product Development Project

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Kari-Pekka Heikkinen, Nina Jackson

Content

The course provides an overview of the specific characteristics of international product development and innovation activities, and involves the implementation of product development projects based on scientific research. The course focuses on developing solutions for the needs of society, industry, and business, grounded in scientific principles. As part of an international team, students will produce, during the course, the following components: 1) a prototype of a scientifically-based new solution., 2) a presentation of the solution. 3) a product presentation to be held at the end of the project. 4) final report detailing the group's solution. The final report will include information on the genesis, implementation, technological and scientific background of the solution, as well as a potential path for commercialisation. Additionally, students will reflect on their own learning during the course of the project.

Learning outcomes

The student deepens their understanding and skills in product development and prototyping and develops the following skills:

- 1) Negotiation skills with experts related to one's own innovation project,
- 2) To acquire information about technology and other know-how related to one's own development project,
- 3) To direct one's own team's innovation activities and product development project in order to achieve the desired result,
- 4) Understand the basics of using demanding prototyping tools and how computer and mechanical tools, such as 3D printing, modeling, laser cutting, and programming can be used to build different level of prototypes.
- 5) Is able to use various user-centered product development methods for development testing, forecasting and ideation,
- 6) Is able to work as part of a self-directed and decentralised global product development team and has the needed interaction and cultural skills.

[Official course record: TI00AV57](#)

555204A | Internship

5 ECTS | Industrial Engineering and Management | Practical Training | Finnish

Person in charge: Osmo Kauppila

Content

The student defines the exact IEM focus of the report during the course and may discuss it with his/her teacher tutor.

Learning outcomes

The objective is to familiarise students to industrial engineering and management in practical work life. During the course, students learn to observe his/her working environment from theoretical viewpoints of Industrial Engineering and Management (IEM). From the working environment, the student is able to identify IEM themes and classify them. The student is able to select theoretical references relevant for the topic and is able to evaluate the working environment based on the theoretical references. The student is able to draw up a report based on given instructions.

[Official course record: 555204A](#)

TA00AK05 | Introduction to Architectural Research

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Aale Luusua

Content

Lectures, workshops and seminars, an independent/group assignment, and independent readings of architectural literature.

Learning outcomes

After completing the course, the student is able to: 1) recognise the fundamental areas of knowledge and themes pertaining to the field of architecture, and how these connect to architectural research literature; 2) know the central methods of knowledge production and understand design a method of producing knowledge; and 3) reflect on their own work, including their design process. The student is also able to critically seek for, read and interpret knowledge from sources within their own discipline, to creatively formulate new arguments based on these readings, and to present these arguments verbally. The student is able to understand and use a chosen reference system.

[Official course record: TA00AK05](#)

OH00AQ36 | Introduction to biomaterials and biomechanics

5 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Mikko Finnilä

Content

Biomaterials, tissue engineering and biomechanics terminology, biomechanical parameters and material models, properties of biomaterials, characterisation methods, rheology, Darcy's Law, elastic and fracture behaviour of materials, biomaterial types (metals, ceramics, polymers and composites), sterilization, biocompatibility (biological systems, cell and tissue interaction with biomaterials, biocompatibility evaluation methods), preparation of biomaterial, experimental measurements of biomechanical properties.

Learning outcomes

Upon completing this course, students will be familiar with the main terminology and definitions of biomaterials, tissue engineering, and tissue biomechanics. The student knows the biomechanical basis of locomotion. The student understands the biomechanical characteristics of tissues and their relationship to the composition and structure of the tissues. The student knows methods and materials in tissue engineering, including the most frequently used characterisation methods of biomaterials and tissues. The student knows different biomaterial types and their properties, and how they are related to human body tissues. The student can list different sterilisation methods. The student is familiar with the legislation and ethics related to biomaterials and implants. The student learns how to perform biomaterial testing and prepare biomaterial.

[Official course record: OH00AQ36](#)

521242A | Introduction to Biomedical Engineering

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Teemu Myllylä

Content

Biomedical engineering is a multidisciplinary field of study that ranges from theory to applications at the interface between engineering, medicine and biology. This course will introduce the subdisciplines within biomedical engineering and general issues of the subdisciplines will be presented together with selected examples and clinical applications. In addition, basic principles of measurements of physiology, biomedical imaging, signal analysis, medical device instrumentation and technology will be lectured. A number of lectures are given by professionals working in different fields of biomedical engineering, presenting their areas of expertise. Furthermore, health technology industry and companies in Finland will be introduced.

Learning outcomes

After completing the course, the student has a basic knowledge of the biomedical engineering discipline and its many applications.

[Official course record: 521242A](#)

080926A | Introduction to Biomedical Imaging Methods

1-3 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Sami Kauppinen

Content

Differences between in vivo, ex vivo, and in vitro imaging.
Light and electron microscopy.
Optical projection and coherence tomography.
Optical in vivo imaging.
Magnetic resonance imaging.
Fourier transform infrared imaging spectroscopy and Raman imaging spectroscopy.
Micro-computed tomography.
The basics of image analysis and interpretation.

Learning outcomes

The student understands and can describe the basic principles and main applications of imaging methods used in biomedical research.

[Official course record: 080926A](#)

488054A | Introduction to Bioproduct and Bioprocess engineering

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Elisa Koivuranta, Johanna Panula-Perälä

Content

Renewable raw materials and their properties, value chains of bioproduct processing. Industrial biotechnology for food and pharmaceutical applications, materials industries and environmental applications.

Learning outcomes

After completing this course, a student should be able to identify key renewable natural resources and their sustainable and economical processing via mechanical, chemical and biotechnological methods. The student is able to recognize the major properties of the bioproducts and their use in different applications and basics of biotechnical principles.

[Official course record: 488054A](#)

485101A | Introduction to building construction

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Liedes

Content

Information sources for the construction industry. The construction process, its parties and the functions of the parties. Building Act and Decree. Key building regulations, such as structural strength and stability, fire safety, healthiness, humidity control, operational safety, accessibility, noise abatement and noise conditions, and energy efficiency. Building elements, structures and types of structures. The main building materials, their properties and manufacture. Thermal moisture engineering operation of structures. Product approval and CE marking. Construction life cycle, carbon footprint and environmental impact.

The course includes the practice of the following generic skills:

- *Analytical, critical and creative thinking skills
- *Well-being self-development skills
- *Sustainability, responsibility and ethical skills

Learning outcomes

The student is able to explain the principles of construction control systems. The student understands the principles of building design and is able to prepare the main architectural drawings for a detached house. The student is able to describe the stages of the building construction process, its parties and the tasks of the parties. They are able to tell about the key physical functions of buildings, building regulations and building services of houses. The student is able to collect ready-made information on construction products and construction types and tell about the properties, product groups, suitability for construction, and the health and environmental impacts of key building materials. In addition, the student is able to explain the practices related to the product approval of construction products and to apply the life cycle and carbon footprint thinking of building materials in design.

[Official course record: 485101A](#)

521077P | Introduction to Electronics

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Topias Järvinen

Content

Structures and interfaces of electronic devices.

Electromagnetic properties of materials (conductivity, dielectricity, magnetism and semiconductivity).

Electronics components (resistors, capacitors, inductive components and semiconductors). Interconnection technologies and circuit board technologies.

The future of electronic materials and application areas.

Learning outcomes

1. Student understands the block structures of electronic devices and their signal processing paths.
2. Student can identify the interfaces of analog and digital electronics and the software operations.
3. Student is able to identify and classify electronics components and compare their properties.
4. Students can describe electric conductivity and apply the phenomenon on designing and choosing resistors.
5. Student is able to estimate the difference between dielectric materials and how they affect the properties of a capacitor.
6. Student can compare properties of magnetic materials and how they affect inductive components.
7. Student can identify semiconductivity and is able to list typical semiconductor components.
8. Student can classify different circuit board techniques and is able to choose proper coupling techniques.
9. Student can identify the future technologies of electronics materials.
10. Student will learn multi- and interdisciplinary skills; to be able to compare the differences and similarities between their own field of study and related disciplines; to be able to be open to the perspectives of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field, and to be able to work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields.

[Official course record: 521077P](#)

AY521077P | Introduction to Electronics (OPEN UNI)

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Topias Järvinen

Content

Structures and interfaces of electronic devices.

Electromagnetic properties of materials (conductivity, dielectricity, magnetism and semiconductivity).

Electronics components (resistors, capacitors, inductive components and semiconductors). Interconnection technologies and circuit board technologies.

The future of electronic materials and application areas.

Learning outcomes

1. Student understands the block structures of electronic devices and their signal processing paths.
2. Student can identify the interfaces of analog and digital electronics and the software operations.
3. Student is able to identify and classify electronics components and compare their properties.
4. Students can describe electric conductivity and apply the phenomenon on designing and choosing resistors
5. Student is able to estimate the difference between dielectric materials and how they affect the properties of a capacitor.
6. Student can compare properties of magnetic materials and how they affect inductive components.
7. Student can identify semiconductivity and is able to list typical semiconductor components.
8. Student can classify different circuit board techniques and is able to choose proper coupling techniques.
9. Student can identify the future technologies of electronics materials.
10. Student will learn multi- and interdisciplinary skills; to be able to compare the differences and similarities between their own field of study and related disciplines; to be able to be open to the perspectives of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of their own field, and to be able to work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields.

Official course record: AY521077P

521150A | Introduction to Internet

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Erkki Harjula

Content

The design principles and architecture of the Internet, data link layer and most important access network technologies, TCP/IP protocol stack and its most important protocols, most important Internet applications, principles of Internet security and multimedia, internet's challenges and Future Internet.

Learning outcomes

Upon completion of this course, students know and understand the basic concepts, know the key terminology and can write clearly with justifications about the following key areas of the course, which are:

- > - The design principles of the Internet, its architecture, functionality and challenges
- > - The role of the data link layer and the most important access network technologies
- > - The structure and the most important protocols of the TCP/IP protocol stack
- > - The most important internet applications and their protocols
- > - The basic principles of internet security and multimedia applications

Additionally, students who have attained grades 2 or 3 have demonstrated satisfactory capability to perform practical software implementation work and/or solving Internet-related problems relevant to most centric course key areas. Students who have attained grades 4 or 5 have demonstrated solid capability to perform practical software implementation work and analytical skills for solving technical and research problems relevant to the course key areas.

Generic skills:

In the course, students learn the basics of digital communication and the Internet. The course requires the ability to use the necessary information and computer systems. Upon completion, students are expected to have a holistic understanding of the roles and cooperation of different protocol layers, as well as the ability to apply this understanding in practice. Students are also expected to be able to recognize their roles and responsibilities related to studying, and to demonstrate goal-oriented independent study skills, including time management, planning, implementing plans, and monitoring their progress. Laboratory and exercise work require and develop generic skills such as teamwork, reporting, information retrieval, and source criticism. The course includes participants from diverse educational backgrounds and cultures.

Official course record: 521150A

462103A | Introduction to Maintenance

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jouni Laurila

Content

Basic Concepts, Objectives and Effects of Maintenance, Types of Maintenance and Major Maintenance Strategies, Failure and Affected Factors, Reliability and its Modeling, Dependability and Indicators of it, Life Cycle Costs and Profits, Importance of Lubrication and Cleanup in Maintenance, Maintenance and Machine Design.

Learning outcomes

After completing the course, students will be able to explain key concepts related to the maintenance industry, define what maintenance is, and describe its most important impacts on productivity, safety and the environment. The student will be able to name the levels of maintenance activities and describe what aspects are involved in choosing a maintenance strategy. After the course the student is able to calculate the most important reliability indicators and evaluate the overall efficiency of production equipment and the factors affecting it, and classify maintenance activities as corrective and preventive. The student is able to explain what issues and practices are essential for keeping the production assets in good condition. The student can also take into account maintenance related issues in different planning tasks.

[Official course record: 462103A](#)

463101A | Introduction to manufacturing technology

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jyri Porter

Content

Mechanical engineering materials, workshop manufacturing methods and tools, measurements, assembly, manufacturing design, numerical control.

Learning outcomes

The aim of this course is to give students a general view of manufacturing methods. The primary emphasis of the course is on the cutting methods of metals. Upon completion of the course, the student is able to name the key areas of manufacturing technology and the most important cutting methods. In addition, the student is able to choose the applicable cutting methods and tools for achieving the basic manufacturing tolerances. The student is able to explain the basic features of the most common materials of cutting tools. The aim of the course is to create a general understanding of the manufacturing methods of the metal industry.

[Official course record: 463101A](#)

465101A | Introduction to materials for mechanical engineering

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jaakko Hannula

Content

Solidification and phase transformations, plastic deformation, static recovery and recrystallization, effect of microstructure on mechanical properties of metal alloys, typical corrosion mechanisms, fatigue in metal alloys, creep in metal alloys, and non-destructive and destructive material testing.

Learning outcomes

The aim of the course is to introduce the common physical (metallurgical) phenomena in metal alloys and other construction materials. The student understands the effect of different microstructural features on the mechanical properties and the processability of the above mentioned materials. Finally, the student is familiar with typical non-destructive and destructive testing techniques in material science.

[Official course record: 465101A](#)

521070A | Introduction to Microfabrication Techniques

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Niina Halonen

Content

The content of the course covers fabrication methods of micro-, nano- and optoelectronics as well as MEMS systems:

1. Fabrication methods for silicon based electronics and MEMS systems
2. Printing methods for micropatterns
3. Nanomaterials and fabrication.
4. Sustainability in electronics

Learning outcomes

The student

1. Can present the processing of source materials used to manufacture micro- and nanoelectronics/mechanics and analyze the required material properties depending of the application
2. Can explain the fabrication methods and discuss the characteristic features of each fabrication method, including their utilization and restrictions.
3. Is capable of designing a fabrication process for a simple microelectronics application and is able to identify the process steps also in complex application.
4. Understands how the concept sustainability can be included in manufacturing of electronics.

[Official course record: 521070A](#)

491101P | Introduction to mining

5 ECTS | Mining Engineering and Mineral Processing | Basic Studies | Finnish

Person in charge: Saija Luukkanen, Jyrki Salmi

Content

Different stages of mine development: Exploration, environmental aspects, geochemical and geophysical measurements, basics in mining engineering and mineral processing.

Learning outcomes

After completing the course student can explain the various stages of mine value chain from exploration until the final concentrate. Students understand the economical, social and environmental aspects of sustainable mining.

[Official course record: 491101P](#)

521079S | Introduction to Nanotechnology

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Krisztian Kordas, Olli Pitkänen

Content

Nanotechnology definitions and the nanomaterials around us. Health concerns. Synthesis methods; morphological, structural, electrical, optical and spectroscopic characterization of nanomaterials. Properties on the nanoscale. Integration and device development with nanomaterials. Current and future applications.

Learning outcomes

1. The students will acquire the basic principles of nanoscience and technology.
2. The course will also help understanding and rational thinking concerning strategies towards practical synthesis and safe utilization of nanomaterials.

Official course record: 5210795

465107A | Introduction to physical metallurgy

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Olli Nousiainen

Content

Crystal structure, bonding types, reciprocal lattice, XRD, SEM/EBSD, and TEM.

Learning outcomes

The aim of the course is to introduce common crystal structures in metal alloys. A student knows how to describe crystal planes and crystal directions of a cubic crystal structure using Miller indices. The student also understands the interactions between x-ray radiation (or electronic beam) and metallic specimen. Finally, the student is able to analyze data obtained from XRD, SEM/EBSD and TEM studies.

Official course record: 465107A

477013P | Introduction to Process and Environmental Engineering

5 ECTS | Process and Environmental Engineering | Basic Studies | Finnish

Person in charge: Outi Ruusunen

Content

1. Unit operations. 2. Material balances. 3. Phenomena inside processes. 4. Process control and automation. 5. Material transport. 6. Principles in use, planning and protection of water and land resources: primary production, municipalities and industry. 7. Energy systems. 8. Industrial processes as a part of society.

Learning outcomes

Students can examine industrial processes using the methods and perspectives of process and environmental engineering (e.g. unit operations, material management, phenomenon-based considerations, automation, energy and environment) and they recognize the role of different areas of the process and environmental engineering, when these areas are considered in more detail in the forthcoming courses. In reporting the assignments and using source materials, the student applies analytical, critical, and creative thinking skills. During the course, the student practices communication, interaction, and presentation skills, as well as sustainability and responsibility skills.

Official course record: 477013P

AY00BE39 | Introduction to Process and Environmental Engineering

2 ECTS | Process Engineering | Basic Studies | Finnish

Person in charge: Outi Ruusunen

Content

The course is divided into six thematic areas: unit operations, material balances, phenomena inside processes, process control and automation, energy systems, and industrial processes as a part of society.

Learning outcomes

Upon completing the course, students understand the key concepts and phenomena of process and environmental engineering. They can examine industrial production processes using the methods and perspectives of process and environmental engineering (e.g. unit process thinking, phenomenon-based approach, automation, energy, and environmental impacts).

Official course record: [AY00BE39](#)

TA00AV38 | Introduction to Renovation

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Matti Lakkala

Content

- Established drawing conventions for renovation construction
- The architectural design process—design objectives and solutions—and its role in relation to other design disciplines
- Circular economy, carbon footprint, and carbon handprint in construction
- Technical service life and maintenance cycles of properties, building service life, and the designed service life of buildings and their components
- Old detached houses as part of the built environment
- Structural damage mechanisms in detached houses
- Values and factors affecting the preservation of buildings

Learning outcomes

After completing the course, the student will be able to:

- Produce architecturally appropriate main-level drawings for the basic renovation of a detached house, using established drawing conventions for renovation projects.
- Explain the role of architectural design in relation to other design disciplines within the context of renovation construction.
- Recognize the role of renovation construction as part of the circular economy in construction and its impact on the carbon footprint and handprint of the built environment.
- Consider the technical, functional, aesthetic, and economic factors that may influence the feasibility of renovation projects.
- Understand the architectural design process in broad terms within the context of renovation construction.
- Describe concepts related to the service life of buildings and building components and analyze their impact on renovation design from an architectural perspective.

Official course record: [TA00AV38](#)

485102A | Introduction to structural design

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Liedes

Content

Regulations and supervising. The principle of design verification. The loads and effect. The principle of using of eurocode. The principle of plastic theory on on structure design. Structure systems. The joints of structures.

The course includes the practice of the following generic skills:

- *Analytical, critical and creative thinking skills
- *Communication, interaction and digital skills

Learning outcomes

After completing the course the student is able to name technical regulations and instructions, which guide construction. After completing the course students can explicate principle of verifications and plastic theory on structure design and also different loads on structure. Student estimate design loads by calculation and design load effect in structures. Student can describe different structure and bracing systems.

[Official course record: 485102A](#)

080901A | Introduction to Technology in Clinical Medicine

5 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Eveliina Seppälä

Content

The course introduces students to clinical medical technology. Lectures and demonstrations by experts in various of clinical medicine guide students through the reference frameworks of these fields and present the technical methods in use and their development needs are presented.

Learning outcomes

After completing the course, the student

- can identify technologies in different fields of clinical medicine
- can describe operating principles behind these technologies and evaluate the advantages and limitations of the technologies
- is able to be open to the viewpoints of representatives of other fields and to identify possible interdisciplinary perspectives that could promote the development and cooperation of one's own field

[Official course record: 080901A](#)

TI00AV52 | IPIC Professional Skills

4 ECTS | Industrial Engineering and Management | General Studies | English

Person in charge: Kari-Pekka Heikkinen, Nina Jackson

Content

Pre-orientation material
Orientation week events
Reception of the degree program
Getting to know each other and forming a group
Library information and study planning
Creating a personal study plan
Small group guidance and getting to know the student guild
Getting to know the staff and study direction information
In addition to these, other private tutor and small group guidance events will be announced during the study period.

Introduction to project work
Characteristics of IPIC project courses
Challenges and rewards
Tools used in IPIC-projects

General skills
Teamwork and collaboration
Creativity
Communication and influencing
Emotional intelligence and empathy
Resilience, flexibility, and adaptability

Team building
Team building camp

Thesis work
Thesis work opportunities
Ideation

Learning outcomes

Upon completion of the course, the student is able to plan his/her studies and time management based on the degree program curriculum. The student is familiar with the stages of his/her study path and is able to apply appropriate tools in study planning work. The student knows where to find support for his/her studies in different stages of the studies and in different personal life situations.

After the course the student is familiar with his/her study group. The student has also developed general skills of the future product leader and has built a reflective portfolio of the effect of IEM Master's studies on their professional skills and identity. He/she is also aware of the nature, pedagogical practices, and key concepts and tools of the upcoming project courses as well as the different thesis work possibilities connected to them.

Official course record: [TI00AV52](#)

TP00BC27 | Kestävän kehityksen sementtimäiset materiaalit

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Hellen Silva Santos

Content

Properties, processing, and utilization potential of industrial residues in various applications. Specific focus in novel high-volume applications in construction materials. Basics of cementitious binder chemistry. An overview of regulatory aspects related to waste utilization. Environmental and safety aspects of materials. Product development in the context of industrial residues and the potential business models.

Learning outcomes

Upon completion of the course, the student can rationalize the main incentives and challenges behind the utilization of high-volume, inorganic industrial waste-streams such as steel slags, mining residues, construction and demolition waste, incineration residues and more. The student will understand how to correlate the physico-chemical properties of the waste-stream material with the possible recycling options. The student will gain familiarity with environmental and legislative aspects related to utilization of industrial residues. The student can think about the business models perspectives while taking the limitations set by the environmental and legislative aspects and the industrial residue into account.

Official course record: TP00BC27

521307A | Laboratory Exercises on Analogue Electronics

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Jussi-Pekka Jansson

Content

Five laboratory exercises

1. Passive RC-circuits
2. Diodes and their applications
3. Bipolar transistor amplifiers
4. Operational amplifiers and their applications
5. MOS-transistor, tuned LCR-circuit and tuned amplifier, oscillator.

Learning outcomes

The student is able to design basic electronic structural blocks and verify their functionality in a CAD simulation environment. The student is able to independently realize and test a small-scale design object using analogue circuit techniques and tools. The design exercises deepen the understanding of the material presented in courses Principles of Electronics Design and Analogue Electronics I.

Official course record: 521307A

488128S | Laboratory tests in water resources engineering

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Ali Torabi Haghighi

Content

In the lectures: Units of measurements, error and mistake in laboratory works, how to write lab report, safety in laboratory, calibration, introduction to laboratory test in fluid mechanics and open channel hydraulics, introduction to laboratory tests in water and waste water engineering and introduction to groundwater engineering.

In laboratory: Laboratory works on Fluid mechanics and open channel hydraulics contain different method for discharge measurement, Bernoulli equation, Momentum equation, reservoir outflow, Pump and pumping, gates and weirs, hydraulic jump and tracer test. Laboratory works on Ground water engineering contain hydraulic conductivity (K), specific yield (S), porosity (n) and PF curve test, Darcy law and groundwater flow, contaminant transport. Laboratory works on water and waste water engineering contain Jar test experiment, settling velocity, limestone (CaCO₃) filtration, aeration determination of Fe, Cl⁻, Mn.

Learning outcomes

Upon completion this course, the student improves their skills of working in a team of fellow students to share expertise and execution responsibilities. The student understands the laboratory testing procedures and the associated parameters that help in estimating the water, and waste water properties. The laboratory work contains 3 main parts: fluid mechanics and open channel, water and waste water and ground water engineering.

521176A | Laboratory Works of Electronic Measurement Techniques

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Christian Schuss

Content

An overview to electronic measurements by concentrating to few topics: temperature, light and moisture sensors, measurements of filter and amplifier properties, frequency domain measurements, lidar measurements, reject of interference and noise.

Learning outcomes

After completing the course, the student

1. can design and conduct measurements to define amplifier and filter properties,
2. can design and conduct measurements with spectrum analyser and FFT oscilloscope,
3. can design and conduct measurements to define light and photosensor properties.
4. can apply techniques to increase precision and can detect and reject interference.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

Official course record: 521176A

462104A | Machine automation

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Yrjö Louhisalmi

Content

Basics of automation; Basics of digital technology and logic; Description of operation sequences; Architecture of programmable logic controllers and their programming; Distributed systems and fieldbuses.

Learning outcomes

Upon completion of the course, the student will be able to explain the basic principles and structures of a typical machine automation system. The student is able to divide an automation system into basic elements and explain their role and significance in the system. The student can apply the basic digital technology and logic methods in designing a typical machine automation system. In addition to this, the student knows the operating principles of programmable logic controllers (PLCs) and is able to implement a logic control for a typical application. Furthermore, the student is able to explain the basic principles of fieldbuses. The students also knows the basics of machine automation safety design.

Official course record: 462104A

462102A | Machine automation actuators

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Yrjö Louhisalmi

Content

Basics actuators; Basics of hydraulics, pneumatics and electrical drives; Performance and efficiency of actuators; Hydraulic actuators; Pneumatic actuators; Electrical actuators.

Learning outcomes

After completing the course the student can explain the role of actuators in machine automation systems. The student recognizes different types of actuators and can categorize them eg. based on performance and usage limitations. The student is able to design a simple actuator operation and is able to select suitable actuators for a typical automation application. In addition, the student is able to evaluate the sensing needs and operating conditions of actuators as part of the automation system.

[Official course record: 462102A](#)

464103A | Machine design

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Eino Antikainen

Content

Advanced machine design, design of assemblies and design methods. Utilization of Automation and new materials. Meaning of a machine directive. Understanding machine safety regulations in design. Meeting procedures in machine design project and scheduling of the project.

Learning outcomes

Upon completion of this course, the student is able, as a member of a design group, to design an entire machine, explain material selections and answer for meaning to be responsible of dimensioning of machine elements. Student is also able to design new product or essentially improve old product. Student knows what is required when working as a part of a product development project. Student also know essential meeting procedures and can make a schedule for development/design project.

[Official course record: 464103A](#)

464107S | Machine design project

10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Eino Antikainen

Content

Carrying out a wide industry based product development, research or design project. Student can implement a challenging machine design project and create multiple solutions for fulfill requirements of the desired machine. Student can also choose a best solution for final design.

Learning outcomes

The aim of this course is to deepen the student's knowledge of constructions of production machines with the help of extensive exercise. Upon completion of the course, the student has realized a demanding research, development or design project from a topic given by the industry. After completion of the course, the student is able to analyze, develop or improve existing machine components or processes.

[Official course record: 464107S](#)

462111S | Machine diagnostics

10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jouni Laurila

Content

Main methods and measurement techniques used in machine diagnostics, machine vibration analysis and fault identification, main signal processing methods, planning of measurements, implementation and reporting of measurements, dynamic balancing of machines, standards

Learning outcomes

After completing the course, the student is able to utilize various methods of machine diagnostics and use the most common measuring instruments to analyse the operation and condition of machines. He is able to apply the most common signal features and signal processing methods used in condition monitoring and analyse the frequency content of signals to identify the possible problems related to the operation of machines. He is able to draw up a measurement plan, make measurements and analyse the acquired data, as well as report on the results obtained. He will also be able to assess the reliability and comparability of measurements. The student is able to use standards of this field to assist in evaluation of the condition and vibration intensity of machines. He is able to perceive the importance of machine diagnostics for maintenance success and asset productivity.

Official course record: [4621115](#)

464101A | Machine drawing and CAD

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Lassi Keränen

Content

Purpose of machine drawing; Description and dimensioning of parts; Design and viewpoints of manufacturing; Specifications of welds and surface roughness and tolerances on drawings; Principles of diagrammatic drawings. Machine parts and assembly modeling and making drawings with computer aided design software.

Learning outcomes

The aim of the course is to teach students to read and to draw machine drawings and to carry out standard specifications of description methods, legends and dimensioning. Students also learn how to use the computer system for modeling and drafting machine parts and assemblies.

Official course record: [464101A](#)

464126S | Machine dynamics of piston engines

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Miro-Tommi Tuutijärvi

Content

The kinematics and kinetics of crankshaft mechanism; Gas, mass and bearing forces; Tangential force and torque; Mass forces balancing methods; Vibration mechanics of crank shaft mechanism; Dimensioning methods for machine elements of crank shaft mechanism; Analysis methods of piston engines

Learning outcomes

The student will become familiar with mechanical dynamics and vibrations of piston engines and basis for dimensioning of mechanical elements of crankshaft mechanism. The student is capable of determining kinematics and characteristic drawings. The student will be familiar with mass, gas, tangential and bearing force diagrams. Student is able to determine balancing method of mass forces and vibration damping method of the crankshaft mechanism. In addition to this, the student is able to determine dimensions of machine elements and analyze them using methods applicable for engine design.

Official course record: [464126S](#)

OH00AQ40 | Machine learning in Medicine

5 ECTS | Medical Technology, Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Neslihan Yalcin Bayramoglu

Content

1. Introduction to Machine Learning
2. Short Mathematical Review
3. Classical Machine Learning
 - Linear regression
 - Logistic regression
4. Unsupervised Learning
 - Clustering (K-means)
 - Dimensionality reduction (PCA)
5. Principles of ML in Medicine
 - Data issues: sampling, stratification, preprocessing, normalization
 - Challenges and bias
 - Cross-validation and generalization
 - Patient separation
 - Model evaluation
6. Introduction to Neural Networks
7. Tree-Based and Ensemble Models
8. Ethics in Machine Learning

Learning outcomes

The objective of this course is to provide students with a foundation in machine learning and its applications in medicine. Upon completion, student will be able to:

- Understand the basic concepts and principles of machine learning and apply reasoning to interpret data and model results.
- Recognize common machine learning problem types (e.g., classification, regression, clustering) and the methods used to address them in medical applications, and integrate knowledge from medicine, mathematics, and computer science when approaching practical problems.
- Apply basic machine learning models using Python and work with some medical data, considering challenges such as bias or limited sample sizes.
- Gain an understanding of performance evaluation metrics and validation methods.
- Recognize ethical considerations and challenges in applying machine learning responsibly in medicine.

[Official course record: OH00AQ40](#)

462105A | Machine Sensor Technology

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Toni Liedes

Content

Basics measuring systems; Classification of sensors; Characteristics of analog and digital domain; Analog to digital conversion; Basics of analog signal conditioning: amplification, attenuation and filtering; Operating principle of digital sensors; Examples of typical sensors used in mechanical engineering.

Learning outcomes

Upon completion of the course, the student will be able to identify, classify and implement the most common types of sensors used in machine automation. The student will also be able to select sensors for typical machine automation applications. In addition, the student will be able to design a typical analog and digital sensor signal transmission and processing chain.

[Official course record: 462105A](#)

521297S | Machine-type Wireless Communications and Applications

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Hirley Alves

Content

We will overview the historical facts of the introduction of MTC into cellular network, the evolution throughout the development of 5G, beyond 5G and the development towards 6G. Then we will split into two branches:

mMTC: We will discuss the evolution of the service classes under mMTC, key use-cases, scenarios, and performance indicators. We will also overview the state of the art for mMTC, namely traffic patterns and communication models, information and communication theoretic models, solutions massive random access, joint activity and user detection, massive (cell-free/distributed MIMO) for mMTC, network slicing, (non) orthogonal multiple access, machine learning for mMTC, and PHY/MAC security in mMTC, low power wide area networks.

cMTC: we will discuss the evolution of the service class toward scalable, broadband and extreme cMTC (URLLC). We will revise key scenarios, use-cases and performance indicators. We will review the technical enablers for each case that include: information and communication theoretical limits, advanced modulation and coding, advanced PHY technologies, (non) orthogonal access, (non) orthogonal slicing and traffic coexistence, massive (cell free/distributed) MIMO, cross layer optimization, machine learning for cMTC, positioning-aided cMTC, security for cMTC, time synchronization and time sensitive networking.

Future perspectives and research roadmap towards 6G.

Learning outcomes

Machine-type wireless communications (MTC) emerged with 5G introducing two new service modes: massive MTC and critical MTC (also known as URLLC); besides a paradigm change the design of mobile communications networks that transitions from human-centric towards machine centric applications. MTC is at the core the (industrial) IoT revolution offering seamless connectivity to thousands of devices (as in mMTC) or to devices with strict latency, reliability and rate constraints (as in cMTC). As we are moving towards the next generation, 6G, these two modes evolve to address the needs of the market, industry and society. Therefore, upon completing the required coursework, the student will acquire an extensive overview of the state of the art of the recent progress in MTC contextualized with selected applications in IoT and industrial IoT.

[Official course record: 5212975](#)

462107A | Maintenance of machines

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jouni Laurila

Content

Condition based maintenance, failure, wear and lubrication, common condition monitoring methods, basics of vibration measurements, basics of analyzing and signal processing methods, detection of the most common faults in rotating machinery, vibration severity estimation, rotor dynamic balancing, machine design and its influences to condition of machines, standards of this field.

Learning outcomes

After completing the course, the student will be familiar with the principles and most common methods of implementing condition based maintenance. They are able to explain the importance of maintenance in production and apply the most important standards in the field of maintenance. The student knows how to name the most common machine failure methods and the consequences of failure and can tell how to prevent failure in typical situations. The student recognizes the effects of wear and lubrication on the condition of machines and is able to explain the basic concepts related to lubricant analysis. The student knows operating principles and how to use the most common methods used in machine condition monitoring. The student can explain the basics of vibration measurements and can choose appropriate measurement and analysis methods to identify the most common machine failures.

[Official course record: 462107A](#)

555313S | Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Hannele Lampela

Content

Managers and Managing, The Evolution of Management Thought, Values, Attitudes, Emotions, and Culture: The Manager as a Person, Ethics and Social Responsibility, Managing Diverse Employees in a Multicultural Environment, Decision Making, The Manager as a Planner and Strategist, Managing Organisational Structure and Culture, Organisational Control and Change, Motivation and Performance, Leadership, Effective Groups and Teams, Promoting Effective Communication, Managing Conflict, Politics, and Negotiation.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the key concepts of general management
- know the historical developments in the management thought
- have an understanding about the qualifications of a manager in a modern organisation
- understand the principles of the managerial decision making
- distinguish between the terms management and leadership
- have an understanding about good managerial practices

[Official course record: 555313S](#)

555314S | Management Information Systems

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Hannele Lampela

Content

Key concepts: management information systems (MIS), managerial information, different types of MIS applications, information systems in decision making and leadership, the effects of information technology in business processes and their development. Current trends in management information systems technologies and practices, business driven IT infrastructure and management, special characteristics of business development projects that contain ICT implementation.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the key concepts of management information systems
- understand the significance of information and information management in modern business and business process management
- define the information needs of management processes and understands how information systems can meet these needs
- recognise the current trends in management information systems technologies and practices and find out the relevant MIS information sources
- participate in enterprise information system designing, purchasing, and development tasks in a role of an industrial engineer/process developer
- strengthen the self-directing, reflective learning skills

[Official course record: 555314S](#)

555382S | Management of a Project-Based Firm

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Jaakko Kujala, Elina Jääskä

Content

Contextual factors in project business, business model of a project-based firm, integration of services to the business of a project-based firm, project sales and marketing, contracting, project negotiations, project office and portfolio management.

Learning outcomes

Upon completion of the course student will be able to:

- * describe the core areas of the management of the project-based firm
- * explain how different internal and external contextual factors affect the business of a project-based firm, and how they should be taken account in the design of a business model
- * understand the role of services in the business of a project-based firm
- * apply systematic approach to project negotiation
- * evaluate the significance of a single project for the business of a project based-firm
- * describe how project-based firm organizes internal operations to support projects

Official course record: [5553825](#)

477126S | Manufacturing of fibre products

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Elisa Koivuranta

Content

Properties of fibers, web forming, chemicals in paper manufacture, coating process, structure and properties of paper, paper processing, paper grades, and fundamentals of printing technology.

Learning outcomes

Upon completion of the course, a student should be able to identify the unit operations paper and board manufacturing and can explain their purpose of use. The student can name the most important chemicals, fillers and coating pigments and can explain their importance in paper and board making. The student can present the essential properties of papermaking fibres, the structure and properties of paper and board, as well as different paper and board grades. The student knows the fundamentals of printing technology and identifies paper properties essential for printing.

The student is able to apply analytical and systemic thinking by understanding multistage processes as coherent wholes

Official course record: [477126S](#)

463102A | Manufacturing technology I

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Heikki Pirkola

Content

Features of different machining methods and machine tools; Selection of a blank machining method and machine tool according to type of work piece, accuracy and volume of production; Costs and technological possibilities of different machining methods; A review of control techniques, programming, jigs and tools

Learning outcomes

The objective of the course is to familiarize students with the fundamentals of the functions and manufacturing methods of an engineering workshop. In order to apply manufacturing technology, students must know the features of different alternatives and be able to make technically and economically correct choices and combinations. This course emphasizes practicality and a general view of production. After the course, the student is capable of explaining manufacturing functions and methods of an engineering workshop. The student is able to select parts manufacturing methods, machining data, machine tools and tooling equipment. In addition the student can evaluate the alternatives of production automation in manufacturing functions.

Official course record: 463102A

463107S | Manufacturing technology II

20 ECTS | Production Technology | Advanced Studies | Finnish

Person in charge: Heikki Pirkola

Content

Production management; Production systems; Lean- and Just In Time production; Production automation; Construction and choice of machine tools; Fundamentals of tool design; The theory of cutting process; The theory of choosing economical cutting parameters. Electronics products; Components; Manufacturing process; Assembly process; Manufacturing systems and quality control.

Learning outcomes

This course is the major subject for those who are majoring in Manufacturing Engineering. The aim of the course is to give the student the necessary knowledge for production management and for development of a manufacturing instrument. It also provides the student with the competence to choose the most economical equipment and machining methods.

After the course the student is capable of explaining the objectives and functions of production as well as production planning systems and manufacturing systems. The student is able to explain the benefits of the flexible manufacturing system in small batch manufacturing. He/she is able to find competitive operation methods for different production cases. He/she is capable of evaluating machine tool structure knowledge and selecting productive manufacturing solutions. In addition, he/she is able to apply tool systems and machining methods of the different parts manufacturing. The students is also given a general view of electronics products and how they are manufactured. Upon completion of the course, a student should be able to recognize the special characteristics of electronics products on different assembly levels. He/she can explain the electronics components, manufacturing operations and assembly process requirements. He/she can also list and explain the essential factors affecting to quality and methods to ensure it.

Official course record: 463107S

463108S | Manufacturing technology II

10 ECTS | Production Technology | Advanced Studies | Finnish

Person in charge: Heikki Pirkola

Content

Production management; Production systems; Lean- and Just In Time production; Production automation; Construction and choice of machine tools; Fundamentals of tool design; The theory of cutting process; The theory of choosing economical cutting parameters. Electronics products; Components; Manufacturing process; Assembly process; Manufacturing systems and quality control.

Learning outcomes

This course is the major subject for those who are majoring in Manufacturing Engineering. The aim of the course is to give the student the necessary knowledge for production management and for development of a manufacturing instrument. It also provides the student with the competence to choose the most economical equipment and machining methods.

After the course the student is capable of explaining the objectives and functions of production as well as production planning systems and manufacturing systems. The student is able to explain the benefits of the flexible manufacturing system in small batch manufacturing. He/she is able to find competitive operation methods for different production cases. He/she is capable of evaluating machine tool structure knowledge and selecting productive manufacturing solutions. In addition, he/she is able to apply tool systems and machining methods of the different parts manufacturing. The students is also given a general view of electronics products and how they are manufactured. Upon completion of the course, a student should be able to recognize the special characteristics of electronics products on different assembly levels. He/she can explain the electronics components, manufacturing operations and assembly process requirements. He/she can also list and explain the essential factors affecting to quality and methods to ensure it.

Official course record: 4631085

477323A | Mass and Heat Transfer

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Kaisu Ainassaari

Content

Mechanism of heat transfer. Creating and solving differential energy balances. Heat transfer coefficient. Macroscopic balances. Selection of a proper type of heat exchanger. Scale-up and design of a heat exchanger. Design of heat exchanger networks using pinch technology. Exergy analysis for the heat flows. Diffusion. The Fick law of diffusion. Mass transfer in simple systems. Differential mass balances. Models of mass transfer in turbulent systems. Interphase mass transfer. Absorption.

Learning outcomes

After passing the course the student knows what happens when heat is transferred by conduction, convection and radiation. The student can describe energy transfer with differential energy balances. In macro scale the student is able to solve practical heat transfer problems by correlating heat transfer coefficients to dimensionless flow and material characteristics. With the help of these transfer coefficients the student is capable of estimating the size of heat transfer equipment, especially heat exchangers and select the most suitable and profitable types, and to sketch large heat nets and to diminish the costs of the equipments.

The student is able to use the pinch method which optimises the number of heat exchangers and total energy consumption. He/she is also able to apply the exergy principle to make work from thermal energy. With the aid of this principle he/she will be able to divide the costs of the used energy in right proportion based on the processing stage. He/she student is able to explain diffusion as a phenomenon and the factors affecting it. He/she is able to model mass transfer in simple systems by using the theory of Fick. The student is capable of modeling diffusion by differential mass balances. He/she recognises the special features of mass transfer in turbulent systems and the role of different transport phenomena in mass transfer equipment. He/she has rudimentary practical skills applicable to the scale-up of the equipment used for absorption.

The student is able to recognize the generic skills they have learned related to analytical, critical, and creative thinking – analyzing information and distinguishing the essential, as well as problem-solving and drawing conclusions – and related to skills for well-being and self-development – time management and self-direction.

Official course record: 477323A

450099S | Master's Thesis

30 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Veli-Matti Sanaksenaho, Janne Pihlajaniemi, Helka-Liisa Hentilä, Anssi Lassila, Anu Soikkeli, Aulikki Herneojä

Content

The student defines the contents of his / her work, consulting the supervisor of the diploma thesis.

Learning outcomes

The student is able to set objectives to the given design task, and through processes of creative work is able to develop varying solutions based on analyses and problem solving, regardless of the scale of the task. The student is able to apply advanced working methods and tools in a creative manner in the visualization of design work. The student can take the responsibility of his own professional progress and specialization.

In a research-based thesis the student can set goals to the given research, and through processes of scientific research the student can unwrap the set research problems. He/she can justify the chosen research methods from the viewpoints of problem formulation.

Official course record: 4500995

491601S | Master's Thesis

30 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | Finnish, English

Person in charge: Kari Moisio, Saija Luukkanen

Content

Preparation of a written Master's thesis, based on independent field, mining environment and/or laboratory work. The thesis work always includes familiarization with literature and may include fieldwork, research in a mine and/or enrichment facility, laboratory work, questionnaire research, or theoretical work. In addition, the actual thesis is written.

The topic of the thesis is agreed with the professor of the subject (mining engineering, mineral processing technology, or applied geophysics). The thesis work may also have other supervisors/advisors, inside or outside the research units of OMS. One supervisor must be inside the unit. The completion of the thesis is guided during the research and writing phases. The person in charge of the master's program must also be informed about the topic.

Learning outcomes

Learning outcomes: After completing their diploma thesis, the students are deeply acquainted with one of the fields of mining engineering or mineral processing technology. The students are able to use and apply the main research methods and theoretical knowledge of their field, are able to draw conclusions from their observation independently and are able to make use of scientific literature.

Official course record: 491601S

555300S | Master's Thesis

30 ECTS | Industrial Engineering and Management | Advanced Studies | English, Finnish

Person in charge: Osmo Kauppila

Content

The research topic is defined in co-operation with the supervisor.

Learning outcomes

Upon completion of the course, the student will be able to:

- independently solve challenging problems in organisations
- create a research plan, and define a research problem and research questions
- manage his own work according to the research plan
- utilise various information sources and critically evaluate the information obtained
- create a written report according to the instructions

Official course record: 5553005

521975S | Master's Thesis / Master's Degree Programme in Wireless Communications Engineering

30 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Marko Neitola

Learning outcomes

After completing the course the student

- * is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- * is able to apply the methods of their own discipline and recognize the strengths and limitations of methods in other disciplines
- * is able to develop their self-management skills and build professional identity

Official course record: 521975S

469097S | Master's Thesis in Automotive Engineering

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

Official course record: 469097S

522987S | Master's Thesis in Biomedical Engineering

30 ECTS | Medical Technology | Advanced Studies | Finnish, English

Person in charge: Antti Isosalo

Content

The thesis work is carried out independently. The student defines the content of the thesis under the guidance of the supervisor. The degree program committee approves the supervisor, the reviewers and the content.

Learning outcomes

The student is able to set goals for a given task. He can structure the topic coherently, with emphasis on the key issues. Depending on the nature of the work, the student is able to present the existing results or technological implementations so that the methods used in the work are justified in relation to the state of the art in the field of engineering or science in question. He is able to apply the knowledge and state of the art methods of the subject area in his work. He can present clearly his plan and solution implemented, justify the choices made, and assess the functionality of the solution with relevant testing and evaluation methods. In addition, he is able to compare the results against goals and to consider their general significance to modern engineering or science, and assess the broader significance of the results to the company, organization or project. The student is able to produce smooth, clear and finalized text based on technical and scientific writing practices of the field.

The student will learn about many types of generic skills, naturally depending on the work environment (such as university, research institute, company):

- is able to promote their well-being, develop their self-management skills and build their professional identity and maintain their own competence in a goal-oriented manner
- is able to work in international cooperation and takes into account the international operating environment in its operations
- is able to promote constructive cooperation with people from different backgrounds, develops their language skills and is able to challenge their own stereotypical thought patterns
- is able to solve ethical questions in their own field on a justified basis and justify their actions ethically, taking into account different backgrounds, positions of power, values and environments
- is able to apply the methods of their own discipline and to identify the strengths and limitations of the methods of other disciplines
- is able to search for and combine expertise in different fields to find innovative solutions to global challenges as part of a working group
- is able to promote multidisciplinary cooperation and lead multidisciplinary and professional groups
- is able to utilize and critically evaluate digital solutions and AI technologies in their area of expertise in an appropriate, safe and responsible manner, and to identify their effects on research, working life and society

Official course record: [5229875](#)

485999S | Master's Thesis in Civil Engineering

30 ECTS | Civil Engineering | Advanced Studies | Finnish

Content

The student defines the contents of his / her work with the guidance of a master's thesis supervisor. The responsible person of degree programme accepts the subject and content of the thesis work.

Learning outcomes

Upon completion of the thesis the student recognizes practical engineering challenges, be able to draw up a research plan and research questions to define the problem. They know how to plan a project and follow a project schedule. Students are proficient in different research methods and can apply skills learned during master's studies to solving asked research questions. She/he understands practical meanings of solutions, limitations of solutions and can define the benefits to be gained. The student can also utilize different information sources and critically evaluate the information obtained. The student can produce clear and finalized text, in line with technical and scientific writing practices of the field.

Official course record: [485999S](#)

521976S | Master's Thesis in Electronics and Communications Engineering

30 ECTS | Electrical Engineering | Advanced Studies | Finnish, English

Person in charge: Marko Neitola

Learning outcomes

After completing the course the student

- * is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- * is able to apply the methods of their own discipline and recognize the strengths and limitations of methods in other disciplines
- * is able to develop their self-management skills and build professional identity

[Official course record: 5219765](#)

469095S | Master's Thesis in Engineering Mechanics

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

Content

The student defines the contents of his / her work, consulting the supervisor of the Master's thesis.

Learning outcomes

Upon completion of the thesis the student recognizes practical problems, she/he be able to create a research plan and research questions. She/He is able to plan the project and manage her/his own work according to the timetable. Student controls different kind of research methods and be able to apply skills learned during master's studies to solving asked research questions. She/he understand practical meanings of solutions, limited and know if there is some useful outputs. The student can also utilize different information sources and critically evaluate the information obtained. The student is able to produce clear and finalized text, in line with technical and scientific writing practices.

[Official course record: 469095S](#)

488980S | Master's Thesis in Environmental Engineering

30 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Satu Pitkäaho

Content

The student defines the contents of his / her work, consulting the supervisor of the Master's thesis. The programme director accepts the topic and contents of the thesis work.

Learning outcomes

Upon completion of the thesis the student recognizes practical problems, she/he be able to create a research plan and research questions. She/He is able to plan the project and manage her/his own work according to the timetable. Student controls different kind of research methods and be able to apply skills learned during master's studies to solving asked research questions. She/he understand practical meanings of solutions, limited and know if there is some useful outputs. The student can also utilize different information sources and critically evaluate the information obtained. The student is able to produce clear and finalized text, in line with technical and scientific writing practices.

[Official course record: 488980S](#)

469091S | Master's Thesis in Machine Design

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 469091S](#)

469092S | Master's Thesis in Materials Engineering

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 469092S](#)

469098S | Master's Thesis in Mechatronics and Machine Diagnostics

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 469098S](#)

477980S | Master's Thesis in Process Engineering

30 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

The student defines the contents of his / her work, consulting the supervisor of the Master's thesis. The programme director accepts the topic and contents of the thesis work.

Learning outcomes

Upon completion of the thesis the student recognizes practical problems, she/he be able to create a research plan and research questions. She/He is able to plan the project and manage her/his own work according to the timetable. Student controls different kind of research methods and be able to apply skills learned during master's studies to solving asked research questions. She/he understand practical meanings of solutions, limited and know if there is some useful outputs. The student can also utilize different information sources and critically evaluate the information obtained. The student is able to produce clear and finalized text, in line with technical and scientific writing practices.

[Official course record: 477980S](#)

469094S | Master's Thesis in Production Technology

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 469094S](#)

469099S | Master's Thesis in Structural Engineering and Construction Technology

30 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

The student defines the contents of his / her work, consulting the supervisor of the Master's thesis.

Learning outcomes

Upon completion of the thesis the student recognizes practical problems, she/he be able to create a research plan and research questions. She/He is able to plan the project and manage her/his own work according to the timetable. Student controls different kind of research methods and be able to apply skills learned during master's studies to solving asked research questions. She/he understand practical meanings of solutions, limited and know if there is some useful outputs. The student can also utilize different information sources and critically evaluate the information obtained. The student is able to produce clear and finalized text, in line with technical and scientific writing practices.

Official course record: 4690995

469900S | Master's Thesis Seminar

0 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

Content [Finnish source]

Opiskelija esittelee diplomityöprojektinsä seminaaritilaisuudessa. Konetekniikan valmistuvat opiskelijat esitelmän pitäjinä ja nuoremmat opiskelijat, opettajat tai yritysten edustajat kuuntelijoina.

Learning outcomes [Finnish source]

Opiskelija osaa jäsentää tekemänsä projektin ja esitellä saadut tulokset kohdeyleisönsä huomioiden.

Official course record: 469900S

485991S | Master's Thesis Seminar

0 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Virve Merisalo

Content

Each student gives a seminar presentation on their own master's thesis (duration max. 15 minutes plus discussion) before the thesis is approved by the degree programme committee.

Learning outcomes

After completing the course, the student will be able to:

- clearly and convincingly present the structure, objectives, key results, and conclusions of their work;
- structure the theoretical and practical components of the work with the target audience in mind;
- respond to questions raised during the seminar and receive expert feedback;
- utilize the feedback from the seminar presentation in finalizing the work and its reporting.

Official course record: 485991S

521977S | Master's Thesis / Master's Degree Programme in Electronics

30 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Marko Neitola

Learning outcomes

After completing the course the student

- * is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- * is able to apply the methods of their own discipline and recognize the strengths and limitations of methods in other disciplines
- * is able to develop their self-management skills and build professional identity

[Official course record: 5219775](#)

477221A | Material and Energy Balances

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Marja Mikola

Content

Formulation and application of material and energy balances by taking into account the effects of chemical reactions. Non-reactive process units; mixers, separators and heat exchangers. Reactors. Multiunit processes.

Learning outcomes

The student is able to formulate material and energy balances for a process by taking into account the restrictions set by reaction stoichiometry. The student knows how the created mathematical formulation can be exploited in process consideration. The student can also evaluate the correctness of the obtained results thus person is able to critically evaluate knowledge.

[Official course record: 477221A](#)

AY477231A | Material and Energy Balances I (OPEN UNI)

2 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Content

The importance of material and energy balances. The formulation of material and energy balances for non-reacting systems. Process units considered include mixers, separators and heat exchangers. Multiple unit systems are also considered.

Learning outcomes

By completing the course student can formulate material and energy balances for processes which doesn't include chemical reactions. The student knows how the created mathematical formulation can be exploited in process consideration. The student can also evaluate the correctness of the obtained results thus person is able to critically evaluate knowledge.

[Official course record: AY477231A](#)

AY477232A | Material and Energy Balances II (OPEN UNI)

3 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Content

The formulation of mass and energy balances for reacting systems. Taking stoichiometry into account. Multiple unit systems are also considered.

Learning outcomes

By completing the course student can formulate material and energy balances for processes with chemical reactions. The student knows how the created mathematical formulation can be exploited in process consideration. The student can also evaluate the correctness of the obtained results thus person is able to critically evaluate knowledge.

465102A | Materials for mechanical engineering

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jaakko Hannula

Content

Common structural materials in mechanical engineering, including steels (structural, QT, tool, stainless), cast irons, non-ferrous metal alloys (aluminium, titanium, magnesium, copper, nickel) and polymer based materials (structural plastics, plastics composite, elastomers, rubbers). Materials selection taking into account different demands. Ashby diagrams.

Learning outcomes

The objective of the course is to familiarize the student with basic matters concerning properties of metallic and non-metallic structural materials, the area within which the materials are in use, and the principles of materials selection. After the course, the student is able to classify different structural materials such as steels, cast irons, non-ferrous metals, polymer based materials and structural ceramics. The student masters structural materials and their selection so that the student is able to select the most proper structural material for a product or component.

Official course record: 465102A

491600S | Maturity Test

0 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | Finnish, English

Person in charge: Kari Moisio

Content

To demonstrate their familiarity with the topic of their Master's thesis, students must take a mandatory written Maturity Test related to the topic (491600S, 0 cr). The maturity test also demonstrates the ability to write a scientific text.

The abstract written for the Master's thesis and uploaded to Laturi is accepted as a Maturity Test. The Test is evaluated by the professor of the study field (study option/major) in question, or the supervisor of the Master's thesis. In addition to the English summary, students who have received their school education in Finnish or Swedish must enclose the abstract in Finnish or Swedish too, if the Master's thesis is written in English.

If students' proficiency in Finnish or Swedish has not already been demonstrated for their bachelor's degree, the master's degree Maturity Test is written and evaluated as described in connection with the bachelor's degree Maturity Test. In the bachelor's degree, the student demonstrates not only familiarity with the topic of their master's thesis, but also proficiency in Finnish or Swedish (the language of their school education).

Learning outcomes

Learning outcomes: After completing the Maturity test the students can describe the research subject of their Master's thesis consistently and clearly, using the scientific expressions and terminology typical to mining engineering, mineral processing and/or applied geophysics.

Official course record: 491600S

555202A | Maturity Test / Bachelor of Science in Industrial Engineering and Management

0 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Osmo Kauppila

Content

A maturity test is a study unit required by Section 16 of the Government Decree on University Degree, through which the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. In English-language degree programmes, the maturity test shall, as a rule, be taken in English.

[Official course record: 555202A](#)

477994A | Maturity Test / Bachelor of Science in Process Engineering Technology

0 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce text in popular form of the research field and thus show ones familiarity to the field and knowledge of language of school education.

[Official course record: 477994A](#)

480429S | Maturity Test / Environmental Engineering

0 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Satu Pitkäaho

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce text in popular form of the research field and thus show ones familiarity to the field.

[Official course record: 480429S](#)

555302S | Maturity Test / Master of Science in Industrial Engineering and Management

0 ECTS | Industrial Engineering and Management | Advanced Studies | English, Finnish

Person in charge: Osmo Kauppila

Content

A maturity test is a study unit required by Section 16 of the Government Decree on University Degree, through which the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. In English-language degree programmes, the maturity test shall, as a rule, be taken in English.

[Official course record: 555302S](#)

470313S | Maturity Test / Process Engineering

0 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce text in popular form of the research field and thus show ones familiarity to the field.

[Official course record: 4703135](#)

521010A | Maturity Test for Bachelor 's Degree in Electronics and Communications Engineering

0 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Marko Neitola

Content

Relevant to the topic of the thesis.

Learning outcomes

According to the Government Decree on University Degrees (794/2004), to be awarded a lower university degree, the student write a maturity essay which demonstrates familiarity with in the topic of the thesis and skills in the use of Finnish or Swedish. When a student has been educated in a language other than Finnish or Swedish or a student has been educated abroad, the university shall determine separately the language of the maturity essay.

[Official course record: 521010A](#)

450013A | Maturity Test for Bachelor's Degree

0 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi

Content

Written essay

Learning outcomes

The student is able to communicate in Finnish or in Swedish and is able to express himself both linguistically and in writing.

[Official course record: 450013A](#)

450014S | Maturity Test for Master's Degree

0 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Petri Aarnio

Content

The essay is written on the subject of the thesis.

Learning outcomes

The student is able to communicate in the language of the thesis and is able to show intimate knowledge of the field of the thesis.

[Official course record: 450014S](#)

521011S | Maturity Test for Master's Degree, Electronics and Communications Engineering

0 ECTS | Electrical Engineering | Advanced Studies | Finnish, English, Swedish

Person in charge: Marko Neitola

Content

The aim of the maturity test is to confirm the student's familiarity of the thesis area as well as his/her command of the domestic language of his/her school education.

Learning outcomes

After the maturity test, the student has demonstrated that his/her language skills meet the requirements of the work life.

[Official course record: 521011S](#)

485990S | Maturity Test, Civil Engineering

0 ECTS | Civil Engineering | Advanced Studies | Finnish

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce text in popular form of the research field and thus show ones familiarity to the field.

[Official course record: 485990S](#)

488994A | MaturityTest/Bachelor of Science in Environmental Engineering/Technology

0 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Satu Pitkäaho

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce text in popular form of the research field and thus show ones familiarity to the field and knowledge of language of school education.

[Official course record: 488994A](#)

521096S | Measurement Systems

5 ECTS | Electrical Engineering | Advanced Studies | English, Finnish

Person in charge: Christian Schuss

Content

Basics of measurement and testing systems, especially wired and wireless data transmission. Data acquisition cards. Basics of LabVIEW programming.

Learning outcomes

After completing the course, the student

1. is able to design a multisensor measurement systems which store the measurement data.
2. is able to assembly a multisensor measurement systems which store the measurement data.
3. is able to program with LabVIEW.

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

[Official course record: 5210965](#)

462112S | Measuring instruments in machine diagnostics

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Konsta Karioja

Content

Sensors and other measurement instrumentation for machine diagnostics. Planning of condition monitoring actions and evaluating performance of measurement systems. Calibrating vibration measurement systems and crucial signal processing methods in machine diagnostics. Applying standards in planning of condition monitoring measurements.

Learning outcomes

After completing the course, the student will be able to design and calibrate systems for measurements needed in machine diagnostics. They are able to use data loggers, analyzers, data acquisition cards and filters, and other typical measuring instruments and is familiar with the most important features of them. The student also identifies the most important sources of error affecting the reliability and comparability of measurement results. In addition, the student is familiar with essential signal processing methods, which can be utilized for comparing signals and evaluating the reliability of measurements, and is able to perform the most important calculations related to calibrating measurements and the basic functions of vibration measurement systems.

[Official course record: 462112S](#)

477124S | Mechanical processing of biomasses

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisa Koivuranta

Content

Mechanical and chemi-mechanical pulping of wood and their process units, wood powders, engineered wood, biocomposites and pellets.

Learning outcomes

Upon completion of the course, a student should be able to explain mechanical and chemimechmical processing of lignocellulosic raw materials. Also a student should be able to identify the unit operations of mechanical and chemi-mechanical pulping process. In addition, the student can compare fibre properties of different mechanical and chemi-mechanical pulps and can explain their effects on the quality of the end product. Student can explain production principle of wood powders, engineered wood, biocomposites and pellets.

During the course, the student learns to read and make use of the assigned academic text.

461112S | Mechanical vibrations

5 ECTS | Mechanical Engineering, Structural Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

Basic principles; Vibrations of single degree-of-freedom systems; Vibrations of multi-degree-of-freedom systems; Torsional vibration of a power drive chain; Longitudinal, transverse and torsional vibrations of a beam represented by a continuous model; Some approximation methods; Use of FEM in vibration analysis; Introduction to the theory of balancing; Experimental modal analysis.

Learning outcomes

The aim of this course is to familiarize students with the principles and phenomena of mechanical vibrations and show how different vibrations can be represented by a theoretical model and how detrimental vibrations can be avoided in structures and machines.

Learning outcomes: After the course, the student is capable of forming the equations of motion for a single and multi-degree-of-freedom systems and continuous models and is able to solve them using analytical, numerical and approximate methods. Moreover, the student is able to use finite element methods to solve basic vibration problems.

Official course record: 461112S

461114S | Mechanics of composites

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Hannu Lahtinen

Content

Terminology of composite materials. Elastic properties of anisotropic materials. Micro and macro mechanics of lamina. Macro mechanics of laminates. Bending, buckling and vibration of laminates. Principles of dimensioning of laminated structures.

Learning outcomes

After the course, the student can use terminology of composite materials and their typical mechanical properties in the design of structures. The student can explain how the elastic properties of anisotropic materials affect the mechanical behavior of laminated shells and plates and calculate stresses and strains of laminae and laminates. In addition, the student is capable of analyzing bending, buckling and vibration problems of composite laminates by using the classical lamination theory and the finite element method.

Official course record: 461114S

461108A | Mechanics of materials

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Koivurova

Content

The general equations of mechanics. The stress and strain state. Different material models; Linear elastic material, isotropic, transverse-isotropic and orthotropic material models. The concept of strain energy. Theory of plasticity. Yield criterion, plastic flow rule and hardening. Limit state design. Introduction to visco elastic material and creep theory.

Learning outcomes

Upon completing the required coursework, the student knows the theoretical background of the strength of materials and he/she is able to apply the theory of the strength of materials to different kind of design problems needed in engineering mechanics. He/she understand the fundamental concepts of mechanics of deformable solids; including static equilibrium, geometry of deformation, and material constitutive behavior. He/she can discuss the basic mechanical principles underlying modern approaches for modelling of various types of materials under a different type of loadings. This provide students with exposure to the systematic methods for solving engineering problems in solid mechanics. He/she can also build the necessary theoretical background for further structural analysis and design courses.

Official course record: 461108A

462108S | Mechatronics

6 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Toni Liedes

Content

Simulation and modelling of mechatronic systems; Actuators suitable for servo control; Basics of control systems; Sensors in closed-loop applications; Determination of control profiles; Kinematics and inverse kinematics of mechanisms.

Learning outcomes

Upon completion of the course, the student will be able to explain the concept of mechatronics. The student will be able to divide a mechatronic system into parts and describe the meaning of different parts and the interfaces to other parts. The student will be able to analyze the dynamic and kinematic properties of mechanisms and create control profiles for actuators driving mechanisms. The student will also be able to describe the difference between kinematics and inverse kinematics and solve the inverse kinematics of a simple mechanism. In addition, the student will be able to define the basic structure of a digital control system and will be able to evaluate the operating conditions and hardware requirements of digital control.

Official course record: 462108S

OH00AQ37 | Medical Device Regulation and Quality Management

5 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Teemu Myllylä

Content

This course presents the main concepts and definitions in the field of medical device regulation and quality management. In addition, the course provides students with an overview of the medical device product development process, particularly when it comes to its commercialization. The importance of understanding the definition and different classes of a medical device and corresponding regulations will be discussed. Product development process and documentation throughout the product's life cycle by following new regulatory and quality requirements for medical and health technology products will be studied. The course is targeted especially for those who are interested to work in R&D and in quality and regulatory roles in a health technology company.

Learning outcomes

After completing the course you will have a thorough knowledge about product development and regulatory affairs for health technology.

Official course record: OH00AQ37

488312S | Microbial metabolism and biomolecules

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Johanna Panula-Perälä

Content

The course introduces the key metabolic pathways of microorganisms and their regulation from the perspective of industrial biotechnology. The course covers the energy metabolism of sugars, aerobic and anaerobic respiration, fermentation, and their applications in industrial biotechnology. In addition, the fundamentals of protein synthesis and the major biomolecular groups of microbial cells are examined, and the course provides a foundation for understanding microbial production processes and bioprocess engineering.

Independent work carried out during the course develops the student's ability to structure and present information based on written sources clearly and coherently, as well as to utilize digital information retrieval and working tools to support learning.

Learning outcomes

After completing the course, the student will be able to explain the main principles of microbial energy metabolism and the fundamentals of the synthesis of different biomolecules. The student will be able to identify the major groups of biomolecules in microbial cells and explain, at a general level, their function and significance in industrial biotechnology. Upon completion of the course, the student will also be able to explain the effects of control strategies and operating conditions in bioreactor cultivations from the perspective of cellular function.

[Official course record: 488312S](#)

521074S | Microelectronics and Micromechanics

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Krisztian Kordas, Olli Pitkänen

Content

Theory and practice of semiconductor fabrication technologies that provide the basis and enable state-of-the-art semiconductor devices and circuits: pushing the limits of dimensions and speed. The course provides in-depth discussion of classical and EUV lithography, electron and ion beam techniques, thin film deposition and etching methods, as well as chip and nanomaterials integration concepts.

Learning outcomes

Objective: The course provides advanced knowledge on micro- and nanofabrication as well as on Si integration technologies. Recent progress on the field is emphasized from the application point of view. Learning outcomes: After completing the course the student can give account on correlations between basic physics/chemistry and materials processing/technology in microelectronics, micromechanics and nanotechnology. The student can describe design aspects and operation principles of micro and nanodevices. The students get acquainted with working in laboratory environment similar to those in academic and industrial research labs. Laboratory work practice on either (i) thin film fabrication in clean room, (ii) inkjet printing and electrical characterization of thin film devices with nanoparticles or (iii) synthesis of carbon nanotubes and characterization by electron microscopy techniques will provide a good opportunity also to learn how to design and run experiments safely and manage laboratory reports.

[Official course record: 521074S](#)

521075S | Microelectronics Packaging Technologies

5 ECTS | Electrical Engineering | Advanced Studies | Finnish, English

Person in charge: Sami Myllymäki

Content

Radio technology applications are emphasized. Trends of packaging and component technologies. Area array packaging techniques. BGA-components. Micro joining and bonding. Multi-chip-modules: MCM-L, MCM-D and MCM-C modules. Fine line techniques. System level packaging (SOC, SOP). Multilayer substrates and integration of passive components. 3-D packaging. radio electronics modules. MEMS components. Electronics applications to nanotechnology.

Learning outcomes

Upon completing the course

1. The student can explain how electronics packaging technology has since invention of transistors to current date and can estimate how this development is going to continue in future.
2. The student can describe can explain what is meant by microjoining techniques and what are the pros and cons of these.
3. The student can tell what different kind of materials, and why, are used in IC packaging technology.
4. The student can explain what is meant with system level packaging and how the strong miniaturization on IC requires new system level packaging techniques to be developed.
5. He can explain why active and passive components are being, more and more, embedded to be a part of the circuit board.
6. In addition, he can explain why and how radio electronics will be migrate towards circuit board and components on it.

Official course record: [5210755](#)

521215S | Microelectronics project

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Yang Bai

Content

Supervised and independent laboratory works, which could be design, fabrication, characterization, or modelling, or a combination of some of these works, that are related to electronics materials, components, devices or systems

Learning outcomes

After completing the course, the student will be able to:

- Carry out independent laboratory works related to electronics materials, components, devices or systems such as fabrication, characterization, or prototyping;
- Use professional research tools, software or equipment;
- Correctly use scientific literature searching tools;
- Document technical notes and manage scientific data in ethical ways;
- Understand basic routines and procedures in research.

Also:

- Students will be able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.
- Students will be able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines.
- Students will be able to seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group.

Official course record: [521215S](#)

465109S | Microstructural changes in metallic alloys

7 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Olli Nousiainen

Content

Thermodynamics of phase transformations in the condensed state. Phase diagrams. Diffusion and kinetics. Grain and phase boundaries. Solidification and microsegregation. Basics of static and dynamic softening mechanisms. Precipitation. Ferrite, pearlite, bainite, martensite.

Learning outcomes

After completion of the course, the student will be able to apply basic thermodynamic and kinetic concepts to phase transformations. (S)he will be able to evaluate the effect of phase diagrams on the structure of metallic alloys. The student will be able to explain solidification, precipitation reactions, static and dynamic softening mechanisms in metallic alloys, (S)he will be able explain the phase transformations occurring during the decomposition of austenite during cooling and identify the microstructures.

[Official course record: 4651095](#)

492600S | Mining Engineering

10 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Adeyemi Aladejare, Kari Moisio

Content

1. Introduction to mining technology
2. Basic knowledge in geology and rock mechanics
3. Basic knowledge in rock drilling and boring
4. Basic knowledge in rock blasting
5. The mining Cycle
6. Mine ventilation
7. Mine layout
8. Mine development
9. Roof support
10. Ground movement monitoring
11. Mine loading and transportation
12. Open cast method
13. Sublevel caving-VCR
14. Longwall mining
15. Room and pillar
16. Cut and fill method
17. Shrinkage stoping
18. Block caving
19. Leaching method
20. Mining safety, accident and prevention
21. Mining economy
22. Mine automation and digitalization

Learning outcomes

Upon completion of the course students should be able to: 1) use the knowledge of rock mechanics, rock drilling and blasting to make mining planning and mine designs; 2) perform better operations or improve current operations in drilling, blasting, extraction, tunnelling, and comminution; 3) understand the effect of ore recovery on mining economy and resource recovery; 4) gain knowledge on how to improve recovery; 5) gain the knowledge of reducing the damage to the environment due to mining activities.

The course develops the following generic skills: analytical, digitalization, ethics, self-development, internationality, interdisciplinarity, sustainability and responsibility, critical thinking, and interaction and communication.

493301A | Mining Geophysics

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Elena Kozlovskaya, Kari Moisio

Content

The course is intended for geophysicists, geologists and mining and rock mechanics engineers working at mines. The basic techniques of applied geophysics are introduced and explained with application to problems of exploration, development, planning, operation, closure and reclamation of open pit and underground mines. For each method, principles, instrumentation, field procedures, interpretation and case histories are discussed. The students get familiar with the geophysical instrumentation used in specific mining environment. A part of the course is introduction to mining seismology and the modern methods and techniques used to monitor and study seismicity and rock bursts in underground mines.

The course is consisting of four parts.

Part 1 is introduction to mining geophysics and its tasks on different stages of mine life circle.

During the first Introduction lecture the students get familiar with the concept of mine-life circle and with the possible harmful environmental effects of mining. The concept of sustainable development is introduced and explained using the model of the main pillars (social, economic, environmental and cultural) of sustainability in mining industry. Connection with the UN Sustainable Development Goals and mining industry activities is explained.

The role of different multidisciplinary mining specialists (geologists, mining engineers, mine planning and design specialists, geophysicists) and their interaction in realisation of rock mechanics program and ensuring of safety of mining operations is explained.

Part 2 is devoted to problem of rock bursts in underground mines and mining seismology

Part 3 is introduction to other methods of applied geophysics that are used in underground environment (electric and electromagnetic, acoustic emission, optical measurements). In this part of the course the student get familiar also with the methods that could be used to monitor mining tailing storage facilities and map their hydrogeological properties (TSF).

Part 4 is introduction to geophysical methods and equipment that can be used in boreholes, with particular stress upon instruments that can be used in dry exploration boreholes.

Learning outcomes

The students got familiar with geophysical methods and instrumentation used to solve practical problems arising at all stages of mine life circle. They develop analytical, critical and creative thinking skills during performing practical tasks with the real data in EPOS AH TCS EPISODES distributed online platform and interpretation of their results. By working with the distributed EPISODES platform, the students develop their international and multicultural skills: ability to cooperate with the European network specialists dealing with the anthropogenic hazard problem and their professional English language skills. They learn the following digital skills: a) different formats of digital data deposited to platform; b) learn how to read and understand manuals concerning different applications; c) loading the data to application and creation of graphical output.

Official course record: 493301A

492603S | Mining Project Feasibility Study

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Saija Luukkanen, Raul Mollehuara Canales

Content

Mineral resource estimation - geological perspective, mining project valuation, geometallurgy perspective, mineral processing, mine waste management, tailings management, water management, mine closure and reclamation, infrastructure development, environmental studies, permitting and social impacts, external factors and due diligence, cost estimation, financial evaluation and sensitivity analysis.

Learning outcomes

After completion of the course, the students will learn how to:

- Distinguish the distinct phases of mining project development through critical articulation of the objectives, data requirements, and confidence levels at each step.
- Evaluate the quality and confidence of feasibility studies through analysis of the multidisciplinary technical principles, geological assumptions, and engineering parameters.
- Integrate interdisciplinary inputs and comprehend how technical variables (such as mineralogy, extraction techniques, and processing efficiencies) and modifying factors (such as legal and statutory requirements, environmental and social imperatives, ESG best practices) quantitatively affect the structure of a project's financial model.
- Construct reliable financial models by creating thorough economic assessments that integrate capital and operating cost estimations (CAPEX/OPEX) that reflect life-of-mine scenarios.
- Estimate and interpret key financial metrics (e.g., NPV, IRR, Payback Period) to assess the economic viability and risk profile of a mining project.
- Assess the influence of environmental, social, and governance (ESG) factors on the profitability and sustainability of mining projects, and in alignment with worldwide industry standards and ethical practices.

Official course record: 4926035

464122A | Mobile hydraulics

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jonne Untinen

Content

Applications of hydraulic systems in mobile machines; Fundamentals of proportional- and hydraulic technique;. Components and their properties; Basics of design and dimensioning; Maintenance and safety of hydraulic systems. Basics of the digital valves and valve control systems.

Learning outcomes

The objective of the course is to provide the students with a general idea of the design and dimensioning of hydraulic systems used in mobile machines. Upon completion of the course, the student is able to describe the basic circuits and characteristics in mobile hydraulics. The student can also describe the most important components and operational preconditions of the mobile hydraulic system. The student is able design simple mobile hydraulic systems. Furthermore, the student is able have discussions with the experts in the field of mobile hydraulics using relevant terminology. The student is also capable of dimensioning the simple hydraulic drivetrain systems.

Official course record: 464122A

TP00AQ18 | Modelling and control for industrial processes

5-10 ECTS | Process Engineering | Advanced Studies | English

Person in charge: Mika Ruusunen, Aki Sorsa

Content

Module 1: Methods and tools

Recap of data-based modelling, process dynamics and optimization methods. Simulink. Other methods and tools.

Module 2: Bio-technical processes

Bioreactors: models, kinetics and transfer phenomena. Models: different modelling approaches with examples. Measurements and control aspects in fermentation processes. Implementation of a bioreactor model with Matlab/Simulink.

Module 3: Metallurgical processes

Modelling and control examples of steel production processes: coking, sintering, blast furnace, steel converter, continuous casting, and rolling mill. Model solutions by special-purpose simulators. Also some special measurements are introduced.

Module 4: Mineral processing

Mathematical (mechanistic and data-driven) models for processes such as crushing, grinding, flotation, leaching, separation. Examples how to use these models in process design and automation related problems and what kind of benefits can be drawn from their use.

Learning outcomes

Module 1: Methods and tools

After module 1, students understand the main concepts of modelling, control and optimization methodology behind the applications and can use Simulink and other tools adequately to pass the course.

Module 2: Bio-technical processes

After module 2, students can model kinetics and dynamics of bio-technical processes (mainly fermentation) starting from the process phenomena and mass balance models. They understand the limitations of different modelling approaches and assumptions, and fundamentals of monitoring and optimization of bioprocesses with respect to energy, economic, and environmental issues. Students have preliminary skills to develop models in Matlab/Simulink environment.

Module 3: Metallurgical processes

After module 3, students understand the management and control problems in metallurgical industry and can choose between the main modelling and control methods to solve them. They can analyse the control of separate processes and larger process lines and can estimate technical and economic effects of automation in metallurgical industry.

Module 4: Minerals processing

After module 4 students have the skills to understand and develop mathematical models for minerals processing and apply these models in process monitoring, optimization and control applications. Students can recognize the primary physical and chemical phenomena related to the material and energy balances of the (selected) processes. Students can link the control variables, manipulated variables and disturbance variables to the models. Students can differentiate the basic and advanced level controls and are familiar with applications of machine learning and novel monitoring in mineral processing.

Official course record: [TP00AQ18](#)

485305S | Modelling in Geoenvironmental Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Anssi Rauhala

Content

The course covers topics such as stability analysis of earth structures and the design of counter berms, settlement calculations for soil and foundation structures, design of soil stabilization, modelling of seepage flow and contaminant transport in earth dams, modelling of ground freezing and frost protection design, as well as the design of piles and retaining walls. The student learns to utilize digital skills and computer based modelling solutions as part of geotechnical design and analysis, and to report results and conclusions in a manner appropriate for the target audience. In addition, the student learns to critically evaluate the accuracy of the parameters, methods, and technologies used, as well as their suitability within modelling and design processes.

Learning outcomes

After completing the course, the student is able to apply numerical and computer based calculation methods as part of the design and dimensioning of geotechnical and environmental structures. They are able to assess the suitability and reliability of input data and solution methods, as well as their significance for the performance of the structures.

Official course record: 4853055

465108S | Modelling of metal forming processes

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jari Larkiola

Content

The course will cover traditional physical models related to various methods of shaping and shaping, as well as familiarize with computer-based simulation software (eg Abaqus and / or LS-Dyna). Temperature is an essential factor in hot working and the theory and modeling of heat transfer is one part of the course. In addition to the exam, the course includes assignments.

Learning outcomes

Students are initiated into physical models and computer aided modelling of metal forming processes. The object is to give students e.g. readiness of calculate forming forces during plastic deformations utilising simulation softwares.

Official course record: 465108S

521318S | Modern Topics in Telecommunications and Radio Engineering

3-7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Jari Linatti

Content

Varies yearly based on actual topics in telecommunications and radio engineering.

Learning outcomes

After completing the course the student understands and is able to analyze basic principles of the topic which has been presented in the course. The final outcomes will be defined based on the contents of the individual implementation.

Objective: Depending on each implementation's topic, the course gives either an overview or deepens knowledge of actual topics and applications on radio techniques and telecommunications. The course comprises varying topical subjects, applications, research areas. Depending on the subject, the course may comprise a seminar of essays that practices a student for spontaneously acquiring information, improves readiness for making a master's thesis and readiness for performing in front of an audience.

Official course record: 521318S

521183S | Modern Topics in Telecommunications and Radio Engineering 13 - Introduction to Transmitter Linearization by Digital Predistortion

4 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Nuutti Tervo

Content

The basic concepts of power amplifier behavioral modeling and linearization in modern transmitters.

Lectures;

1. Introduction to power amplifiers and nonlinear distortion (2h, during 1 week)

- Basic principles of power amplifiers
- PA nonlinearity and memory effects
- Impact of nonlinearity in a communication system

2. Behavioral modeling of power amplifiers (2h, for 1 week)

- Modelling approaches and their applications
- Volterra-based models
- Coefficient extraction

3. Digital Predistortion (4h, for two weeks)

- Basics of DPD
- Learning methods and approaches for coefficient extraction
- Experimental setups & DPD testing for research

4. Current trends and challenges in DPD (6h, for two weeks)

- DPD challenges in antenna arrays (2h)
- AI-based DPD methods and applications (2h)
- Discussion on recent literature on DPD (2h)

Learning outcomes

Upon completion of the course, the student will be able to

- understand the basic concepts of power amplifier (PA) behavioral modeling and digital predistortion (DPD).
- is then able to model and simulate PA nonlinearity with communication waveforms in MATLAB,
- apply different methods to solve DPD coefficients to linearize power amplifiers, and observe its impact on standard figures of merit.
- recognize how DPD can improve the system performance by allowing PAs to operate in a more nonlinear mode with potentially better efficiency.
- comprehend the basics of phased array linearization by DPD, and different challenges related to novel multi-antenna transmitter linearization
- understand the principles of how artificial intelligence (AI)-based approaches are used for DPD and learns how to employ some of them for solving linearization problems.

Official course record: [521183S](#)

521185S | Modern Topics in Telecommunications and Radio Engineering 15 - Techno-economics of 6G

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Seppo Yrjölä

Content

The course comprises of six topic specific seminars (á 3 hours):

- 1) The emergence and evolutionary continuum of mobile communications from 1G toward 6G
- 2) Future scenarios and anticipated impacts of 6G
- 3) Sustainability and 6G mobile communications
- 4) Value creation and capture in future mobile communications
- 5) Regulatory considerations for 6G
- 6) Implications for the future

Learning outcomes

Upon completion of the course, the student has acquired a deeper understanding of diverse mobile communications phenomena, research methods and approaches. The student demonstrates ability to analyze his/her own subject of study or research in relation to techno-economics disciplines – technology innovations, regulation and business.

Learning outcomes - generic skills:

Analytical, critical, and creative thinking

- Apply analytical and critical thinking skills appropriate to their discipline, taking into account interfaces between fields and the generation of new knowledge.
- Apply creative thinking and problem-solving skills to develop new knowledge, methods, or procedures within their field.

Sustainability, responsibility, and ethics

- Identify and explain the interdependencies between the social, ecological, economic, and cultural dimensions of sustainability within their field of study.
- Assess the impacts of activities in their field on these dimensions of sustainability in a responsible and ethical manner.

Multidisciplinary and interdisciplinary competence

- Analyze and evaluate the strengths and limitations of methods used in other disciplines when working in multidisciplinary or interdisciplinary contexts.

Communication, interaction, and digital skills

- Utilize and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society.

[Official course record: 5211855](#)

IE00BD45 | Modern Topics in Telecommunications and Radio Engineering 18 - Signal Processing Programming

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Lily Lehtomäki

Content

The course focuses on modern signal processing programming (with Python). The specific programming languages and tools may evolve, but the core focus is on high-level architecture combined with low-level performance.

- Object-Oriented Signal Processing: Designing custom data types (classes) to represent signals, handling properties like sampling rate and timestamps automatically.
- Abstraction and Operator Overloading: Implementing mathematical operations as object methods to create intuitive and readable code.
- Performance Optimization: Techniques for accelerating numerical computations. Moving from naive implementations to optimized code using vectorization and compilation (e.g., JIT).
- Algorithm Implementation: Building core SP blocks (filters, convolution, spectral analysis) as reusable software components.
- Memory and Efficiency: Understanding how data is stored in memory and how to minimize overhead in large-scale signal processing.

Learning outcomes

Objectives:

Upon completion, the student:

- Masters Modern Signal Processing Programming: Understands how to apply Object-Oriented Programming (OOP) principles to encapsulate signal data and metadata (such as possibly non-uniform sampling times) into reusable, modular structures.
- Can Implement Custom Signal Operations: Is able to design intuitive interfaces for signal manipulation (e.g., interpolation for adding two signals, if needed), hiding complex implementation details behind clean abstractions such as Python `__add__` dunder
- Masters Code Optimization: Understands the trade-offs between different execution models (interpreted vs. compiled) and can utilize modern acceleration techniques (such as Just-In-Time compilation like Numba in Python or vectorization like in Numpy) to optimize algorithms for high performance.
- Can Bridge Theory and Implementation: Is able to translate mathematical definitions (filtering, transforms) into efficient and readable code.
- Understands the Computing Ecosystem: Knows an overview of the available tools for signal processing programming (e.g. not only Python)

Generic skills: osaa arvioida oman alansa tietoa kriittisesti ja soveltaa sitä monimutkaisten ja ennakoimattomien ongelmien ratkaisemiseksi / is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems, osaa käyttää opinnoissaan alalleen relevantteja digi- ja tekoälysovelluksia tarkoituksenmukaisesti, turvallisesti ja vastuullisesti / is able to use digital and AI applications relevant to their field in their studies appropriately, safely, and responsibly, osaa kuvata osaamistaan, kehittää omaa ammatillista identiteettiään, edistää ryhmän oppimista ja kehitystä sekä tunnistaa elinikäisen oppimisen tarpeen / is able to describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning

HUOM! Tämä kurssi järjestetään vain yhden kerran, (vuoden 2027 alussa: tammi, helmi, maaliskuu). Tulevina vuosina sama kurssi on mahdollisesti pysyvänä kurssina eri koodilla.

PLEASE NOTE! This course will be arranged only once, (at the beginning the year 2027: Jan, Feb, Mar). After that, this might be a permanent course with different code.

Official course record: IE00BD45

521192S | Modern Topics in Telecommunications and Radio Engineering 2 - Strategic Learning in Wireless Networks: Theory and Applications

3-7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Mehdi Bennis

Content

Basics of game theory, reinforcement learning (RL), risk sensitive RL, mean-field game theory, matching theory, and their related applications.

Learning outcomes

After completing the course, the student is able to:

1. Understand and analyse the interactions between learning agents and the environment
2. Know different tools to analyse learning strategies and how to use them for different learning problems
3. Understand the notion of uncertainties, dynamics and risk, and their impact on learning
4. Understand and implement distributed machine learning algorithms

[Official course record: 5211925](#)

521195S | Modern Topics in Telecommunications and Radio Engineering 5 - An Introduction to Wireless Information and Power

3-7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Onel Alcaraz López

No description supplied in the collected record.

[Official course record: 521195S](#)

485504S | Moisture damage remediation design

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Vuokko Lappalainen

Content

Stages and tasks of moisture damage repair planning. Methods of repairing moisture damage, as well as alternative methods of repairing typical repairable structures. Repair work explanation. Examples of demanding repair projects.

Learning outcomes

After completing the course, the student knows the course of the moisture damage repair project and the tasks of the designer. The student is able to assess the need for further research and repairs based on the condition assessment of the building and the condition survey reports. The student is able to evaluate alternative repair methods and acquires the skills to draw up typical repair plans. The student is also able to plan the cleanliness and humidity control of the construction site.

In generic skills, focus is placed on learning analytical and critical approaches and practicing communication and interaction. The student also understands the responsibility related to design and the ethical aspects of the purpose of repair methods and plans. The student understands the importance of occupational safety, self-management, and maintaining competence related to repairs.

[Official course record: 485504S](#)

521394S | Multiantenna Communications

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Antti-Heikki Tölli

Content

Point-to-point MIMO communications, multiuser multiple antenna communications in uplink and downlink, opportunistic communications, massive MIMO, beamforming for mmWave, scheduling and interference management, coordinated multi-cell transmission.

Learning outcomes

* Upon completing the coursework, the student will have a deep understanding of the fundamental multiantenna transmission and reception concepts used in broadband wireless systems.

> * The student understands and can derive the channel capacity for various multiple-input multiple-output (MIMO) communication scenarios, can explain the effect of having the channel state information at the transmitter, and is acquainted with physical modelling of MIMO channels.

> * The student have knowledge of generalized MIMO transmitter and receiver structures for scenarios with and without channel state information. Both linear and non-linear transceiver structures are covered. The Massive MIMO foundations are reviewed including a brief introduction to the its analysis via random matrix theory.

> * After learning the basics in a single-user MIMO communications, the student is acquainted with the basic principles for multiuser multiantenna communications in fading channels and can derive the capacity region for MIMO multi-access and broadcast channels.

> * After the course, the student has also gained understanding on the applicability of multiuser MIMO communication and interference management schemes in realistic multi-cell scenarios, and how these technologies are deployed in current and future wireless systems and standards. In addition, hybrid beamforming and low precision quantization schemes are covered especially intended for mmWave and TeraHz communication scenarios.

[Official course record: 5213945](#)

454505S | Municipal Planning

15 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Helka-Liisa Hentilä, Aale Luusua

Content

The study unit consists of the overall planning of the municipality's land use as part of the planning of the region and the municipality's strategy and functional planning (e.g. transport, business policy), as well as the interactive practices in general land-use planning. During the study unit the student is acquainted with the management of land use planning projects and learns to practice interactive planning and impact assessment in authentic situations. Depending on the planning case, the focus is either on the conceptualization of growth or shrinkage management strategies as part of planning. Students will prepare a strategic land use planning scenario as a group.

Learning outcomes

After completing the course, the student understands the principles of strategic land-use planning and identifies the main features and phases of regional planning and local level master planning. The student knows how to outline the planning context, evaluate the quantity and quality of the analyses / inquiries needed in the planning, and assess their adequacy. The student can carry out basic surveys and inquiries. The student is able to form strategic planning goals in interaction with stakeholders. The student can present land use plans that combine expertise from different fields in the context of uncertainty and ambiguity related to the target area and its changing operating environment. The student is able to justify the plan and prepare responses to the received feedback. The student knows how to plan and implement an interactive land use planning process. The student acquires the basic skills of managing a land-use planning process. The student can promote community and interaction in a multidisciplinary student group and lead a team. The student can communicate plans to the target audience as an expert.

[Official course record: 454505S](#)

OH00AQ43 | Neuroimaging and brain function

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Heta Helakari

Content

Understanding the brain functions and using different imaging methods to study brain are in important role to prevent, diagnose and treat brain diseases. In this course, the student will get familiar to basics in brain structure and functions. The student learns brain imaging methods (main focus in MRI), preprocessing and analysis of the data. Also other brain imaging modalities and multimodal imaging will be introduced.

Learning outcomes

After the course the student

1. knows basic structure and functions of the brain
2. knows, what research and imaging methods are used to study brain structure, functions and disturbances.
3. is able to use main preprocessing and analysis tools (AFNI, FSL) in Linux- and Matlab -environments.
4. is able to critically interpret the analysis results and make conclusions.

Official course record: [OH00AQ43](#)

477306S | Non-ideal Reactors

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Mika Huuhtanen

Content

Mixing models of a flowing material. Residence time distribution theory. Heterogeneous catalysis and biochemical reactions: mechanisms, mass and heat transfer, and reactor design. Gas-liquid reactions: mechanisms, mass transfer, and reactor design. Design heuristics. Bio- and microreactors.

Learning outcomes

After completing the course the student can analyse the effect of non-ideal mixing conditions on the behaviour of a reactor. He/she is capable of explaining the mechanisms of heterogeneous reactions, especially with methods that are used to analyse the effect of mass and heat transfer on the observed kinetics of reactions. The student has rudimentary skills to conduct demanding reactor analysis and to design heterogeneous reactors ((i.e. multicomponent and multiphase reactors). The student is able to apply analytical and critical methods to the course topics.

Official course record: [477306S](#)

477132S | Novel applications in bioproduct industry

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisa Koivuranta

Content

Production and properties of nanocellulose and its applications. Pulp-based textiles fibres and their production. Fractionation of lignin and its utilization in novel applications.

Learning outcomes

Upon completion of the course, a student is familiarized with novel applications in the bioproduct industry (for example nanocellulose, wood-based textile fiber, utilization of lignin). Student is able to recognize the main incentives, possibilities, challenges and barriers behind the development of the novel applications.

The student is able to manage their time effectively, apply academic writing skills, and use critical thinking in the evaluation of information.

Official course record: [477132S](#)

485121S | Numerical methods in structural engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

Introduction. Simulation governance. Principles of elasticity theory and calculus of variations. Bar, beam and arch structures. Plate and shell structures. Structural dynamics and stability.

Learning outcomes

Upon completion of the course, the student

- is able to produce structural calculations by applying advanced analysis and simulation methods in structural engineering, and to critically assess the reliability of the results
- is familiar with and able to develop methods for verifying modelling data and structural analysis results, and is capable of reporting the calculations clearly and in a well-reasoned written form
- masters the variational and energy principles of mechanics and is able to apply them in structural analysis, including in novel and uncertainty-laden situations
- understands the characteristics of different structural models and is able to formulate a purpose-appropriate and validated mathematical model, taking into account underlying assumptions and limitations
- understands the mechanics-based models applicable to the analysis and design of steel, concrete, and timber structures, and is able to evaluate their suitability for different design tasks
- understands the governing principles of shell and plate structures from the perspective of structural design, and is able to make appropriate use of digital analysis tools in a responsible manner

[Official course record: 485121S](#)

555226A | Operations and Supply Chain Management

5 ECTS | Industrial Engineering and Management | Intermediate Studies | English

Person in charge: Päivi Kekkonen

Content

Production types, forecasting methods, capacity planning and queuing models, location and transportation decisions, inventory management systems, aggregate scheduling, MRP & ERP, short-term scheduling, linear programming.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe different production types
- apply different forecasting methods
- plan needed production capacity
- apply location and transportation decisions related methods
- master common inventory management methods
- master aggregated and short-term scheduling

[Official course record: 555226A](#)

555332S | Operations and Supply Network Analytics

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Osmo Kauppila

Content

Operations research in the analytics landscape, linear, integer and mixed integer linear programming, scheduling, simulation and optimization of logistics, supply networks, inventories and queues, demand forecasting, the role and capabilities of generative AI in operations research

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the basic concepts of operations research, its relation to business analytics and data science, and its applications in operations and supply network planning
- apply prescriptive and predictive analytics methods typical to operations research for decision-making regarding operations and supply networks

Official course record: 5553325

521108S | Optical Measurement Technology Exercise

5-10 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Anssi Mäkynen

Content

The content and scope of the course will be confirmed on a case-by-case basis. The amount of ECTS credits is determined by the hours worked by the student.

Learning outcomes

The student

1. is able to justify the chosen implementation principle.
2. is able to assess the suitability of the implementation method for different measurement needs.
3. is able to produce solutions for small-scale optical measurement engineering design tasks.

The student also

1. is able to apply creative approaches to addressing and solving problems in their field
2. is able to independently analyse and critically evaluate information and results, and to develop justified new or improved solutions on that basis
3. is able to utilise multidisciplinary approaches to analyse and address problems within the subject area of the course.

The detailed objectives of the course will vary depending on the assignment.

Official course record: 521108S

080922S | Optical Microscopy and Spectroscopic Imaging

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Jianan Huang

Content

Lecture topics:

1. Light-matter interactions.
2. Principle and instrumentation of optical microscopes
3. Bright-field and dark-field microscopy
4. Phase contrast microscopy
5. Differential interference contrast microscopy
6. Fluorescence microscopy
7. Confocal microscopy
8. Scanning near-field optical microscopy
9. Molecular motions and vibrations
10. Infrared and Raman spectroscopic imaging
11. Multivariate and artificial intelligence-assisted spectral analysis methods
12. Surface enhanced Raman spectroscopy and their biomedical applications
13. Tip-enhanced Raman spectroscopy and single-molecule imaging

Laboratory work:

1. Students will disassemble, re-assemble an fluorescence microscope;
2. Students will stain a onion samples and setup a Kohler illumination on a bright field microscope to collect images;
3. Students will observe how a Raman microscope is setup to measure and scan a sample to obtain Raman spectra and do the Raman spectral analysis.

Learning outcomes

Upon completion of the course, the student can:

1. Explain the physical backgrounds of light-matter interactions and molecular vibrations.
2. Describe the working principle and components of common optical microscopy and spectroscopy methods.
3. Perform microscopic imaging in practice.
4. Perform data analysis for spectral data.

[Official course record: 0809225](#)

521241A | Optical systems

5 ECTS | Electrical Engineering | Intermediate Studies | English, Finnish

Person in charge: Anssi Mäkynen

Content

Basics of geometrical and physical optics. Basic optical phenomena and their applications. Common optical components and instruments. Gaussian analysis of an optical system. Laser beam and laser optics. Non-imaging optics. Optical design software tools. Optics as part of an electronic system.

Learning outcomes

Student

1. is capable of explaining the basic facts of geometrical and physical optics
2. is able of explaining the operating principles of simple optical components and instruments
3. is able to describe an optical system as a principal point representation based on Gaussian analysis
4. is able to explain the properties of a laser beam
5. is able to estimate the radiometric properties and resolving power of an ideal optical system
6. is capable of recognizing and explaining the difference between imaging, non-imaging and laser optics
7. is capable of designing and optimizing simple imaging and non-imaging lens systems as well as optics for laser beam modification using optical design software tools.

Student also

1. is able to draw analytical conclusions based on acquired knowledge
2. is able to apply creative methods within the subject area of the course
3. is able to purposefully develop their general and discipline-specific proficiency in a foreign language
4. understands the physical principles underlying climate change and measures for its mitigation
5. is capable of following developments in scientific and professional knowledge relevant to their field.

Official course record: [521241A](#)

521088S | Optoelectronics

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Jan Nissinen

Content

1. Wave / particle nature of optical radiation with associated phenomena
2. Optical waveguides and their properties
3. Light sources, LED and laser diode structures
4. Light detectors, PIN and AP diodes, special detectors including SPAD
5. Light source control, preamplifier structures and their bandwidth, stability and noise analysis.

Learning outcomes

A student

1. Is able to explain the principles of operation of optical fibres and waveguides
2. Is able to explain the principles of operation of semiconductor light sources and photo detectors, and knows the factors affecting their performance
3. Is able to outline the circuit-level structures for optical transmitter circuits and photo detector preamplifiers
4. Is able to compare their performance in terms of the main performance parameters

Official course record: [521088S](#)

493605S | Ore Benefication Technologies

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Maria Sinche Gonzalez, Kari Moisio

Content

Module 1: Introduction to Mineral Processing Technology
Module 2: Mineral Characterization Techniques
Module 3: Comminution - Size reduction
Module 4: Beneficiation Technologies - Physical Separation Techniques
Module 5: Physic-chemical separation techniques
Module 6: Solid-Liquid Separation
Module 7: Cu, Fe, Phosphate beneficiation and Optimization in separation processes
Module 8: Seminar (technic, method or process reviewed)

Additionally, it is included Practices in sampling, comminution, flotation, mass balances, lab test calculation (in laboratory or on-line according to the situation)

Learning outcomes

Upon completion of the course students should be able to:

- Describe the principles and applications of the main beneficiation technologies
- Recognize the variables affecting the selection of the process techniques
- Understand the characteristics of the feed material and behaviour during physical and chemical beneficiation processes (comminution, flotation, gravity separation and sedimentation processes) and characteristics of the products and waste
- Understand of optimization methods applied in beneficiation plants
- Apply knowledge in practical exercises, carrying out calculation of sample size, efficiencies, balances and basic design of the unit operations that are used in ore processing

[Official course record: 4936055](#)

TA00BC42 | Orientation

2 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Petri Aarnio

Content

The aim of the orientation is to initiate the student into the study program, and to familiarize with the facilities (the library included), the staff responsible, as well as with working methods of studies in architecture. The orientation program includes attendance in workshops.

Learning outcomes

Having attended the orientation, the student is able to apply to the key persons of the study program for essential information concerning the studies in architecture, and to recognize the study environment, student tutors, tutor teachers and other staff of the school. Additionally, the student is able to describe working methods and study culture of the architecture program.

[Official course record: TA00BC42](#)

460083P | Orientation Course for New Students

1 ECTS | Mechanical Engineering | Basic Studies | Finnish

Person in charge: Reijo Saari

Content

Within the period, the student also becomes aware of the services offered to students by the university, the student union, student organizations and society (including guild activities, student support, physical education and medical services) and the university and faculty policies. In the initiation phase, a personal study plan (HOPS) is drawn up.

Students also receive guidance on using the services of the University Library and basic information on IT software important to study and study progress.

1. Information sessions for all students at the beginning of their studies during orientation week
2. Small group guidance; The division into small groups takes place in the orientation week. Getting to know your own small group and associated meetings organised by tutor students and tutor teachers are part of the course's performance. Accepted performance of the course also requires participation in pre-defined information sessions during the orientation week (language studies info, information from study councillor and education designer, and information sessions for new students organised by the university).
3. Drafting a personal study plan (HOPS) and presenting it with approval to a tutor teacher.

Learning outcomes

At the beginning of the period, the student adopts issues related to the initiation of study, the planning of studies and the study techniques. In addition to this, the section coaches students to identify their learning skills, as well as provides group and individual guidance to progress their studies.

Official course record: 460083P

555212P | Orientation Course for New Students

1 ECTS | Industrial Engineering and Management | Basic Studies | English

Person in charge: Osmo Kauppila

Content

Orientation week events:

- * The Deans' reception (1 h)
- * Degree program reception (1 h)
- * Meeting each other and grouping (1 h)
- * Library info and planning of studies (2 h)
- * Student service info (2 h)
- * Personal study plan (PSP) creation (2 h)
- * Student tutoring, getting familiar with the student guild (1 h)

Additionally other teacher and group tutoring events informed during the course realization, and getting familiar with the University's general orientation materials.

Learning outcomes

Upon completion of the course, the student is able to plan his/her studies and time management based on the degree program curriculum. The student is familiar with the stages of his/her study path and is able to apply appropriate tools in study planning work. The student knows where to find support for his/her studies in different stages of the studies and in different personal life situations. The student has reflected upon the effect of IEM Master's studies on his professional skills and identity.

Official course record: 555212P

521007P | Orientation to Electronics and Communications Engineering

3 ECTS | Electrical Engineering | Basic Studies | Finnish, English

Person in charge: Timo Kokkonen

Content

Matters related to starting studies. Services provided to students by the university, student organizations and society (including student support, sports, and health care services). The structure of the degree program, academic study, and related important practical matters, planning and monitoring of studies and time use, as well as study-related services and information systems. Well-being, self-development and leadership skills. Identifying the stressors associated with professional work and utilizing self-compassion. Describing one's own competence, developing professional identity, promoting group learning and development, and identifying lifelong learning needs. Getting to know Fab Lab.

The orientation also includes the University of Oulu's general orientation materials, which are reviewed independently according to the instructions that come with them before starting studies and arriving on campus.

Learning outcomes

After completing the course, the student:

1. Recognizes the university's study system and can utilize study-related services.
2. Can use the information and computer systems needed at the beginning of studies.
3. Recognizes his/her role and responsibilities regarding university studies and can study independently in university.
4. Can make short and long-time study plans and follow the realization of the plans.
5. Has made an acceptable personal study plan.
6. Has been actively acquainted with the activities of Fab Lab.
7. Identifies key elements related to their own well-being and self-management.
8. Identifies stressors related to expert work and utilizes self-compassion to support well-being.
9. Is able to describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: 521007P

IE00BC34 | Orientation to Electronics and Communications Engineering 2

1 ECTS | Electrical Engineering | Basic Studies | Finnish, English

Person in charge: Timo Kokkonen

Content

Critical assessment of study progress. Issues related to continuing studies. Review of second-year studies and identification of challenges, and planning further studies taking these into account. International and multicultural skills.

Learning outcomes

After completing the course, the student:

1. Is able to critically evaluate the progress of their studies.
2. Recognizes the challenges of the second year of studies and is able to plan their studies accordingly.
3. Recognizes the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognizes stereotypical ways of thinking.
4. Is able to work in multicultural teams and act openly in international and multinational situations with people from different cultural backgrounds.

Official course record: IE00BC34

IE00BC35 | Orientation to Electronics and Communications Engineering 3

1 ECTS | Electrical Engineering | Basic Studies | Finnish, English

Person in charge: Timo Kokkonen

Content

Issues related to continuing studies. Critical assessment of study progress and planning for completing any missing assignments. Review of third-year studies and identification of their challenges. Digital skills and in particular the appropriate, safe and responsible use of artificial intelligence.

Learning outcomes

After completing the course, the student:

1. Is able to critically assess the progress of their studies and plan the efficient completion of any missing requirements.
2. Recognizes the challenges of the third year of studies and is able to plan their studies accordingly.
3. Is able to use digital and AI applications relevant to their field in their studies appropriately, safely, and responsibly.

Official course record: [IE00BC35](#)

450541A | Photoshop, Advanced Photo Manipulation

2 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Asko Leinonen

Content

The course consists of three full-day workshop sessions and independent work carried out between them. The topics covered in the course include:

- Photoshop's user interface and optimizing settings
- Advanced selection and masking techniques
- Color correction, contrast control, and light adjustment
- Perspective correction and architectural straightening
- Managing layers, groups, and composite images
- Integrating objects and background elements into photographs
- Retouching and effects used to achieve photorealistic results
- Creating panorama and HDR images in Photoshop
- Generative and AI-based features (Generative Fill, Generative Expand, and AI-generated content elements)
- Designing, preparing, and presenting one's own teaching module

Learning outcomes

The course teaches advanced image-editing techniques for architectural visualization and representation. Students deepen their skills in Adobe Photoshop, including color management, creating composite images, correcting perspective, enhancing light and material qualities, and producing photorealistic and expressive visualizations.

The course also introduces the use of AI-based tools and image generation (such as generative fill, generative expand, and AI-assisted corrections) as part of a professional image-editing workflow.

The aim is for students to work at a level required in architectural visualization tasks, applying a wide range of post-processing and compositing techniques to finalize images created from 3D models, renderings, and photographs.

Official course record: [450541A](#)

521448S | Physical Design of Digital Integrated Circuits

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Lauri Koskinen

Content

1. Technologies and libraries
2. Design and verification flow overview
3. Layout-driven, power-optimized logic synthesis process
4. Standard cell layout design, including power-network and clock-tree synthesis
5. Post-layout verification

Learning outcomes

Upon completion of the course the student

- understands the technologies and the physical design and verification flow of digital integrated circuit
- knows how a digital integrated circuit is implemented using logic synthesis and layout design electronic design automation tools.

Official course record: 5214485

477000P | Planning of Studies and Career

1 ECTS | Process Engineering, Environmental Engineering | Basic Studies | Finnish

Person in charge: Saara Luhtaanmäki

Content

The course familiarises students with how to start their studies and the key services offered by the university, student organisations and society, such as student financial aid and sports and health services. In addition, the University of Oulu, the Faculty of Technology and the university's administrative structure are presented. Students get an overall picture of their own degrees, the progress of their studies and the role of the Master of Science in Technology in the labour market. The course provides skills for planning studies, managing one's own time, and effective study techniques. Finally, you will get to know the library's services, key information materials and the use of the Oula database.

Learning outcomes

After completing the course, the student will be able to identify the university's study system, services, and operating environment, and understand the societal significance of university education. The student will be able to plan their studies and manage their time purposefully, strengthening skills related to well-being and personal development.

The student will understand the structure of their degree programme, the content of their studies, and key career options. They will also be able to describe their own competencies and use them in career planning, which supports communication and interpersonal skills.

Furthermore, the student will recognise the role of their field in society and understand the ethical and sustainability-related dimensions of the engineering profession. The student will also learn to use the university's digital systems and information resources appropriately, thereby enhancing their digital and multiliteracy skills.

Official course record: 477000P

485000P | Planning of Studies and Career

1 ECTS | Civil Engineering | Basic Studies | Finnish

Person in charge: Virve Merisalo

Content

Key themes of the course include:

- the University of Oulu, the Faculty of Technology, and the Civil and Environmental Engineering degree programme;
- degree structure, study paths, and elective options;
- personal study plan (PSP);
- study skills, time management, and responsibility for one's own studies;
- basics of career planning, working life connections, and expert services.

Learning outcomes

After completing the course, the student will:

- be familiar with the structure, key requirements, and progression principles of the Civil and Environmental Engineering degree programme;
- be able to prepare and update a personal study plan based on the curriculum of the degree programme;
- identify support services, guidance channels, and key university practices that support studying;
- be able to reflect on their own strengths and interests and their connection to future career paths;
- gain readiness to begin career planning at an early stage of the studies.

[Official course record: 485000P](#)

450516P | Portfolio

2 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Asko Leinonen

Content

The course covers the following topics:

- The structure and purposes of basic and showcase portfolios
- Fundamentals of typography
- Composition and layout techniques in InDesign and Figma
- Visual identity design and editing of project materials
- Use of a digital skills competence map as part of the workflow

Learning outcomes

After completing the course, the student:

- understands the difference between a basic portfolio and a showcase portfolio, as well as their role in evaluating and presenting one's own skills.
- masters the fundamental principles of typography, composition, and layout.
- is able to create a publishable showcase portfolio using InDesign or Figma.
- is capable of selecting and editing material suitable for a portfolio (texts, images, project presentations).
- uses a digital skills competence map to support self-assessment of their own abilities.

[Official course record: 450516P](#)

494605S | Potential Fields and Airborne Geophysics I

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio

Content

The course provides an introduction to the theory, measurement techniques, and interpretation principles of the geophysical magnetic methods—with an emphasis on airborne applications. The course develops both conceptual understanding and practical skills related to magnetic fields, magnetization processes, field instrumentation, survey design, and data processing workflows. Students will apply theoretical knowledge to exploration, environmental, and crustal scale geophysical problems, including ore exploration, geological mapping, and characterization of subsurface structures.

Learning outcomes

Upon completion of the course student identifies the special characteristics of geophysical magnetic measurements and knows how to process and interpret magnetic data. Also the principles of the radiometric method are introduced. In addition, student can explain and describe the special characteristics related to airborne magnetic measurement and also physical properties of rocks and rock forming minerals related to magnetism. Students also develop different transferable skills.

Upon completion, students will be able to:

- Explain the theoretical basis, limitations, possibilities and practical applications of magnetic methods.
- Collect, process and interpret geophysical data using digital tools and software, examine data critically, draw analytical and critical conclusions from the results including available multidisciplinary knowledge and produce new information based on the results.
- Communicate and report results in written and oral formats
- Collaborate and interact effectively in multicultural group
- Manage and allocate time to specific tasks, take responsibility for their actions and learn self-management

Official course record: 494605S

494606S | Potential Fields and Airborne Geophysics II

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Elena Kozlovskaya, Kari Moisio

Content

The course Potential Fields and Airborne Geophysics consists of two parts. Part I deals mainly with magnetics and airborne magnetic geophysical investigation and radiometric methods.

The Potential Fields and Airborne Geophysics Part II deals mainly with gravity field theory, methods and instrumentation used in ground-based and airborne gravity measurements. It also provides introduction to electromagnetic airborne methods.

Part 1 of the course is introduction to the gravity method is used to access the density distribution of the subsurface, that is why it is important to understand what factors define density of rocks and minerals and what are the methods to access the density. This part also considers the theory of gravitational potential and its first and second derivatives that form a physical basis of a gravity method in geophysics.

Part 2 considers the instrumentation used in ground-based and airborne gravity measurements.

Part 3 considers main procedures of gravity data acquisition, processing and visualisation in ground-based and airborne gravity surveys

Part 4 explains the main principles of gravity data modelling and inversion.

Part 3 and Part 4 of the course include a number of practical exercises with real digital data using up-to-day software at OMS.

Part 5 of the course is introduction to airborne electromagnetic methods illustrated with examples of data acquired by Geological Survey of Finland and in research projects with participation of OMS.

Learning outcomes

Upon completion of Part II of the course the student understand the theory of gravity method of applied geophysics, they have knowledge about instrumentation used in gravimetry (gravimeters, gravity gradiometers) that are used in ground-based and airborne gravity surveys. They learn the main procedures used in data processing, interpretation, modelling and inversion of gravity data and understand how to apply gravity methods in exploration and other stages of mine life cycle. The course includes practical work with the digital gravity data acquired in real projects.

The airborne geophysical techniques are considered as non-invasive, environmentally friendly and socially acceptable methods of imaging of the Earth's subsurface. That is why the course contributes into development of the following generic skills: digitalization, ethics, internationality, sustainability and responsibility, critical thinking, identification and development of one's own expertise, and interaction and communication.

Official course record: 494606S

521025S | Power Electronics

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Timo Rahkonen

Content

Introduction to switch mode power supply technology. Analysis of continuous and discontinuous conduction mode in steady state condition. Loss mechanisms, efficiency and continuous mode dc-modeling. Different switch mode power supply topologies. Power factor.

Learning outcomes

1. Student is able to discuss and write on the subject by using the terminology in the field of switching power supplies.
2. Student can analyze the operation of different switching power supplies in continuous and discontinuous conduction mode and in steady state operation.
3. The student can design different switching power supplies for dc-dc applications and to take into account different loss mechanisms in the design phase and calculate the efficiency reduction caused by them.
4. Goal: The course provides basic information about switching power supply technology, after which the student identifies the basic topologies of power supplies and is able to analyze the operation of the continuous mode of power supplies.

Also:

- * Making exercises and design tasks trains in analytical, critical thinking and handling with uncertainty.
- * In general, electronic design targets in reducing energy consumption.
- * Student population is generally international.

[Official course record: 521025S](#)

477625S | Power Plant Automation

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Jenő Kovacs

Content

Introduction to related thermodynamics of steam generating combustion power plants. Description of different types of power plants, the main components and their operation including automation system. Fundamentals of industrial measurements, sensors, emissions and industrial actuators. Static and dynamic modelling of power plants. The control principles and the main control loops.

Learning outcomes

The student has a full understanding of the role of the power plants in energy market and the importance of different energy sources. The fundamental thermodynamics in power generation will be fully explained. The student will understand the structure of different power plants, the main components and can explain their behavior and operation. The role and manner of measurements and automation system will be clarified. Furthermore, the student will understand the main principles in modelling energy systems. The student will fully understand the static and dynamic behaviour of the power plants and the sub processes. The student will understand the role of control in power plant operation and can describe the main principles and structures of control systems. The student can implement the theoretical knowledge gained in power plant automation courses into practice and has deepened his/her understanding in the subject. The student knows the principles of power plant operation in different situations (start-ups and shut-downs, load changes).

The course develops analytical, critical and creative thinking common generic skills.

[Official course record: 477625S](#)

477004A | Practical Training

5 ECTS | Process Engineering, Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Saara Luhtaanmäki

Content

The practical training introduces the student to key tasks and working practices in their field. During the training, the student becomes familiar with the organisation's technical and economic operations, participates in everyday work assignments, and practices professional communication and the use of digital tools. The student observes the work community, identifies development needs, and proposes well-founded improvement suggestions. Throughout the training, the student reflects on their own competence, strengthens their working life and self-leadership skills, and learns to apply theoretical knowledge to practical work situations.

Learning outcomes

After completing the bachelor's-level practical training, the student will recognize the key tasks within their field and gain a general understanding of workplace practices, as well as the technical and economic organization of a company. The student will be able to describe a potential future work environment, identify challenges within the work community, and propose well reasoned development suggestions using analytical and critical thinking.

The training enhances the student's communication and interpersonal skills, working-life competencies, digital skills, and their ability to connect the theoretical content of their studies with practical workplace situations. In addition, the internship supports self leadership skills and helps the student understand how their own competencies develop as part of building professional expertise.

[Official course record: 477004A](#)

485001A | Practical Training

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Aino-Maija Vuori

Content

During the Bachelor-level internship, the student becomes familiar with work tasks in the field of construction and civil engineering, particularly on building and infrastructure construction sites, where practical production management, site supervision, and the management of schedules, safety and quality are emphasized.

The internship may include, for example, assisting site supervision tasks, monitoring work phases, practical quality assurance and occupational safety procedures, participating in measurements and interpretation of plans, as well as site documentation and supporting daily management. The aim is to provide the student with a realistic and comprehensive understanding of construction site operations and the roles of different workers.

Learning outcomes

After completing the Bachelor-level internship, the student is familiar with the key tasks in the field of construction and civil engineering and gains an overall understanding of professional practices, construction site organization, and the technical and economic operating environment of the industry.

The student is able to describe one possible future work environment, identify challenges related to the functioning of the work community and construction site, and present well grounded development proposals using analytical and critical thinking.

The internship develops the student's communication and interpersonal skills, basic project management abilities, digital competencies, and the capacity to apply theoretical knowledge to practical work situations. In addition, the internship supports the student's self management skills and helps them understand how their expertise develops as part of professional growth

[Official course record: 485001A](#)

491300A | Practical Training

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | Finnish

Person in charge: Saija Luukkanen, Kari Moisio

Content

Suitable areas for practical training are, for example, the mining and metallurgical industry and mining projects.

Learning outcomes

During the practical training the student gets experience of his/her working environment from the point of view of his/her studies and becomes acquainted with one possible future job. He/she can identify the problems associated with the working environment and can propose improvements to them. The student will experience points of contact between working life and studies.

The objective is to give an overview of the industrial area where the student may possibly work after graduation. Practical training nurtures theoretical study. In addition the training should give the student a general idea about the company and its technical and organizational operations, financial management and supervision. Student training positions often place students in employee-type positions so that the student becomes familiar with practical work, work safety, as well as with the social nature of the working environment. Students will land the jobs themselves.

[Official course record: 491300A](#)

521015A | Practical Training

3 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Juha Häkkinen

Content

Learning about the requirements of working life, responsible contribution to the chosen work community, reporting.

Learning outcomes

After the practical training the student can describe one possible future job and its working environment from the point of view of his or her studies. The student can identify problems in the work and suggest improvements. The student can find connections between work and studies. The technical goal of the training is to give a student a general insight into the field on which he or she will work after graduation, as well as support and promote theoretical studying. Likewise the training has to acquaint the trainee with the social aspects of industrial production and with industrial safety.

[Official course record: 521015A](#)

450503A | Practical Training / Construction Site

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio

Content

The objective of the practical training is to acquaint the student with the working life on the building site. The training supports and promotes theoretical studying. Furthermore, the practical training gives the general idea about the technical and economic organizing, administration and management of the building site. The practical training is usually performed in the ordinary worker's position.

Learning outcomes

After the construction site practical training the student can describe a potential future construction site and its working environment for a building they may design, viewed from the perspective of their studies. The student can name problems in the working environment and can make improvement proposals to them. The student finds points of contact between working life and the studies. The student develop their professional identity.

The student can work in multiprofessional teams and value the expertise of different fields, can communicate clearly both orally and in writing, and document their observations appropriately.

Official course record: 450503A

450505A | Practical Training 1

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio

Content

The aim of practical training in architect's office is to initiate the student into architects' work and tasks. It is essential for students to get to know the work field of an architect in to begin their own professional career after graduation more efficiently. Recommended places of work for practical training are private or public design and planning offices led by qualified architects.

Learning outcomes

After completing the practical training, the student is able to describe one possible occupation after his / her graduation. The student recognizes the architect's professional tasks at his / her workplace during the practical training. The student can recognize and solve problems of the working environment. The student is able to implement theoretical knowledge in practice. The student can develop their communication and interaction skills.

The student is able to identify factors related to their own well-being and self-leadership. The student can articulate their competencies and develop their professional identity.

Official course record: 450505A

450506A | Practical Training 2

5 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio

Content

The aim of practical training in architect's office is to initiate the student into architects' work and tasks. It is essential for students to get to know the work field of an architect to begin his / her own professional career after graduation more efficiently. Recommended places of work for practical training are private or public design and planning offices lead by qualified architects.

Learning outcomes

After completing the practical training, the student is able to describe one possible occupation after his / her graduation. The student can recognize and solve problems of the working environment. The student is able to implement theoretical knowledge in practice. The student recognizes the architect's professional tasks at his / her work place during the practical training. The student can develop their self leadership skills, build their professional competence and identity, apply creative thinking and problem solving skills in their work, and analyze and construct well reasoned arguments.

The student can understand the multidisciplinary nature of architectural design, collaborate with experts from various fields, and communicate design ideas clearly and professionally to different target audiences.

Official course record: 450506A

460003A | Practical training I

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 460003A](#)

460004S | Practical Training II

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

[Official course record: 460004S](#)

462106A | Precision engineering

5 ECTS | Mechanical Engineering | Intermediate Studies | English

Person in charge: Yrjö Louhisalmi

Content

Introduction, design of precision mechanical devices, enclosure and usability of devices, fixed and removable joints, implementation of rotary and linear motion, and the most common precision and micromechanical manufacturing methods.

Learning outcomes

Upon completion of the course, the student can analyze structures and components used in precise engineering products, can explain working principles of them and can design new qualified and easily manufactured precise engineering products.

[Official course record: 462106A](#)

521431A | Principles of Electronics Design

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Ilkka Nissinen

Content

Analogue and digital circuits, basic amplifier related concepts, diodes and diode circuits, single stage bipolar and MOS transistor amplifiers, small signal modeling and analyzing ac properties of amplifiers, internal structures of digital circuits (mainly CMOS), MOS/CMOS switch, operational amplifier.

Learning outcomes

After completing the course, the student should be able to analyze and design such electronic building blocks as rectifiers, clamping circuits, amplifiers and CMOS logic elements using diodes, operational amplifiers and MOS and bipolar junction transistors.

[Official course record: 521431A](#)

OH00AQ39 | Principles of Machine Learning in Medicine

5 ECTS | Medical Technology | Intermediate Studies | Finnish

Person in charge: Neslihan Yalcin Bayramoglu

Content

1. Introduction to Machine Learning
2. Short Mathematical Review
3. Classical Machine Learning
 - Linear regression
 - Logistic regression
4. Unsupervised Learning
 - Clustering (K-means)
 - Dimensionality reduction (PCA)
5. Principles of ML in Medicine
 - Data issues: sampling, stratification, preprocessing, normalization
 - Challenges and bias
 - Cross-validation and generalization
 - Patient separation
 - Model evaluation
6. Introduction to Neural Networks
7. Tree-Based and Ensemble Models
8. Ethics in Machine Learning

Learning outcomes

The objective of this course is to provide students with a foundation in machine learning and its applications in medicine. Upon completion, student will be able to:

- Understand the basic concepts and principles of machine learning and apply reasoning to interpret data and model results.
- Recognize common machine learning problem types (e.g., classification, regression, clustering) and the methods used to address them in medical applications, and integrate knowledge from medicine, mathematics, and computer science when approaching practical problems.
- Apply basic machine learning models using Python and work with some medical data, considering challenges such as bias or limited sample sizes.
- Gain an understanding of performance evaluation metrics and validation methods.
- Recognize ethical considerations and challenges in applying machine learning responsibly in medicine.

Official course record: [OH00AQ39](#)

465103A | Principles of metal shaping and forming

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jari Larkiola

No description supplied in the collected record.

Official course record: [465103A](#)

493300A | Principles of Mineral Processing

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | Finnish

Person in charge: Saija Luukkanen

Content

The main unit processes used in mineral processing. Understanding how the mineralogy and chemistry of the ore influences in the process development.

Learning outcomes

Upon completion the course the student can explain the main unit process used in ore beneficiation and understands the main chemical and mineralogical factors playing the key role in process development. The student is able to calculate the most relevant process related calculations, such as mass balances, concentrate recoveries and grindability. The student is aware of the environmental as well as H&S aspects of mineral processing.

[Official course record: 493300A](#)

492601A | Principles of Mining Engineering

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | Finnish

Person in charge: Markku Seitsaari

Content

Technical solutions used in exploitation of mineral deposits, common mining and mine planning methods, supporting topics such as feasibility studies, environmental impact assessments and working safety in mining.

Learning outcomes

To complete the course, students will learn independently to apply generic skills like the use of digital information and learning environments, schedule their studies in the given time frame, and to apply interdisciplinary skills. After completion students will have basic understanding on technical solutions used in exploitation of mineral deposits, as well as on the common mining and mine planning methods, and on supporting topics such as feasibility studies, environmental impact assessments and working safety in mining.

[Official course record: 492601A](#)

521229A | Principles of repurposing of electronics

5 ECTS | Electrical Engineering | Intermediate Studies | Finnish, English

Person in charge: Juha Häkkinen

Content

The course teaches students to use common methods to hack hardware in order to repurpose old electronic devices to new applications.

These techniques include

- (a) patching into I/O,
- (b) replacing a component,
- (c) signal hacking using a logic analyzer,
- (d) firmware hacking using hex dump and
- (e) repurposing circuit boards and components removed from old electronics.

Major part of the course is dedicated to students own projects in groups to create devices and system using repurposed electronics such as old cell phones, PCs, printers etc.

Learning outcomes

Upon completion of the course, the student:

- is able to repurpose old electronics to create new applications and devices
- is able to create simple Arduino-based embedded programs
- is able to implement communication between two electrical devices/equipment
- is able to build own measurement instruments to enable hardware repurposing, such as a simple logic analyzer
- is able to create simple Android programs
- is able to deconstruct and take apart old electronics safely
- is able to recognize and repurpose old components removed from used electronics
- is able to safely solder and desolder electrical components
- is able to define and implement simple electrical systems and applications

Official course record: [521229A](#)

521071A | Principles of Semiconductor Devices

5 ECTS | Electrical Engineering | Intermediate Studies | English

Person in charge: Jani Peräntie

Content

Main contents:

1. Introduction to crystalline materials and wave propagation in crystals
2. Electrons in metals and energy bands in crystals
3. Semiconductor materials and their properties
4. Semiconductor p-n and metal-semiconductor junctions
5. Semiconductor diode components and lasers
6. Bipolar junction transistors (BJTs)
7. Field-effect transistors (FETs)

Learning outcomes

After completing the course, the student

1. is able to describe and define basic properties of semiconductor materials,
2. is able to describe and define basic properties of p-n junction and semiconductor-metal junction,
3. can explain and evaluate the physical operation of basic semiconductor devices (diodes and transistors),
4. is familiar with basic diode and transistor component types and their main applications.
5. identifies and is able to describe the importance of analytical, critical and creative thinking in solving semiconductor related problems.
6. is able to analytically and critically evaluate semiconductor-based knowledge and apply it to solve complex and unpredictable problems.

Official course record: [521071A](#)

521089S | Printed Electronics

5 ECTS | Electrical Engineering | Advanced Studies | Finnish, English

Person in charge: Tapio Fabritius

Content

Materials (conductive and semi-conductive polymers, dielectrics, metal particle based inks) and processing methods (screen printing, gravure printing, flexo printing, inkjet) utilized in printed electronics, surface wetting and film formation, printed electrical components (passive components, sensors, solar cells, light emitting diodes, transistors) and their fabrication. Possibilities and challenges of printing based processing methods and how to take them into account in the printed electronics fabrication.

Learning outcomes

Student

1. Knows the most typical materials and printing methods suitable for their processing
2. Can explain the principles of materials and printing methods
3. Can utilize the material and manufacturing process knowledge to design fabrication processes for electrical components
4. Can analyse how the selected materials and printing methods influence on the performance of electrical components

Official course record: 5210895

IE00AN82 | Printed Electronics Prototyping and Fabrication

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Rafal Sliz

Content

The content and scope of the course will be confirmed on a case-by-case basis. Primarily 5 ECTS cr.

Learning outcomes

During this course, students will learn about the practical aspects of various printing methods. In addition, students will gain hands-on experience on how to control the printing process according to their needs and application requirements.

This course consists of three cross-linked modules: theoretical, practical and analytical. After completing this course, students will be able to:

Theoretical

- Identify the main parameters governing the printing processes in various printing methods,
- Apply basic formulas and equations to predict ink-substrate interactions,
- Design basic models of printed batteries and their components by utilizing the most commonly used modeling software.

Practical

- Understand and apply basic principles governing the printing process,
- Create appropriate ink formulations and tune the printing process,
- Design and fabricate various thin-film structures by using screen and ink-jet printing methods.

Analytical

- Conduct characterization of inks and printed layers,
- Perform basic characterization of printed batteries,
- Present a concluding report of achieved results in a form understandable for a general audience.

Before starting this course, to increase the interaction, the students will be asked to provide one additional learning outcome based on their interests that will be appropriately formulated at the first session and included in the intended learning outcome.

Official course record: IE00AN82

555390S | Process Analytics

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Osmo Kauppila

Content

Foundations and basic tools of data analytics, supervised and supervised learning, statistical process control, revenue management, Excel and R as analytics tools, applying generative AI in analytics.

Learning outcomes

Upon completion of the course, the student:

- is prepared to solve practical data analytic problems related to industrial engineering and management
- is able to apply the software used during the course in practical development work
- is prepared to apply the methods used during the course in practical development work

[Official course record: 555390S](#)

477309S | Process and Environmental Catalysis

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Satu Ojala

Content

Catalysis and catalytic phenomena, catalysis in industry, environmental catalysis.

Learning outcomes

Student recognizes the connection between catalysis and green chemistry and the role of catalysis in processes, energy production, and environmental engineering. Student is able to explain the most important industrial catalytic processes, the use of catalysts in environmental technology, and the importance of catalyst research. The student understands the basics of catalytic phenomena (activity, selectivity, stability, reaction mechanisms).

[Official course record: 477309S](#)

555286A | Process and Quality Management

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Osmo Kauppila

Content

Foundations of total quality management, strategic management of quality, performance measurement, process management, standards based management systems, customer oriented product development, human resources, Lean Six Sigma, quality and quality management in the contexts of twin transition, platform economy and generative AI.

Learning outcomes

Upon completion of the course, the student:

- * is able to explain the purpose of process management, quality and total quality management
- * has the prerequisites to develop an organization and its operations based on the principles of process and quality management
- * has the prerequisites to apply modern quality management philosophies such as Lean and Six Sigma in development work

[Official course record: 555286A](#)

AY555286A | Process and quality management (OPEN UNI)

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Osmo Kauppila

Content

The course is a holistic offering on quality and quality management. We start off from the basic assumptions of quality and quality management, and their role in the culture and strategy of an organisation. Subsequently we move on towards daily operations, as we discuss product and service quality, process modeling, performance measurement and quality management systems. The modern improvement philosophies Lean and Six Sigma form a key role in the course. Finally we discuss the roles of human resource management and teamwork in the course context, and quality in the contemporary landscape of twin transition and platform economy.

Learning outcomes

Upon completion of the course, the student:

- * is able to explain the purpose of process management, quality and total quality management
- * has the prerequisites to develop an organization and its operations based on the principles of process and quality management
- * has the prerequisites to apply modern quality management philosophies such as Lean and Six Sigma in development work

Official course record: [AY555286A](#)

TP00AQ75 | Process automation systems

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Joni Vasara

Content

In the laboratory exercises included in the course, the automation of the sub-process is planned, implemented, and tested.

The course introduces the configuration and tasks of process automation systems, such as process performance assessment and monitoring, as well as diagnostic methods for maintenance. Completion of the weekly assignments and exercises requires one's own analytical and creative thinking.

Learning outcomes

After completing the course, the student knows how to design and configure automation systems, as well as systems that utilize them to keep processes running and improve performance.

The course prepares students to work in automation tasks in the process industry.

Official course record: [TP00AQ75](#)

477203A | Process Design

5 ECTS | Process and Environmental Engineering | Intermediate Studies | English

Person in charge: Juha Ahola

Content

Safety and environmentally conscious process design. Design tasks from conceptual process design to plant design. The methodology applicable for preliminary process and plant design.

Learning outcomes

The student is able to identify the activities of process design and the know-how needed at different design stages. The student is capable of utilizing process analysis methods in the different stages of process design activity. The student recognizes the holistic criteria used in techno-economic analysis of the process concept.

Strengthen analytical and critical thinking as an integral component of the course assignments.

477501A | Process dynamics

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Aki Sorsa

Content

Basics of process models and dynamics, dynamic models, linearization, lumped and distributed parameter models, practical examples of different unit processes such as chemical reactors and heat exchangers, modelling of large-scale processes

Learning outcomes

After completing the course, the student understands the basic principles of dynamic behaviour of processes and the difference between open and closed loop system dynamics. The student can write dynamic balance equations for unit processes. The student understands the alternatives for solving the balance equations. The student can simplify and linearize the balance equations and solve them with the help of the transfer function approach. The student can build a dynamic simulator of a simple process.

Official course record: 477501A

491687S | Process Modeling in Mineral Processing

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Maria Sinche Gonzalez, Kari Moisio

Content

Students undertaking the course can use computational methods. They can use commercial process simulation software (i.e. HSC Sim software) to model mineral processes. This course includes 16 topics:

- General information
- Introduction to modelling and simulation in MinPro
- HSC Geo and mineral data browser
- Modal calculations or Element to Mineral Conversion (HSC-Geo)
- Mineral Liberation
- Start drawing a Flowsheets with HSC Sim
- HSC Unit Model Library Self-study
- Working with a ready-made Simulation
- Bulk flotation model
- Kinetic flotation model
- Scaling up from kinetic results to a flowsheet
- Model with size distribution
- Comminution model
- Integrated model with a thickener
- JKSIMMET Demonstration
- Dynamic simulation and optimization
- Final exercise - Assignment (4 hours)

Learning outcomes

Upon completion of the course, students will know how to:

- Use models and perform simulations in mineral processing
- Manage the mineral database of HSC
- Model flowsheets for various processes
- Apply simulation on various mineral processing circuits and practical problems in mineral processing
- Run calculations and simulation to analyze the results of laboratory tests and scale up to plant results
- Model and simulate a complete process of selected plant operation

Official course record: [4916875](#)

477524S | Process Optimization

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Aki Sorsa

Content

Basic concepts of optimization. Optimization of unconstrained and constrained functions. Linear programming. Trajectory optimization. Evolutionary algorithms in optimization. Applications in process engineering.

Learning outcomes

After completing the course, student understands the role of optimization in process and automation engineering. Student understands and can use unconstrained and constrained optimization methods. Student understands the basics of evolutionary optimization algorithms and can use them. Student can define and identify optimization problems.

Official course record: [477524S](#)

TP00BC93 | Process simulation

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish, English

Person in charge: Markku Ohenoja

Content

Modelling, modular and equation-based simulation, dynamic simulation, simulation in automation, event handling in continuous simulation, simulation of production processes, distributed simulation, integration with other systems, simulation languages and programming tools.

Learning outcomes

Upon completion the student is capable of explaining the concepts and operation principles for both simulators of continuous processes and event-based simulation. The student has skills to construct simulation models in Matlab-Simulink environment, explain the operation of these models, and write technical reports on the simulation results. The student recognizes the key benefits and problems of the process simulation and is able to choose suitable approaches and algorithms for different simulation purposes in process engineering. Moreover, the student is able to search other relevant simulation languages and programming tools.

Official course record: [TP00BC93](#)

TP00AQ73 | Process Synthesis

5 ECTS | Process Engineering | Advanced Studies | English

Person in charge: Juha Ahola

Content

Conceptual process design and hierarchical decision making. Heuristics of process design. Design methodology: synthesis, analysis and evaluation. Design cycle. Performance evaluation of the chemical processes. Process flowsheeting programs in process synthesis and evaluation Team work and meetings.

Learning outcomes

The student is able to produce a preliminary chemical process concept. She/he can apply systematic process synthesis tools, chemical process simulation tools and whole process performance criteria in the conceptual process design phase. Furthermore, the student is able to report design results with rationales behind them. The student will acquire skills how to work as a member in an in a chemical process design project. She/he will experience by team work the hierarchical character of the conceptual process design, the benefits of the systematic working methods and the need to understand the whole process performance when optimal design is sought. The student understands the importance of innovation and creative work.

[Official course record: TP00AQ73](#)

465115S | Processing and properties of steels

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jukka Kömi

Content

Production of molten steel, forging, continuous casting and rolling. Thermal and thermomechanical treatments and their effect on the properties of steels. Different types of steels, their properties and use. Environment, recyclability and emissions.

Learning outcomes

The course covers the stages of steel making and their effects as well as the properties of products. After completing the course, the student will know how to make modern steels, will be able to name the main types of steels and understand how their good qualities have been achieved and where development is going. In addition, the student is able to explain metallurgical phenomena in heat treatment and thermomechanical treatment, and especially the techniques used to grind grain size. Environment, recyclability and CO₂ emissions are an essential part of the course content.

[Official course record: 465115S](#)

555343S | Product Data and Product Life Cycle Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Janne Härkönen

Content

PDM and PLM strategic targets, productization concept, commercial and technical product portfolios, PDM and PLM processes and tools, governance model and related IT applications and architecture

Learning outcomes

The course familiarises students with the broad concepts of product data management (PDM) and product life cycle management (PLM). Upon completion of the course, the student will be able to:

- understand the basic terminology related to product, productization, PDM and PLM
- analyse the current status of the productization, product data structures, product life cycle management, commercial and technical product portfolios and related applications in case companies
- create strategic PDM and PLM concept based on the critical building blocks for one product data, product master data and product related business data
- model the company's HW, SW and Service product related commercial and technical product portfolios according to productization concept
- understand the PDM and PLM processes including key roles such as concept owners, education and support roles, data owners, data users including the product data quality concept
- create and implement the governance model for PDM and PLM process and IT development as a part of company's business process development including PDM/PLM related information technology (IT) architecture for product master data and product related business data

Official course record: 5553435

555242A | Product Development

5 ECTS | Industrial Engineering and Management | Intermediate Studies | English

Person in charge: Kari-Pekka Heikkinen

Content

Definitions of a product and service for the operations of an industrial enterprise.

Product development paradigm and defining relevant concepts.

Realising product development methodologically (U&E model, Cooper's stage-gate model, Agile, QFD)

Managing innovations, and product development success factors.

Concrete first steps of a product development

Learning outcomes

This course introduces product development process and management in a company environment. The course provides fundamental understanding over process, tools and frameworks that can be used for analysing and managing products, innovations, and technology development. The aim is to create a connection between product development and other company functions.

Upon completion of the course, the student will be able to

- explain the role of product development as a company process and consider it as a necessity for a company/organisation renewal
- understand the difference between innovation activities and systematic product development, know the difference between different phases of product development process and its activities
- choose between different product development processes, depending on the type of the product
- transform customer needs into requirements for product development process and finally into product features
- define the meaning of other company functions to product development activities
- act in the early steps of a product development

Official course record: 555242A

AY555242A | Product development (OPEN UNI)

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Harri Haapasalo

Content

The significance of products in industrial companies' operations:

- The paradigm of product development and definition of concepts
- Factors influencing the success of product development
- Methodical implementation of product development (U&E-model, Cooper's stage-gate model, QFD)
- Participants and stakeholders in product development
- Requirements management in product development

Learning outcomes

Upon completing the course, the student will be able to:

- Define the role of product development in a company's operations
- Distinguish between innovation activities and systematic product development, and describe them
- Differentiate the phases and tasks of the product development process
- Work in a product development project
- Use tools such as QFD (Quality Function Deployment) and DFM (Design for Manufacturability) in product development
- Determine the significance of other company functions (stakeholders) for product development activities
- Describe the transformation of different stakeholders' needs into requirements and specifications
- Describe the management of various stakeholders' requirements in product development

[Official course record: AY555242A](#)

464104A | Product innovations

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Eino Antikainen

Content

Creativity in technology products, what is creativity and how creative innovations can be made. Analyzing and abstracting of a problem; Connecting a problem to a larger context or its division to minor problems; Applying systematic methods to a defined problem. Product protection models and their use in competition; Comprehension and legitimacy of the protection by patent; Applying for patent and making an application for a patent; Applying for a patent in a foreign country; Situations involving a conflict; Patent legislation.

Learning outcomes

After passing the course a student understand what is creativity in technical products and what are guidelines for designer to make a innovative and creative product. The objective of the course for the student is also to learn to find problems in familiar environment, analyze them and implement mechanical engineering to solve the problems. Upon completion of the course, the student is able to convert a familiar condition to a problem requiring a technical solution and question existing solutions. The student is able to apply the most important methods of systematic creative working. Student can develop solution as far as it is protectable with patenting. The main emphasis is on patenting; how to protect valuable product design from imitation; and how to avoid infringement of competitors' industrial property rights. Upon completion of the course, the student can explain conditions for a patentable design and compare patenting to other ways of protecting industrial rights and is able to make an application for patent. The student also knows employer's and employee's rights in case of making an invention as an employee.

[Official course record: 464104A](#)

555346S | Product Portfolio Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Janne Härkönen

Content

Basic issues in product and product portfolio management performance management, governance models, horizontal and vertical portfolios, processes, tools and product information.

Learning outcomes

The course familiarizes students with the broad concepts of product management and product portfolio management. After finishing the course, the student understands central principles and content of product management and product portfolio management. Student knows the basic steps of the product portfolio management development and understands the ways to analyze and manage products and product portfolios. A student learns to see products and product portfolio management through the lenses of strategic targets, performance indicators, governance models, process and product information management over horizontal and technical portfolios over product life cycle phases and product structure levels. The student can apply the learned aspects and methods in different industries to develop systematic product and product portfolio management processes.

Official course record: 555346S

464106S | Production machine design, Paper machinery

10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Eino Antikainen

Content

Fundamentals of production machine structures and their design criteria. Detailed design criteria of paper machine parts, calendars, rolls as well as construction materials. Whole process from wood log to finished customer product. Production of paper/board product including mechanical, process and chemical viewpoints. General chemical processes of production machine, pipe flows, corrosion, chemicals in use, structural designs, designing of machine parts, offset and other print methods, ways to prove quality of final product and quality parameters and detailed parameters of process for controlling the quality properties of final product.

Learning outcomes

Upon completion of this course the students can describe the most common problems of the production machines and know the effects of machine constructions to quality and production. During the course papermachine is used as an example of production machines. Understanding customer needs and how those needs effect on production and used parameters in production machine are one of the main topics in course. After the course students can explain the importance of the pulp and paper industry to domestic economy and can describe the main stages of paper making processes. Student also understand how hot, cold, moist or dry conditions effect on process and how those conditions should take in the consideration when designing machine or machine parts which are under those operating conditions.

Official course record: 464106S

555333S | Production Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Jukka Majava

Content

Operations and production strategies, processes and performance, Just-In-Time (JIT) and Lean manufacturing, service production, information systems and digitalisation, social responsibility and sustainable development

Learning outcomes

Upon completion of the course, the student:

- knows the key strategic concepts of operations and production management
- understands operations and production strategies, processes and performance and how to analyse, develop and manage them
- understands the role of social responsibility, sustainable development and digitalisation in operations and production development

[Official course record: 5553335](#)

491602S | Professional Practical Training

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English, Finnish

Person in charge: Saija Luukkanen, Kari Moisio, Maria Sinche Gonzalez

Content

Students work as an interns during their Master's studies, on the summer term between 1st and 2nd study years. The course is completed by giving a seminar presentation during the autumn term after the internship. The schedule of this seminar will be agreed with the responsible person.

Suitable areas for practical training are, for example, the mining and metallurgical industry and mining projects.

Learning outcomes

During the advanced practical training students get familiarized with the working environment from the point of view of their studies and become acquainted with possible future jobs.

Students can identify the problems of the working environment and can solve them. The students can apply theoretical knowledge in practical tasks.

The students identifies the tasks appropriate for the Master of Science in Technology at his/her workplace.

[Official course record: 491602S](#)

555285A | Project Management

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Jaakko Kujala

Content

Defining project management, project goals and objectives, project phases and project life-cycle management, project planning, organising and scope management, schedule management, cost management, earned value calculation and project risk management, project stakeholder management, project communications management, the role of project manager, new modes of project delivery

Learning outcomes

Upon completion of the course, the student will be able to:

- describe explain the essential concepts and methods related to project management
- apply project management methods to create a schedule for a project and calculate critical path
- understand essential concepts related to project cost management and able to apply earned value method and three point estimate to manage project costs
- recognises the essential tasks of project risk management

[Official course record: 555285A](#)

555288A | Project Management

5 ECTS | Industrial Engineering and Management | Intermediate Studies | English

Person in charge: Jaakko Kujala

Content

Defining projects, project management and project business, goals and objectives of projects, project stages and lifecycle management, project sales and marketing, project initiation and planning, schedule management, scope management, cost management and earned value management, project risk management, project stakeholder management, project organizing, communication management, roles and tasks of project managers, new forms of project organizing

Learning outcomes

The course focuses on basic project management methods. After completing the course the student:

- Knows the most important areas of project management and relevant concepts related to it
- Knows and can use central methods in project management
- Can apply project management methods when leading different projects
- Knows current trends in project management

[Official course record: 555288A](#)

AY555285A | Project management (OPEN UNI)

5 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Jaakko Kujala

Content

- Introduction to project management
- the nature of projects and project work
- Project lifecycle
- Project sales and marketing
- Management of project objectives
- Project planning, organizing, and schedule management
- Project cost management
- Project stakeholder management
- Project risk management
- Management of project schedules and dependencies
- Earned value calculation
- Management of different types of projects (agile, integrated project delivery)
- Projects as a business

Learning outcomes

Upon completion of the course, the student will be able to:

- is able to explain the key concepts of project management
- can describe the main elements of a project plan and is capable of utilizing various methods for project breakdown
- can schedule a project and estimate its costs
- recognizes the key tasks in project risk management
- has a good understanding of the core competencies in project management and the competency requirements for a project manager
- can apply the acquired knowledge to the planning and evaluation of different types of projects (construction, information technology, product development)

[Official course record: AY555285A](#)

485112S | Project work in structural engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Antti Niemi

Content

Project work including structural analysis and production of drawings related to the design exercises.

Learning outcomes

Upon completion of the course, the student

- can perform comprehensive analysis and design of structural systems made of different materials
- can utilize design software to analyze and design structural systems against various types of loads
- develops professional identity and knowledge of ethical standards specific to structural design

[Official course record: 485112S](#)

TA00AT34 | Project Work of Architecture 1

5-10 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio, Helka-Liisa Hentilä, Janne Pihlajaniemi, Veli-Matti Sanaksenaho, Anssi Lassila, Anssi Joutsiniemi, Anu Soikkeli

Content

The content of the course is defined separately

Learning outcomes

The course enables e.g. one-off projects organized by the unit. The objectives are determined by the goals of each specific assignment.

[Official course record: TA00AT34](#)

TA00AT30 | Project Work of Architecture 2

5-10 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Petri Aarnio, Janne Pihlajaniemi, Helka-Liisa Hentilä, Anssi Joutsiniemi, Veli-Matti Sanaksenaho, Anu Soikkeli, Aulikki Herneoja, Henriika Pihlajaniemi

Content

The content of the course is defined separately

Learning outcomes

The course enables e.g. one-off projects organized by the unit.

[Official course record: TA00AT30](#)

TI00AV51 | Prototyping

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Kari-Pekka Heikkinen, Nina Jackson

Content

Prototyping-part:

- The basic concepts of digital fabrication, along with hands-on experience in electronics and programming essential for prototyping.
- For more details refer to the course: Digital Fabrication, 521159P-3005.

Leadership and Management-part:

- Fundamentals of team leadership in innovation and product development
- Project planning, time management, and resource allocation
- Introduction to relevant leadership theories, such as Authentic and Transformational leadership in team and project contexts.
- Practicing leadership skills in a team setting of students with diverse backgrounds.
- Communication and decision-making in a diverse team setting and dynamic development environments
- Conflict resolution and constructive feedback practices
- Stakeholder Management practices
- Ethical and responsible leadership in innovation projects

Learning outcomes

The course provides students with a well-rounded understanding of prototyping by combining hands-on digital fabrication with essential team leadership and project management practical skills. The course serves as a platform for learning how to produce prototypes by digital fabrication, knowledge sharing and purposeful leadership in a team of students with diverse backgrounds. In essence, through team-based work and team leadership practices, the course fosters collaboration, and practical execution of digitally fabricated prototypes. It also builds competences for the following innovation creation courses, aligning with the demands of professional product and innovation creation environments.

[Official course record: TI00AV51](#)

MM00AT54 | Public Health

5 ECTS | Civil Engineering | Finnish

Person in charge: Aino-Kaisa Rantala, Timo Hugg, Taina Lajunen

Content

1. Public Health

- Prevalence and incidence of population health in different phase of life
- Assessment and surveillance of health status among population
- Lifestyle, behavior and health
- Socioeconomic factors and health
- Finnish health care system
- Health promotion
- Global public health

2. Epidemiology

- Causal thinking in epidemiology
- Measures of disease occurrence and effect
- Types of epidemiologic studies: cohort studies and case-control studies
- Data analysis and reasoning

3. Environmental health

- Environment and health
- Risk factors in outdoor and indoor environments and their health effects
- Climate change, temperature and health
- Environmental radiation and noise
- Microbiological and chemical risks of drinking water and food
- Municipal environmental health control and exceptional situations related to environmental health

Learning outcomes

Upon completion of the course, the student will:

- understand the essential challenges of public health
- identify the common chronic diseases and their risk factors
- understand the structure and function of Finnish health care system
- be aware of the importance of assessment and surveillance of health status and health promotion among population
- understand that health and well being is connected to an individual's lifestyle, living environment (including the built environment) and social and global development
- understand the system and the function of environmental health
- identify the most harmful environmental factors and the health risks associated with those
- understand the basic epidemiologic thinking, is able to define the basic concepts of epidemiology, is able to identify the central types of epidemiologic studies
- know how to apply epidemiological methods in public health research

[Official course record: MM00AT54](#)

MM00BE07 | Public Health 1

5 ECTS | Civil Engineering | | Finnish

Person in charge: Aino-Kaisa Rantala, Timo Hugg, Taina Lajunen

Content

1. Public Health

- Prevalence and incidence of population health in different phase of life
- Assessment and surveillance of health status among population
- Lifestyle, behavior and health
- Socioeconomic factors and health
- Finnish health care system
- Health promotion
- Global public health

2. Epidemiology

- Causal thinking in epidemiology
- Measures of disease occurrence and effect
- Types of epidemiologic studies: cohort studies and case-control studies
- Data analysis and reasoning

3. Environmental health

- Environment and health
- Risk factors in outdoor and indoor environments and their health effects
- Climate change, temperature and health
- Environmental radiation and noise
- Microbiological and chemical risks of drinking water and food
- Municipal environmental health control and exceptional situations related to environmental health

Learning outcomes

Upon completion of the course, the student will:

- understand the essential challenges of public health
- identify the common chronic diseases and their risk factors
- understand the structure and function of Finnish health care system
- be aware of the importance of assessment and surveillance of health status and health promotion among population
- understand that health and well being is connected to an individual's lifestyle, living environment (including the built environment) and social and global development
- understand the system and the function of environmental health
- identify the most harmful environmental factors and the health risks associated with those
- understand the basic epidemiologic thinking, is able to define the basic concepts of epidemiology, is able to identify the central types of epidemiologic studies
- know how to apply epidemiological methods in public health research

Official course record: [MM00BE07](#)

463103A | Quality in production and dimensional measurements

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Heikki Pirkola

Content

Concept of quality; TQC managing philosophy; Quality control in different phases of production; Quality costs; Methods of quality assurance; Quality system of a company; Quality policy in subcontracting; Quality circles.; SFS-ISO 9000 quality standards.

Learning outcomes

Quality in Production is the supplementary course for the students graduating in the field of Functions of Management in Industry. The aim of this course is to understand the effects of a comprehensive quality control on the functions and costs of an enterprise and the principles of realization of quality assurance. Learning Outcomes: Upon completion of the course, the student is able to specify the concept of quality, explain the quality control in different phases of production and explain how it is possible to realize quality assurance by using different methods and principles of quality assurance. In addition, the student is able to explain the principle of quality system and to plan the quality system according to the requirements of quality standards. The student can explain the use of measuring instruments needed in workshop quality assurance.

Official course record: 463103A

493607S | Quality Requirements for Concentrate

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Saija Luukkanen

Content

Quality requirements for selected concentrates, Distribution of penalty elements in final concentrates, Calculation of Net Smelter Return, Price variation, Typical pricing clauses, Exercises

Learning outcomes

After finishing this course student understands the main quality requirements of the final mineral processing concentrate which effect on further processing in each selected case. The student knows the main economic and technical factors and limitations related to the successful process.

Official course record: 493607S

450557A | R2 Revit advanced

1 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Mikael Heikkinen

Content

Self-made objects, complex forms, schedules and legends.

Learning outcomes

Students are able to produce complex building components and detail models into the Building Information Model and schedules from the information gathered.

Official course record: 450557A

521386S | Radio Channels

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Joonas Kokkonen

Content

The radio channels of different radio systems. Characterization of radio waves and propagation media. Different mechanisms of radio wave propagation: direct free-space propagation, absorption, scattering, reflection, refraction, diffraction, surface and ground waves, ionospheric waves and multipath propagation. Statistical description of fading radio channel. Principles of the radio channel modelling. Noise calculations. Radio wave propagation phenomena over fixed terrestrial, ionospheric and satellite links. Radio channel modelling for outdoor mobile systems. Radio wave propagation inside or into buildings. Radio channels of mobile satellite links. Slow fading. Multipath propagation and its effects on narrowband and wideband radio channels. MIMO radio channels. Measurement methods of radio channels. Atmospheric attenuation on terahertz frequency bands.

Learning outcomes

After completing the course, student

1. will be able to define what the radio channel is and is able to distinguish it into modellable parts.
2. knows different radio wave propagation mechanisms.
3. can apply physical and empirical radio channel models.
4. is able to analyse which are the dominating propagation mechanisms in different environments.
5. will know how to measure the properties of different radio channels.

Generic skills:

6. identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
7. is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems

[Official course record: 521386S](#)

521326S | Radio Engineering 1

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Kimmo Rasilainen, Aarno Pärssinen

Content

Noise, non-linearity, impedance matching using lumped components, microstrip matching networks, low noise amplifier (LNA) design, active and passive mixers design, Wilkinson power dividers, directional couplers, hybrids, cross-coupled oscillator, voltage controlled oscillators, power amplifier design.

Learning outcomes

1. learns key components of radio transceivers used in wireless communications.
2. recognizes different kind of impedance matching methods and can design the impedance matching network using lumped components and microstrip lines. A student can also explain factors, which are limiting the bandwidth of impedance matching networks. Smith chart (admittance/impedance chart).
3. will be able to design a low noise RF amplifier. The amplifier is designed that the noise figure is minimized or the gain is maximized. The impedance matching can also be made for the constant gain.
4. knows single sideband and double sideband noise in mixers. A student will be able to design balanced and double balanced mixer and knows the advantages and the disadvantages of these mixers.
5. will be able to design passive microwave components like a Wilkinson power divider, a directional coupler and hybrids.
6. can explain basic principles of RF-oscillators. A student can design a cross-coupled oscillator and voltage controlled oscillator.
7. knows concept of noise, non-linearity and dynamic range as used in radio frequency communications.
8. can classify power amplifiers and will be able in the basic case design the matching network for a power amplifier.

Generic skills:

1. The student is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces.
2. The student is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.
3. The student is able to work in international cooperation and take the international operating environment into account in their activities.

Official course record: 521326S

521327S | Radio Engineering II

6 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Marko Leinonen

Content

Designing a transceiver at the system level, transceiver architectures, performance characteristics of transceivers, nonlinearities, factors which limit the performance of a transceiver, placement of the A/D-converter in a receiver, frequency synthesis, design and implementation examples.

Learning outcomes

1. understands radio system and RF design for modern wireless equipment like cellular phones.
2. recognizes the blocks of a transceiver and can explain the operating principle of a transceiver.
3. can classify different architectures used in a single and a multi-antenna transceiver and understand the basis for them.
4. will be able to define parameters used in the transceiver system level design and can design a transceiver at the system level so that the requirements for the system are fulfilled.
5. knows nonlinear distortion and can design the automatic gain control in the system level.
6. will be able to explain factors, which are important for the selection of D/A- and A/D-converters and can derive various methods to create the in phase and the quadrature components of a received signal.
7. recognizes the principles of frequency synthesis in a transceiver.
8. understands principles of key implementation technologies of radio transceivers and relation to electronics.

Official course record: 521327S

477225S | Reaction Kinetics

5 ECTS | Process and Environmental Engineering | Advanced Studies | Finnish

Person in charge: Juha Ahola

Content

Empirical and mechanistic rate equations for chemical reactions. Parameter estimation and assessing the fit of regression models. Measuring reaction rates. Chemical reactions in gas and liquid phases. Solid catalysts and surface reactions.

Learning outcomes

The student is able to formulate kinetic rate equation for chemical reactions. Student is familiar with typical methods for parameter estimation and criteria for assessing the goodness of the model as well as recognize the experimental methods in chemical reaction engineering. Student is able to apply the kinetic models for analysis of chemical reactions. Contents: Formulation of material and energy balances by taking into account the effects of chemical reactions.

[Official course record: 477225S](#)

477222A | Reactor Analysis

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Marja Mikola

Content

Basics of chemical kinetics. Reaction rate on the basis of experimental data. Modelling of ideal reactors. Yield, selectivity and reactor size. Heuristics for selecting reactor type and operating conditions.

Learning outcomes

By completing the course the student is able to explain the determination methods of the reaction rate from experimental data and can determine reaction rate parameters by using spreadsheet program relevant to the field. Student is able to illustrate the basics of deterministic modelling. On that basis, the student has skills to analyse the behaviour of ideal reactors and to perform initial reactor selection and sizing. The student can also evaluate the correctness of the obtained results thus person is able to critically evaluate knowledge.

[Official course record: 477222A](#)

493603S | Recycling and Treatment of Process Rejects

5 ECTS | Mining Engineering and Mineral Processing, Process Engineering | Advanced Studies | English

Person in charge: Saija Luukkanen

Content

Recycling of processing rejects from various sources:

- Characterization of rejects from various sources
- Methods for separation of potential valuables ("secondary ores") from processing rejects (such as hydro-/pyrometallurgical rejects, old tailings, WEEE)
- Beneficiation of processing rejects for turning them into products
- Theoretical and experimental approaches

Learning outcomes

After completion of the course the student will be able to:

- Understand the treatment processes for processing rejects
- Able to explain and analyze processes for different rejects

[Official course record: 493603S](#)

488209S | Renewable Energy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Mika Huuhtanen

Content

Renewable energy production methods and technologies. Water and wind power, solar energy, biofuels, biomass conversion, side-streams utilization, power-to-X technologies, emissions and environmental aspects, and sustainability issues.

Learning outcomes

The student is able to define different methods and techniques on renewable energy production field. The student can describe the energy production from renewable sources and is able to compare the environmental impacts of different ways of producing energy. He/she is able to identify main specific characters, challenges and driving forces in the field. The student is able to justify how the course contents relate to e.g. the UN Sustainable Development Goals as well as to apply analytical and critical methods to the course topics.

[Official course record: 488209S](#)

555350S | Research and Technology Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Harri Haapasalo

Content

Defining technology and its role within an enterprise and within society, the meaning of innovation in technological competition, the lifecycles of technology including development, acquirement, and transition, the meaning of technology forecasting

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the differences between product development and technology management in a company
- piece together the development needs and cycles of technologies in an organisation
- understand the meaning of technology forecasting
- combine technology development and technology management with strategic planning of a company

[Official course record: 555350S](#)

TA00AS00 | Research Methods II: Design Thinking in Urban Context

5 ECTS | Urban Design | Advanced Studies | English

Person in charge: Eevi Juuti

Content

The teaching content of the courses includes 1) an introduction to concepts of design thinking, 2) an overview of the methods, process, and philosophy of design thinking, 3) collecting and documenting user understanding, 4) formulating a design brief -document, and 5) recording and analyzing the completed design process.

Learning outcomes

After successfully completing the module, students have a fundamental knowledge of design thinking as a design approach. They are able to apply design thinking methods and processes in the design and development of urban environments. Students also have fundamental skills to collect and utilize user-understanding in design work. Students have a fundamental knowledge of how to report design evidence and have a fundamental understanding of how to formulate a design brief document.

[Official course record: TA00AS00](#)

450552S | Research of Architecture

10 ECTS | Architecture | Advanced Studies | Finnish, English

Person in charge: Aulikki Herneoja, Helka-Liisa Hentilä, Anssi Joutsiniemi, Anu Soikkeli, Janne Pihlajaniemi

Content

The joint course of the Oulu School of Architecture introduces the basics of architectural research. It provides the student with essential information on the topical themes of architectural theory and research. During the course, the student will deepen his / her epistemological understanding and strengthen the research basis of his / her architecture studies. During the course, the student learns the interaction between research, theory and practice, and methodology based on his / her research topic and interest. Through a jointly agreed program, the student prepares a written or design research paper on his / her field of study.

Learning outcomes

During the course, the student becomes familiar with the basic concepts of architectural research and can apply the architectural research methods in his / her academic study to produce new knowledge. The scholarly study assignment is entirely written, or the student may also use a research-by-design approach in his / her assignment. After completing the course, the student can write an academic study by outlining the research problem of his / her research topic, identifying the appropriate research strategy(s) and using applicable data collection and analysis methods.

[Official course record: 450552S](#)

520023J | Research plan seminar

1 ECTS | Electrical Engineering | Post-graduate Studies | Finnish, English

Person in charge: Pääohjaajat

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- * is able present his/her research plan to a wider audience
- * is able to answer questions and critical comments concerning the research plan
- * is able to prepare a scientific presentation

[Official course record: 520023J](#)

555379S | Research Project in Industrial Engineering and Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English, Finnish

Person in charge: Osmo Kauppila

Content

Project topics and types vary. The topic may come from the practical needs of the research unit or collaborating organization, or it may be defined as the collaboration between the supervisor and the student(s).

Learning outcomes

In the course, a student approaching the completion of his/her studies combines and applies the skills learnt during previous studies, learns new skills and creates new knowledge through a large research project. During the course, besides the topic of the project, the student is further familiarized with the scientific research process and scientific writing. The exact learning goals depend of the content of the research project.

[Official course record: 5553795](#)

555301S | Research Seminar

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Hannele Lampela

Content

Research approach, qualitative and quantitative research methods, structure of research report, evaluating validity of research, constructive criticism and participation in scientific discussion.

Learning outcomes

Upon completion of the course, the student will be able to:

- know scientific process and different research methods
- select an appropriate method for his/her master's thesis work
- evaluate validity of research work and provide constructive criticism
- report research findings in the form of academic research report and participate in academic discussion

[Official course record: 555301S](#)

465105A | Research techniques for materials

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Jaakko Hannula

Content [Finnish source]

Valo- ja lasermikroskopian sovellukset metallografisessa tarkastelussa, pyyhkäisyelektronimikroskoopi (SEM), mikroanalyysilaitteistot (SEM/EDS ja SEM/WDS), atomivoimamikroskoopi (AFM), dilatometria, termiset analyysimenetelmät, magneettiset mittaukset metallurgiassa, pinta-analyysimenetelmät sekä metalliteollisuuden käyttämät yleisimmät alkuaineanalyysimenetelmät.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija ymmärtää kurssilla käsiteltyjen tutkimusmenetelmien teoreettisen taustan, käyttösovellukset ja rajoitukset. Oppimansa perusteella hän osaa itsenäisesti tuottaa ja analysoida kyseisillä menetelmillä määritettyä mittausdataa.

[Official course record: 465105A](#)

451515S | Restoration

15 ECTS | Architecture | Advanced Studies | Finnish

Person in charge: Anu Soikkeli, Jaana Tiikkaja

Content

The lectures cover the historical, philosophical, and theoretical foundations of restoration, as well as the practical aspects of restoration design and its key principles. The course includes site visits and guest lectures. The project work focuses on addressing issues related to the use and adaptive reuse of built cultural heritage, repairing damage, and planning and organizing restoration work.

Learning outcomes

Upon completion of the course, the student is familiar with the fundamental principles of restoration and is able to integrate the value-based perspective of architectural history into holistic architectural design in restoration work, with a particular focus on the repair and restoration of modern architectural heritage. The student is familiar with the historical and theoretical foundations of restoration as well as the main schools of restoration philosophy, and is able to critically examine them in relation to design decisions. The student is able to analyse the values of a building, prepare a value-based repair and restoration plan, and justify design solutions from cultural, historical, functional, and ethical perspectives. The student understands the principles of adaptive reuse and is able to apply them in design practice, taking into account sustainability, responsibility, and the specific characteristics of the building. The student is able to communicate restoration-related solutions clearly and convincingly as an expert, and to reflect on their own professional role and responsibility in restoration design.

[Official course record: 451515S](#)

521225S | RF Components and Measurements

5 ECTS | Electrical Engineering | Advanced Studies | Finnish, English

Person in charge: Sami Myllymäki

Content

Fundamentals of RF and microwave techniques, components in microwave circuits, measurement instruments, measuring of power, frequency, impedance and noise, time-domain and active circuit measurements.

Learning outcomes

1. After completing the course the student has knowledge of the behavior of passive components at RF frequencies, knows the fabrication methods of components and is also able to apply the knowledge to practical applications.
2. The student also knows the operating principles of transfer lines, antennas and filters and of their design.
3. The student can apply the fundamentals of RF and microwave techniques to measurements, is able to make the measurements of RF components, has knowledge of the operating principles of RF region measurement equipment and is able to compare the usability of d
4. The student knows how to perform typical measurements of RF region magnitudes (power, frequency, impedance and noise).

[Official course record: 521225S](#)

555377S | Risk Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Arto Reiman

Content

Definitions of risk and uncertainty, risk management standards, methods of risk management, human capital risk, investment, and cost-effective operations, customer risk, supply chain risk management, logistics risk management, supplier resilience, regulation/ethics in risk management, project risk management, corporate social responsibility (CSR) and health, safety, environment, and quality (HSEQ) management processes and practices and quantitative risk management.

Learning outcomes

Upon completing the course, the student will be able to:

- Define and critically examine the core concepts of risk, uncertainty, and risk management within industrial and organisational contexts.
- Explain and evaluate the principles, processes, and frameworks of risk management.
- Interpret and integrate key concepts of enterprise risk management and uncertainty management into organisational decision-making.
- Analyse and apply regulatory and compliance requirements related to risk management across different industries.
- Select and utilise appropriate risk and uncertainty management tools, methods, and analytical approaches in varied organisational settings.
- Assess and articulate the role of corporate social responsibility (CSR) and sustainability considerations in contemporary risk management practice.

Official course record: 5553775

488123S | River Engineering and Hydraulic Structures

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Ali Torabi Haghighi

Content

Review of hydrology, open channel hydraulics and fluid mechanics, General Requirements and Design Considerations, River geomorphology and river engineering, Flood, managing and damage assessment, Erosion and sediment transport in the river, River Issues in cold climate, Ice process in the Nordic rivers, River analysis system by using Hec-Ras software, Riverbank stability, and flood control structure, Conveyance structures, Water storage structures, Protective structures, Regulating structures, Water measurement structures, Energy Dissipaters, Design small hydraulic structures

Learning outcomes

Upon completion of this course, the student should be familiar with:

River geomorphology, flood control and management, erosion and sediment transport, mesohabitat analysis river measurement, river engineering issues in the cold region, an overview of hydraulic structures, fundamentals of designing hydraulic structures

In addition, students should be able to

Applied the previously learned courses (open channel Hydraulics, fluid mechanics, and hydrology) in hydraulic structures design and river engineering, Design an open channel, design Riverbank protection, Flood damage analysis, and flood impact analysis

Students can work with three relevant software in the field of River Engineering, including

IHA software for Analysis of river regime alteration,

Hec-Ras software for River analysis system and

CasiMir for using hydraulic and morphologic features for analysis of habitat suitability for selected species (fishes)

Official course record: 4881235

485404S | Road Design and Construction

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Veikko Pekkala

Content

Function of road structure, road damaging, structural modernisation, pavements, Road design and construction.

Learning outcomes

By completing the course student is familiar with road structure and function, structural modernisation, pavements and the basics of earthworks. He/she is also able to design road computer aided. In addition, students will be able to communicate expert knowledge clearly, both orally and in writing.

Official course record: [485404S](#)

462116A | Robotics

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Tapio Heikkilä

Content

Modeling rigid body motions; Forward and inverse kinematics; Differential Kinematics; Basics of motion control; Motion planning; Programming of robots; Basics of Robot vision.

Learning outcomes

After completing the course, the student knows the basic concepts and modeling methods of robotics. Students understand how robots work as kinematic structures, their control principles, and how robots are programmed and carry out tasks in changing operating environments.

Official course record: [462116A](#)

492608S | Rock Blasting

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Zongxian Zhang, Kari Moisio, Liyuan Chi

Content

The course will: (1) introduce basic knowledge of explosives and initiators/detonators; (2) introduce process of rock blasting and mechanism of rock fracture by blasting; (3) present effect of free surface and expansion space on blasting results; (4) introduce effect of burden and spacing on blasting results; (5) discuss effect of stemming, primer placement, delay time, specific charge, air deck, and decoupling on blasting results; (6) present some examples from industry on increasing ore recovery, improving safety and so on by making a scientific blast plan; (7) introduce some special techniques in blasting applications.

Learning outcomes

Upon completion of the course students should: (1) have basic knowledge in explosives and detonators/initiators; (2) understand basic process of rock fracture and fragmentation by blasting; (3) understand those important factors or parameters that greatly influence blasting results; (4) be able to make a good plan for rock blasting in various type of operations such as tunnelling or excavation, surface and underground production blasting, vibration control, etc.; (5) be able to make any necessary improvement to current blasting operation if it is optimum.

Official course record: [492608S](#)

492300A | Rock Mechanics

5 ECTS | Mining Engineering and Mineral Processing | Intermediate Studies | English

Person in charge: Zongxian Zhang, Kari Moisio

Content

The course will: (1) introduce basic properties and characteristics of rock and rock mass; (2) introduce stress analysis method; (3) present basic theory on rock failure or fracture; (4) introduce basic methods for measuring rock strengths (compressive, shear and tensile) in laboratory; (5) present methods for measuring in-situ stresses; (6) introduce methods for rock support; (7) give knowledge on how to apply rock mechanics to mining engineering and other types of rock engineering.

Learning outcomes

Upon completion of the course students should: (1) know the basic properties of rock; (2) be able to make stress or strain analysis to a rock sample and a rock structure; (3) be able to analyse rock failure under compression, shear and tension loads; (4) know which factors influence rock failure or fracture and know how those affect rock fracture; (5) know the basic principles and methods in rock support; (6) be able to do rock support design; (7) be able to apply rock mechanics theory to tunnelling, mining planning, rock drilling, rock excavation, slope engineering, and other rock-related engineering.

Official course record: [492300A](#)

465116S | Rolling technology

10 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jussi Paavola

Content

Concepts of the rolling technology and terminology; Basics of the plasticity theory; Calculation of roll force and characteristics of roll gap; Temperature behavior during rolling; Flatness and profile analysis; Accuracy of manufacturing and its statistical applications; Modeling of the rolling process.

Learning outcomes

The target for the course is for the student to gain knowledge of the basic concepts of the rolling technology, the basic character of the rolling process and some special characteristics also which are related to it. Upon completing the required coursework, the student can explain the effects of hot rolling and cold rolling on the quality of the final product. With the help of the learned theory, the student can explain the significance of the process modeling on the control of the rolling process. Furthermore, the student understands the connection between rolling and materials engineering and can estimate their effect on the manufacturing process and on the quality of the final product.

Official course record: [465116S](#)

555213A | Sales and marketing

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Jyrki Hietaniemi

Content

Customer's buying behavior, value proposition, communicating value, basics of sales and marketing, customer oriented approach, sales and marketing processes, sales pipeline, marketing mix, CRM, digital sales and marketing, key performance indicators

Learning outcomes

Upon completion of the course, the student will be able to:

- * understand and apply basic terminology of sales and marketing and the fundamentals of customer oriented approach
- * recognise sales and marketing process phases, plan product and service offerings for customers, and create sales and marketing plan
- * explain the following concepts: business model, sales pipeline, segmentation, marketing mix, value proposition and branding, CRM
- * listen and develop a customer's need, and present and defend one's own value proposition

Official course record: 555213A

477312S | Science and Professional Ethics

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Satu Pitkääho

Content

Basis for the research and professional ethics. Professional ethics. Ethical problems characteristic to the fields of technology and natural sciences. Ethical challenges and problem solving in different stages of researcher education and activities related to research. Research integrity, i.e. good scientific practice and procedures for handling misconduct and fraud in science. Ethical problems regarding the relation between scientific community and wider society.

Learning outcomes

After the course, students are familiar with the ethical codes of research, and are able to recognise and analyse ethical problems related to different fields and stages during their professional and researcher career, and in research.

The student can identify the generic skills they have learned related to analytical, critical and creative thinking - data analysis and source review and source criticism, sustainability; responsibility and ethical skills - the basics of professional ethics, promoting ethical, equal and non-discriminatory activities and following good scientific practice; and related to communication, interaction and digital skills - clear and concise written expression.

Official course record: 477312S

494604S | Seismic soundings

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Kari Moisio

Content

This course provides a comprehensive introduction to seismic soundings, refraction and reflections methods, surface wave methods and also passive seismic techniques as a key method for investigating the Earth's subsurface. Students will learn the physical principles of seismic wave generation and propagation, and how these waves are recorded, processed, and interpreted to reveal geological structures. The course bridges theory and practice, offering hands on experience with seismic datasets and modeling tools commonly used in geophysics.

Learning outcomes

Upon completion of the course student will be able to use and adapt seismic methods in studying the structure of the bedrock and soil. Student can explain and justify theoretical background of the seismic methods, and the limitations and error sources involved in them. Student can also make measurements in the field, produce seismic data, interpretate and analyse it and summarize the results.

Upon completion, students will be able to:

- Explain the theoretical basis, limitations, possibilities and practical applications of different seismic methods.
- Distinguish between reflection, refraction, and surface wave methods and understand their applications.
- Collect, process and interpret geophysical data using digital tools and software, examine data critically, draw analytical and critical conclusions from the results including available multidisciplinary knowledge and produce new information based on the results.
- Communicate and report results in written and oral formats
- Collaborate and interact effectively in multicultural group.
- Manage and allocate time to specific tasks, take responsibility for their actions and learn self-management

Official course record: 4946045

450522A | Seminar

1 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Petri Aarnio

Content

The student presents their bachelor's thesis work in the seminar. The teachers participating in the seminar give oral feed-back on the project.

Learning outcomes

The student can describe their own competencies, communicate clearly both orally and in writing, and present information effectively in visual form.

Official course record: 450522A

521036A | Seminar for Bachelor`s Degree, Electronics and Communications Engineering

0 ECTS | Electrical Engineering | Intermediate Studies | Finnish

Person in charge: Topias Järvinen

Learning outcomes

1. The student develops their digital skills by preparing a comprehensible and suitably long presentation from their bachelor's thesis work.
2. In giving the presentation, they learn communication skills as well as articulating their expertise to the audience.
3. The student learns interaction skills both from the discussion and questions on their presentation as well as assessing and commenting other presentations.

Official course record: 521036A

555378S | Seminar in Industrial Engineering and Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish, English

Person in charge: Osmo Kauppila

Content

A irregularly organized course with varying contents, focusing on some current industrial engineering and management phenomenon that is linked to the research unit's focus areas.

Learning outcomes

Upon completion, the student has gained a richer understanding of the industrial engineering and management phenomenon that the course focused on. More detailed learning goals will be defined for each realization depending on the content and learning methods.

Official course record: [5553785](#)

477419S | Seminar in metallurgy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Anne Hietava

Content

Course consists of a seminar presentation prepared and given by students. Topics vary. Students also prepare a short written summary to support the presentation and participate on a metallurgical student seminar which is organized in co-operation with other Nordic universities.

Learning outcomes

Student can describe some topic related to metallurgy and metal production clearly, thoroughly and logically as well as give a written and oral seminar presentation on this topic (after searching information about this topic independently). Student is also able to communicate as an expert in a way suitable for the target audience (also in a foreign language), to build professional networks, to evaluate the activities of individuals or groups and provide constructive feedback and development suggestions, to apply analytical and critical thinking skills in a manner appropriate to his/her discipline as well as to argue appropriately. Furthermore, student is able to work in international co-operation and develop his/her language skills.

Official course record: [477419S](#)

477304A | Separation Processes

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Kaisu Ainassaari

Content

Separation processes based on mass transfer in process and environmental engineering. Phase equilibrium problems in multistage separations for binary mixtures. Phenomena behind the following separation processes: distillation, absorption, stripping, liquid-liquid extraction, supercritical extraction, crystallisation, adsorption, chromatography separation, membrane separations, and reactive separations. Separation method selection, synthesis and design of separation sequences, and heuristic design methods. Energy technology for separation processes. Phenomena integration.

Learning outcomes

After the course the student is able to define the position of separation processes based on mass transfer in process and environmental engineering. He/she is capable of solving phase equilibrium problems in multistage separations for binary mixtures. The student is able to explain the phenomena behind the following separation processes: distillation, absorption, stripping, liquid-liquid extraction, supercritical extraction, crystallisation, adsorption, chromatography separation, membrane separations, and reactive separations. He/she recognises the equipment used for these processes and is able to compare the methods to each other with heuristic rules.

The student is able to recognize the generic skills they have learned related to analytical, critical, and creative thinking – analyzing information and distinguishing the essential, as well as problem-solving and drawing conclusions – and related to skills for well-being and self-development – time management and self-direction.

Official course record: 477304A

465112S | Sheet metal forming

8 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Jari Larkiola

Content

The course covers the various sheet metal forming methods and the related tooling principles, including cost estimates. Molding methods are accompanied by the plastic behavior of materials to support learning in the selection of materials. In addition, the information obtained through substance testing and its utilization in the selection of molding methods are studied. Moldability evaluations emphasize the stress-strain behavior of materials and their consideration in choosing the material and the correct forming method. The course also covers material selection through different methods and models.

Learning outcomes

The course focuses on sheet metal forming methods such as for deep and stretch drawing, hydraulic molding by fluid pressure, incremental molding and roll forming. The methods are compared with the functions of both sheet metal bending machines and bending machines. After completing the course the student will be able to evaluate different manufacturing methods and make the right choices for the effective manufacturing of the desired product. The student is able to compare mold manufacturing methods with cutting machining and can propose suitable cost-optimal materials for the particular application and production environment. In addition, the student understands the importance of simulation in optimizing and selecting the manufacturing process.

Official course record: 465112S

462114S | Signal Analysis in Mechanical Engineering

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Juhani Nissilä

Content

The course consists of the most important mathematical methods of digital signal processing related to mechanical engineering, such as filters, numerical differentiation and integration, application of the discrete Fourier transform, calculation of signal features in time and frequency domains, envelope analysis and other cyclostationary methods, describing mechanical phenomena by means of random signals and basics of statistical pattern recognition. Examples of applications in mechanical engineering are provided.

Learning outcomes

The student understands the basic concepts related to the sampling of time domain signals and the creation of their spectra and knows how software tools and programming languages are used to perform analyzes. In addition, the student knows the most commonly used features in mechanical engineering measurements and understands their significance in describing mechanical quantities. The student can evaluate the effects of signal processing on the usability of measurement data in identifying the operating modes of a machine and in implementing machine control.

[Official course record: 4621145](#)

462109S | Simulation and modelling of machines

8 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Toni Liedes

Content

Basics of modeling and simulation and the classification of models; ADAMS simulation software principles and basic usage; Creation and usage of multibody systems comprised of rigid bodies; Kinematic and dynamic analysis; Determination of actuator motion paths and velocities as well as determination of loads; Modelling and simulation of control systems.

Learning outcomes

Upon completion of the course, the student will be able to explain the basic concepts of machine modeling and will be able to classify models based on their content and presentation. The student will be able to create a simulation model of a multi-body system consisting of rigid bodies using the Adams software. He/she will be able to interpret simulation results and assess the validity of the results. In addition, the student will be able to design sub-models of complex systems and will be able to explain the principles of creating demanding modeling entities.

[Official course record: 462109S](#)

521328A | Simulations and Tools for Telecommunications

5 ECTS | Communications Engineering | Intermediate Studies | English

Person in charge: Johanna Vartiainen

Content

Communication channels: random number generation, AWGN noise, multipath, fading. Performance evaluation: Monte Carlo method, confidence limits, BER. Simulation levels: network, link, platform. Simulation process: tools, requirements and limitations, accuracy, errors, validation. Basics of Matlab and Simulink simulation software. Short introduction to some other simulation softwares (like OPNET, OMNET ++, CST).

Learning outcomes

1. A student recognizes problems and limitations related to simulations.
2. They can select a suitable simulation method and know how to validate the model.
3. Student knows how to generate signals, random numbers and noise.
4. They know how to model fading channels.
5. A student knows how to make Monte-Carlo simulations at the baseband level and can estimate confidence level of simulation results.
6. They can explain principles of network level simulations.
7. A student knows basics of one or two fundamental simulation programs.
8. A student can an apply analytical, critical, and creative thinking to solve problems, develop knowledge, and construct well-reasoned arguments.

[Official course record: 521328A](#)

521369A | Simulations and Tools for Telecommunications

3 ECTS | Communications Engineering | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 521369A](#)

488501S | Smart Grid I: Integrating renewable energy sources

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Antonio Calo

Content

The first part of the course includes primarily background information regarding the energy and environmental crisis, the co-evolution of energy and information systems and an outlining of the transition to a distributed and smarter system. This allows for an in depths appreciation and comprehensive assessment of the environmental engineering elements in the second part of the course, including lectures on energy systems fundamentals, climate goals and decarbonization, and on the sustainability of Smart Grids taking into consideration environmental as well as socioeconomic impacts.

Furthermore, during the course, students will be able to operate a microgrid simulator allowing them to appreciate the dynamic connections and the long-term effects of a number of technical, technological and economic components discussed during the lecture activity.

Learning outcomes

Upon completion of the course, students are able to explain the concept of Smart Grids, the evolution of Smart Grids from electricity power grids, the information technology requirements as well as the economic, environmental and social implications of Smart Grids. Students can explain the basic functioning of energy markets in Finland and in the Nordic countries, within the context of the modern European smart energy system. Students are also able to find and utilize real time data on variable renewable energy sources (VRES) and are able to apply the residual curve equation. They can explain the costs of large scale VRES integration and how they can be mitigated, they can explain demand side flexibility and the related role of the emerging energy services in the Smart Grid system. Furthermore, students are able to master the basics concepts necessary to draft a scenario for the decarbonization of the power system by 2050, properly assessing its economic, environmental and geopolitical implications, as well as the technological and infrastructural gaps.

[Official course record: 488501S](#)

488502S | Smart Grid II: Smart buildings/smart customers in the smart grid

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eva Pongracz

Content

Building energy efficiency, smart building, smart buildings as part of smart grids and smart cities. The energy need of buildings, factors influencing energy needs, energy efficiency, and potential changes to building energy consumption on a long term due to climate change. Defining the smart readiness of building and legislative background. Game theory to solve complex problems of energy distribution. The key technologies of smart houses: smart devices, smart home energy management, advanced metering infrastructure. Communication technologies to support home energy management, blockchain. The new role and challenges to consumers, demand side flexibility, energy poverty.

No exam, however, the students are to complete learning tasks related to the lectures, min 9/12. In addition, a compulsory exercise on building consumption modelling.

Learning outcomes

The student is able to explain the concept of smart houses, and is able to demonstrate the optimization of smart house functions for energy efficiency, decarbonization and cost savings. Further, the student is familiar with the concepts and technologies of smart readiness, smart house automation as well as other technologies used in smart houses such as smart appliances and smart metering. The student will also understand the new role of consumers in the smart grid environment, the need for demand side flexibility and collaboration, as well as their vulnerability and the conditions of energy poverty. The student will also understand the risks of smart houses in terms of cyber security, data privacy and management. In addition, the student is able to outline the future perspectives of smart houses and smart consumers as part of the smart city framework.

Official course record: 488502S

488503S | Smart Grid III: Smart energy networks

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Antonio Calo

Content

After an introductory presentation on the course requirements, the basics are set in terms of defining energy transition to a carbon-neutral energy future. Further, the integration of multiple energy networks will be explained, as well as communication within multiple energy networks. The issue of swarms of distributed generation will be explained, as well as the economics of a system relying largely on renewables. The key storage technologies will be explained, demonstrating their use for heat or electricity storage, their effectiveness on small or large scale, as well as their purpose and economics of short and long term storage. Communication within the smart energy network, as well as the economics of distributed generation in a future carbon-neutral energy systems, will be discussed. Finally, the sustainability assessment of smart energy network performance will be explored.

In addition, the students need to complete the group exercise. The exercise is focusing on the simulation of the future smart energy system, including an assessment of environmental, economic, and societal impacts of the planned energy transition. The simulation work will be done in groups of 3-5 students using the EnergyPlan freeware, for which in-class guidance will be provided.

The students will present the results of their group work at the end of the course. There will be a final exam, where the students will need to answer problem questions related to the lectures.

Learning outcomes

Upon completion of the course, students are able to explain the concept of energy transition, and are able to outline the structure and functioning of smart energy networks. Further, student are familiar with the basic concepts related to multiple energy networks, their integration, and the related networks flow analysis. Students will also understand the concept of swarms of distributed energy generation and the need for storage to ensure network stability. They are able to outline the key energy storage methods and are able to provide contextualized recommendation for distributed and/or centralized storage of both heat and electricity. Students are also able to use design tools for the planning and evaluation of future smart and sustainable energy systems.

Official course record: 488503S

492609S | Software Application in Mining Engineering

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Adeyemi Aladejare, Kari Moisio

Content

(1) Development design, which includes polyline design, tunnel design, decline and ramp design; (2) loading of drillholes data; (3) data display and management; (4) stope design; (5) attribute assignment; (6) geological models; (7) survey data processing; (8) plotting.

Learning outcomes

Upon completion of the course students should be able to: (1) design and edit polylines, declines, tunnels, stopes, ramps and drillholes; (2) annotate and label designs; (3) assign, import, and modify attributes; (4) create model boundary and query block model properties; (5) perform stope reconciliation; (6) create, animate and analyze schedule dependencies; (7) create and update cable bolting derived tasks; (8) update graphic attributes, start and finish dates from schedule.

[Official course record: 4926095](#)

485303A | Soil Mechanics

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Aleks Wallin

Content

Introduction and stress distribution, soil deformation properties, settlement, soil strength, stability calculations and geotechnical bearing capacity, earth pressure and static equilibrium of retaining walls.

Learning outcomes

Upon completing this course, the student will 1) understand the effects of stresses on soil deformation and be able to calculate the distribution of stresses in the soil, 2) understand the specific characteristics of soil in construction, be able to explain the factors affecting soil deformation properties, the laboratory test methods used to determine these properties, and the ways to present the results, 3) be able to describe types of settlement and calculate consolidation settlement, 4) be able to explain the factors affecting soil strength, the methods used to determine strength, and the ways to present the results, 5) understand the principles of stability calculations and be able to calculate simple slip surface stabilities, as well as understand geotechnical bearing capacity, the factors affecting it, and the principles of the bearing capacity formula, 6) be able to explain types of earth pressure, calculate them, and draw earth pressure diagrams, as well as understand the principles of retaining wall design and calculate the static equilibrium of simple retaining walls.

[Official course record: 485303A](#)

477402A | Solid Inorganic Materials

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Anne Hietava

Content

Sources, usage, importance, refining and environmental impacts of inorganic solid materials (metals and compounds) used in modern society. Structure, properties and interdependency between the structure and properties and material characterization methods. Application examples: solid materials as raw materials and products in process industry.

Learning outcomes

Students passing the course can name the most important solid inorganic materials (metals and compounds) and their applications. Students can describe the significance of the materials for the society and tell about the refining chains and environmental impacts of the materials. Students can describe the structure and properties of solid materials and their interdependency and characterization methods. Students can compare and classify materials and tell the factors the classification is based on. Additionally, students can tell about the importance of the structural approach on the materials when estimating their performance in use or in reprocessing.

[Official course record: 477402A](#)

488213A | Sources and control of air pollution

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Satu Pitkääho,

Content

Atmosphere and air pollutants. Air pollution effects and regulations. Emission measurements. General ideas in air pollution control (particulates, VOCs, SO₂, NO_x, CO, indoor emissions, radon, IC engine emissions).

Learning outcomes

Student is able to explain what kind of air emissions originate from certain industries and power plants, and can explain their effects on environment and health. He/she can describe how air emissions are measured and controlled. Student knows common air pollution control systems for different emissions and is able to design air pollution cleaning devices.

After completing the course, the student will recognize the generic skills they have learned: analytical, critical and creative thinking - drawing conclusions and solving problems, as well as well-being and self-development - time management and organizing work.

[Official course record: 488213A](#)

555330S | Sourcing Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Jukka Majava

Content

Sourcing and purchasing in organisations and value networks, sourcing strategies, processes, tools and methods, performance measurement, supplier management, information systems and digitalisation, public purchases, social responsibility and sustainable development

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the role of sourcing and purchasing in organisations and value networks, and understand the importance of effective management of purchases
- know the key concepts, processes and methods of sourcing and purchasing from strategic and operative perspectives
- analyse sourcing and purchasing processes and create development proposals that improve productivity and competitiveness
- know the importance of sustainability and social responsibility and the opportunities of digitalisation in developing sourcing and purchasing

[Official course record: 555330S](#)

461102A | Statics

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Lahtinen

Content

Fundamental laws and concepts in statics. Force systems and their treatment. Equilibrium of particles and rigid bodies. Static forces in isostatic structures such as beams, frames, cables and trusses. Friction.

Learning outcomes

After the course, the student can calculate forces and moments of loaded structures using equations of vector algebra and trigonometry. The student can draw a free body diagram of the force system and then solve the unknown forces by using equations of equilibrium. The student can determine resultants from uniformly distributed loads and apply Coulomb's law of friction in the problem equilibrium. The student can solve problems of internal and external forces of particle systems and rigid body systems in case of static equilibrium. Especially, the student can draw shear force and bending moment diagrams for beam structures.

Official course record: 461102A

521393S | Statistical Communication Theory

7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Premanandana Rajatheva

Content

Detection of Signals – general Gaussian, ROC curves – performance, Estimation, Representation of Random Processes: Homogeneous Integral Equations and Eigenfunctions, Signals with unwanted parameters, Multiple channels, Mobility in Detection, Correlation functions: Bessel functions – derivations, Waveforms for mm-wave and higher frequencies, Application of learning methods in Physical layer

Learning outcomes

After completing this course

- Student is conversant with commonly used estimation and detection techniques: receiver design and algorithms.
 - Student is able to evaluate the performance of a wireless receiver by analytical or simulation methods.
 - Student is able to read and understand peer reviewed publications in relevant topics.
 - Student is familiar with the novel applications in physical layer and new directions including 5G and beyond
- Generic skills to be achieved:
- is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge.
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.
- Student can observe and explain the performance of these technologies with variable system and channel parameters through the course laboratory exercise – Vienna simulator.

Objective is to develop a theoretical understanding of statistical communication theory.

Official course record: 521393S

521348S | Statistical Signal Processing 1

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Markku Juntti, Lily Lehtomäki

Content

Review of probability, complex valued random variables and stochastic processes; linear algebra, eigenvalue decomposition, use of Matlab; estimation theory, minimum variance unbiased estimator, Cramer-Rao lower bound, linear models, the concept of general minimum variance unbiased estimation, best linear unbiased estimators, maximum likelihood estimation, least squares estimation, Bayesian estimation, linear Bayesian estimation; statistical decision theory, receiver operating characteristics, hypothesis testing, matched filter.

Learning outcomes

Upon completion the student

- * knows the key tools of linear algebra and quadratic optimization and can apply them in solving signal processing problems.
- * understands how to handle vector valued random variables and processes.
- * understands the key concepts in estimation theory such as the classical and Bayesian philosophies.
- * masters the most important estimation principles such as minimum variance, maximum likelihood, least squares and minimum mean square error estimators.
- * can derive an estimator for a given criterion and basic data models.
- * can use the methodology of estimation theory to analyze the performance of estimators and compare to performance benchmarks such as the Cramer-Rao lower bound.
- * understands the basics of detection and classification theory: hypothesis testing, receiver operating characteristics (ROC), the Neyman-Pearson and Bayesian detectors.

Official course record: [5213485](#)

IE00AK15 | Statistical Signal Processing 1

7 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Markku Juntti, Lily Lehtomäki

Content

Review of probability and statistics, random variables; linear algebra, linear filtering of random signals, use of software simulators, supervised and unsupervised learning, estimation theory, Cramér-Rao lower bound, linear models, maximum likelihood estimation, least squares estimation, Bayesian estimation, statistical decision theory, receiver operating characteristics, hypothesis testing

Learning outcomes

Upon completion the student

- * Knows basics of probability and statistics and can apply them in signal processing applications in simple analytical calculations and simulations with software simulators.
- * Knows the basic concepts of linear filtering in time and frequency domains.
- * Knows the key tools of linear algebra and can apply them in solving signal processing problems.
- * Understands the key concepts in statistical-based machine learning (such as supervised and unsupervised learning)
- * Understand Bayesian and frequentist (classical) approaches to both estimation and detection
- * Masters the most important estimation principles such as maximum likelihood, least squares, and posterior mode (MAP) and mean
- * Can derive an estimator for a given criterion and basic data models.
- * Can use linear regression also with regularization to avoid overfitting.
- * Knows and can derive Cramér-Rao lower bound for classical estimation.
- * Understands the basics of detection and classification theory (both Bayesian and classical)
- * Can use software simulators to simulate and assess the performance of estimators and detectors.

Generic skills: “is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge”, “is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures”, “is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines”

Official course record: [IE00AK15](#)

521324S | Statistical Signal Processing II

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Markku Juntti, Nhan Nguyen

Content

Bayesian estimators and filters, sequential Bayesian and least squares algorithms, Wiener and Kalman filtering, iterative algorithms, adaptive filtering and learning algorithms, statistical decision theory for signals with unknown parameters, application examples.

Learning outcomes

Upon completion the student will

- * understand the key design problems and constraints of the typical inference problems and solutions in statistical signal processing.
- * have the skills to apply estimation, detection and learning methods to solve practical problems in basic signal processing applications.
- * can use linear algebra, optimization and statistical models to derive algorithms.
- * can use numerical analysis to approximate optimal algorithms with iterative solutions including adaptive algorithms.
- * understands the basic requirements for the convergence of an iterative, adaptive, and learning algorithm.
- * can model the operation of a transceiver using software simulators to assess the performance of inference algorithms.
- * can solve simple composite hypothesis testing problems with unknown parameters.

[Official course record: 5213245](#)

555370S | Strategic Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Päivi Kekkonen

Content

Strategic analysis, planning and management, strategic decision-making, strategy implementation with an online business simulation, analysis of the strategy implementation

Learning outcomes

Upon completion of the course, the student will be able to:

- utilise strategic analysis, planning, and management
- analyse and plan strategies for complex business operations
- make strategic decisions based on the chosen strategy
- analyse the implementation of the chosen strategy

[Official course record: 555370S](#)

461103A | Strength of materials I

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Lahtinen

Content

Purpose and goals of strength of materials. Experimental elastic properties and strength of steel. Tension and compression of straight bars. Round torsion bar under shear force and torsion loads. Stresses and deflection curves in straight beams under shear force and bending moment loadings. Stress state, strain state and constitutive equations, principal stresses, Mohr's circle. Failure hypotheses.

The main basic concepts of strength of materials and capabilities for sizing the simplest basic construction cases such as axially loaded rods, torsion rods and straight beams.

Learning outcomes

After the course, the student can determine stresses and strains of simple structures under loading. The student can change the general stress and strain states from one coordinate system to another and can also apply constitutive equations in calculations. The student can dimension typical structures such as tension and compression bars, torsion bars and straight beams.

[Official course record: 461103A](#)

461104A | Strength of materials II

5 ECTS | Mechanical Engineering, Structural Engineering | Intermediate Studies | Finnish

Person in charge: Mari Åman

Content

Dimensioning of structures for fatigue. Elements of fracture mechanics. Stability, buckling and buckling of rod and beam structures. Curve bar bending. Free and prevented torsion.

Learning outcomes

The student can apply fatigue design principles in structural analysis and use fracture mechanics to evaluate the life of simple structures. The student is also able to solve stability, buckling and buckling bending of rod and beam structures. The student is able to solve curve beam bending state and free and prevented torque situations.

After completing the course, the student will have a general understanding of the different areas of strength and will be able to discuss the potential of strength design with experts in the field.

[Official course record: 461104A](#)

465110S | Strength of metallic alloys

7 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Olli Nousiainen

Content

Revision of crystallographic and stereographic concepts. Dislocation types and properties. Strengthening mechanisms: cold work, solid solution strengthening, grain refinement, precipitation. Stacking fault energy and its effect on dislocation structure and strengthening. Microstructural changes in fatigue and creep. Fatigue and creep strengthening mechanisms. Typical textures in ferritic and austenitic steels.

Learning outcomes

After completion of the course, the student will know the most important phenomena occurring in metals under stress, understand the relationship between them and microstructure, and understand their effect on strength. The student will be able to rationalize the effects of stacking fault energy on dislocation character and motion. The student will be able to compare and justify the differences in strain hardening seen in different alloys. The student will be able to explain the effects of grain size on static, fatigue and creep strength. The student will be able to explain how to determine fatigue and creep properties and list the most important factors affecting these properties. The student will be able to interpret Ashby's deformation maps. The student will be able to explain the most important concepts related to texture.

[Official course record: 465110S](#)

492607S | Stress Wave Theory and Applications

5 ECTS | Mining Engineering and Mineral Processing | Advanced Studies | English

Person in charge: Zongxian Zhang, Kari Moisio

Content

The course will: (1) introduce basic characteristics of shock waves and stress waves; (2) introduce shock wave collision and its applications in engineering; (3) present basic theory on stress waves, focusing on one-dimensional waves; (4) introduce wave reflection and transmission; (5) introduce spalling theory and its engineering applications; (6) present wave attenuation and dispersion in solids, focusing on rock mass; (7) introduce typical examples from engineering, focusing on rock, mining and mineral processing.

Learning outcomes

Upon completion of the course students should: (1) know the basic theory on shock waves; (2) understand stress wave theory, especially one-dimensional elastic wave theory; (3) be able to apply some shock wave principles to civil engineering, particularly rock engineering; (4) be able to apply stress wave theory to general engineering practices such as rock drilling, rock blasting, rock support (especially dynamic rock support), excavation/tunnelling, testing or measuring dynamic behaviour or properties of general solids, controlling or reducing vibrations, safety engineering, material development, and other applications in rock and mining engineering.

Official course record: [4926075](#)

485104A | Structural renovation of buildings

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Antti Niemi

Content

Structures and materials of one-family and apartment houses in different time periods. Finnish design standards and guidelines.

Learning outcomes

Upon completion of the course, the student

- knows the structural materials and systems used in residential buildings in different time periods and can estimate the risks associated to them as well as their alternative repair techniques
- can prepare preliminary repair plans
- knows the special measures needed when an indoor climate problem is repaired
- knows the typical damage types of different structural systems and the factors affecting their advancement
- knows the building codes and design guidelines employed in different time periods

Official course record: [485104A](#)

464123S | Structural systems in automotive vehicles

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Perttu Niskanen

Content

Chassis construction and dimensioning of automotive vehicles; Support and fastening mechanism of axles and load structures; Stability of tilting load structure, crane equipment and machinery; Rollover stability of container vehicles and busses; Support solutions for automotive tires; Power transmission systems for automotive vehicles; Steering systems of automotive vehicles; Automotive brake legislation; The basics of automotive braking; Braking systems of light- and heavy-duty vehicles and trailers combinations; Automotive electrical systems Automotive technical measurements in automotive laboratories and road conditions.

Learning outcomes

The aim of this course is for the student to become familiar with the basic principles of designing automotive vehicles and construction machines, product development and maintenance. The student is able to design an automotive vehicle chassis, support mechanisms for axles and wheels, and a fastening mechanism for load structures. The student is capable of accounting for basic principles in railway vehicle design. In addition to this, the student is able to measure brake and transmission systems for automotive vehicles, determine load models and dynamic stability of automotive vehicles and construction machines. The student is capable of explaining the regulations and standards that need to be taken into account in automotive vehicles and construction machines design and dimensioning. The student is capable of planning maintenance for a life-cycle of a vehicle and performing technical measurements in automotive laboratories and road conditions.

[Official course record: 4641235](#)

555203P | Study Skills

2 ECTS | Industrial Engineering and Management | Basic Studies | Finnish

Person in charge: Osmo Kauppila

Content

Orientation events:

- * The Deans' reception (1 h)
- * Degree program reception (1 h)
- * Meeting the teacher tutor and group formation (1 h)
- * Student service info (2 h)
- * Personal study plan creation (2 h)
- * Meeting the staff (2 h)
- * Language and communication study info (1 h)
- * Quick introduction to information skills (2 h)

First study year teacher tutoring:

- * September: Pancake evening (4h)
- * October: Business simulation (8h)
- * November: Engineering studies info (2h)
- * December: Engineering subject selection and finalizing first PSP (2h)
- * January: Summer job, career and CV-info (2h)

The rest (24h): participation in student tutoring, as well as other infos and supervision, getting familiar with the University of Oulu general orientation materials and individual study planning

Learning outcomes

Upon completion of the course, the student is able to plan his/her studies and time management based on the degree program curriculum. The student is familiar with the stages of his/her study path and is able to apply appropriate tools in study planning work. The student recognizes some common characteristics of an IEM professional skillset. The student knows where to find support for his/her studies in different stages of the studies and in different personal life situations.

[Official course record: 555203P](#)

555331S | Supply Network Management

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Jukka Majava

Content

Supply chain and supply chain management concepts and processes, supply chain strategies, performance measurement, supply network development, risk management and resilience, demand and supply planning and coordination, inventory management, transportation, information systems, social responsibility and sustainable development

Learning outcomes

Upon completion of the course, the student will be able to:

- describe supply chain and supply chain management concepts and strategies, as well as understand the importance of effective supply chain management
- develop and analyse supply networks and create development proposals to improve productivity and competitiveness
- understand the importance of risk management in supply networks
- know the importance of sustainability and social responsibility and the opportunities of digitalisation in supply network development

Official course record: 5553315

488139S | Surface water quality modelling

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Björn Klöve

Content

Modelling in water resources planning, environmental hydraulics, open channel flow, diffusive and point loading, limnology, processes and water quality, dimensional analysis, hydraulic experiments, transport of conservative and reactive solutes in water bodies. Modelling with ordinary differential equations, fully mixed systems, analytical and numerical methods for surface water modelling. Parameter estimation and uncertainty.

Learning outcomes

After completing the course, the students are able to estimate point and diffusion load from catchment to lakes or rivers and are familiar with basic limnology of these water systems. The students are also able to analyse water systems using mathematical modelling and understand main pollutant transport mechanisms so that are able to model water quality in lakes and streams. They also understand key concepts of surface water systems, and how to control nutrient and pollutant processes. The students are able to use Matlab in environmental analysis, modeling and programming.

Official course record: 488139S

TY00AQ72 | Sustainability in Technology

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Virpi Väisänen

Content

Concept and dimensions of sustainability. Sustainability transition and sustainability thinking. The 2030 Agenda for Sustainable Development including sustainable development goals (SDGs) and indicators. Principles of sustainability assessment. Sustainability assessment methods. Sustainability practices in organizations such as environmental management and sustainability reporting.

Learning outcomes

After successfully completing the course, the student is able to outline sustainable development on the basis of the four dimensions of sustainability (ecological, economic, social and cultural), and the student can explain the root causes for the urgent need for sustainability transition. The student can explain the importance of sustainability thinking especially in relation to technological applications. The student knows the contents of the 2030 Agenda for Sustainable Development, especially the targets and indicators for the Sustainable Development Goals (SDGs). In addition, the student is able to reflect on sustainability principles and analyze the impact of technical applications on the achievement of SDG targets. The student can explain the principles of sustainability assessment and sustainability assessment methods, such as MCA and LCA, and is able to apply this knowledge when carrying out a sustainability assessment study. After completing the course, the student is able to make a sustainability assessment for a technical application.

[Official course record: TY00AQ72](#)

TA00BA48 | Sustainable Architecture Lecture Course

10 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Henrika Pihlajaniemi

Content

The course scrutinizes the multifaceted aims and principles of sustainable architecture. The aim of the course is to provide the student with knowledge of how to apply principles of sustainable architecture in design processes of new buildings and renovation projects. The course gives students the possibility to deepen their understanding and expertise on the field of sustainable architecture.

Learning outcomes

After completing the course the student can explain the basic concepts of sustainable architecture. The student can apply this knowledge in different phases of architectural design processes of new buildings and renovation projects.

[Official course record: TA00BA48](#)

TA00AS16 | Sustainable Architecture Studio Course

15 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Janne Pihlajaniemi, Henrika Pihlajaniemi, Petri Aarnio

Content

The content of the course will be specified when the exercise assignment is given. As an exercise, students design a building/buildings in accordance with the principles of sustainable architecture in accordance with the given exercise task.

Learning outcomes

After completing the course, the student, working independently, is familiarized with the principles of sustainable architecture and the duties of an architect in such a way that the student is able to apply ones knowledge in the architectural design of buildings in demanding tasks of new buildings and/or renovation projects.

[Official course record: TA00AS16](#)

555267A | Sustainable Development and Corporate Social Responsibility

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish

Person in charge: Arto Reiman

Content

Quality of work life, social responsibility, corporate social responsibility, code of conduct, responsibility reporting, grey economy, healthy organisation, sustainable value creation, organisation models, learning organisation

Learning outcomes

Upon completion of the course, the student will be able to:

- describe essential concepts related to sustainable organisations and corporate social responsibility
- identify development trends that may have an impact on organisations' sustainable performance
- define and apply the principles of corporate social responsibility and social sustainability and their impacts at different levels
- identify and analyse different challenges organisations may confront related to sustainable development
- apply development measures for the corporate responsibility challenges

[Official course record: 555267A](#)

TP00AZ25 | Sustainable Process Metallurgy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Anne Hietava

Content

Contents vary but consists e.g. of the following topics: Concept of sustainability and its role in metal industry, methods to evaluate sustainability, BATs in metal production, circular economy in metal industry as well as emissions, waste and residues of metal industry and ways to affect them.

Learning outcomes

Student can identify and describe the most essential interactions between metallurgical industry and its environment. Additionally, students know how to promote sustainable development and circular economy within metallurgical industry. Students are able to recognize the dependencies between the dimensions of sustainability in their own field and are able to assess the impacts of their own field's activities on them. Furthermore, they are able to apply the UN Sustainable Development Goals in their own professional activities.

[Official course record: TP00AZ25](#)

488506S | Sustainable Urban Energy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eva Pongracz

Content

The course has three main parts: (1) Energy in cities, (2) Building energy efficiency, (3) City system efficiency and sustainability. Contents: Part 1: energy need of cities, sustainable energy and sustainable cities, using the urban fabric for renewable energy generation. Part 2: energy in building, air-to-air energy recovery, HVAC, psychrometric chart, heating need of buildings, ground source heat pump, building energy efficiency, city planning for energy efficiency. Part 3: synergies among critical services; water-energy nexus, waste-to-energy technologies, urban mobility, energy transition in cities.

Learning outcomes

The student can explain the concepts and legislative requirements for zero energy buildings and positive energy districts. The student will be able to calculate energy needs of buildings, understand the impact of building age and building materials, U-values. The student can apply the psychometric chart and able to size and select suitable heating, ventilation and air conditioning (HVAC) technologies for different climate zones. The student can also apply energy modelling tools and is able to size building-integrated renewable energy technologies, such as solar panels and ground-source heat pump. The student will also gain understanding of the requirements of energy efficiency in cities, and perform energy audits, recommend strategies for energy efficiency renovation, as well as evaluate the connection of energy efficiency with land use planning and zoning. The student can also calculate opportunities for sector integration, and gain understanding of the energy potential and needs of different urban sectors such as waste management, water and wastewater services and urban mobility. The student will learn how to draw plans for the energy transition of cities including prioritization and timing of actions contributing to a sustainable energy future.

Official course record: 4885065

IE00AV12 | System on Chip Architecture and Design for Data Processing Systems

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Zaheer Khan

Content

Introduction to SoC architecture
Interconnects
Memory Architecture
Processor/DSP Processor
Hardware Accelerators
DMA Engine
SoC Schedulers
SoC Verification Methods
Data formats
Data Word Size Relationship to Dynamic Range and Signal Quality
Implementation Tools

Learning outcomes

Upon completion of the course, the student will be able to:

understand structure and operation of systems-on-chip technologies for wireless systems.

explain about main building blocks of a system-on-chip, e.g. processor, dsp processor, on-/off-chip memories, interconnects are introduced.

understand implementation methods as well as techniques for low power consumption, better area and performance utilization.

understand concepts relating to SoC verification and its importance

familiar with design tools used in hardware/software driven algorithm acceleration

able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge

able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures

recognizes the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them

Official course record: [IE00AV12](#)

555396S | Systematic Process Improvement

5 ECTS | Industrial Engineering and Management | Advanced Studies | Finnish

Person in charge: Osmo Kauppila

Content

Systematic problem solving according to DMAIC, Six Sigma Black Belt body of knowledge tools with a focus on quantitative methods, use of the Minitab software

Learning outcomes

Upon completion of the course, the student:

- is able to manage process improvement and problem solving according to Lean Six Sigma methodology
- is able to explain the steps of DMAIC problem solving and apply appropriate tools in each step
- Is able to analyze data using the Minitab software and interpret the results

Official course record: [555396S](#)

461105A | Technical thermodynamics

5 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Lahtinen

Content

Heat and moisture transfer; Principal laws in thermodynamics and basic concepts involved; Applications in production, transformation, transfer and use of energy.

Learning outcomes

After the course, the student can explain the principal laws of thermodynamics and their impact on energy conversions. Student can apply the energy balance equations for closed and open systems in the calculation of properties and path functions of different processes. The student can explain the theoretical foundations of combustion engines, gas and vapor power plants, and refrigerators and heat pumps. In addition, student can solve problems regarding heat and moisture transfer.

Official course record: [461105A](#)

453510A | Techniques of Plumbing, Heating and Ventilation

3 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Pentti Kuurola

Learning outcomes

After completing the course the student recognizes the essential PHV-technical drawing symbols, can read the drawings and define the space requirements for the PHV-technical systems. Furthermore he/she can present how the assembly, maintenance and observability of the damages has to be taken care in the design and realization of the systems. The student can also explain the impact of the PHV-systems to the energy efficiency, indoor air quality and comfort of the buildings.

Official course record: [453510A](#)

555372S | Technology and Human Factors in Work

5 ECTS | Industrial Engineering and Management | Advanced Studies | English

Person in charge: Arto Reiman

Content

Human factors, ergonomics, human-machine-interaction, human-technology-interaction, risk management, discomfort and load factors, human organisational capabilities, human-centered design, complex systems, socio-technical systems.

Learning outcomes

Upon completion of the course, the student will be able to:

- analyse the interaction between humans and different technologies and systems
- identify human factors related to above interaction
- identify different discomforts, physical and psychosocial loads and risks for hazards arising from this interaction
- apply different means and methods to develop human-technology interaction and to manage adverse effects arising from this interaction
- distinguish and interpret individual and organisational capabilities required when considering, applying and using different technologies efficiently and safely
- identify and assess different risks that may relate to new technologies

Official course record: [555372S](#)

521330A | Telecommunication Engineering

5 ECTS | Communications Engineering | Intermediate Studies | Finnish

Person in charge: Kari Kärkkäinen

Content

Essential and optional blocks of coherent and non-coherent analog and digital transmission systems and their operation principles. Linear (amplitude modulation) and non-linear (angle modulation) modulation principles, and differences in their performance and operation. Carrier and pulse modulation principles and their differences. The most important analog (DSB, AM, SSB, VSB, PM, FM, PAM, PWM, PPM) and digital (ASK/MASK, PSK/MPSK, FSK/MFSK, DPSK, QPSK/OQPSK, MSK/GMSK, QAM, MCM/OFDM, TCM, DM, PCM) carrier and pulse modulation methods and their performance analysis (SNR, BEP) and comparison based on the AWGN channel model. Influence of single-tone carrier radiofrequency interference (RFI) in the case of analog modulations. The threshold effect in the case of non-linear modulations and non-linear detectors. Mixing-principle and superheterodyne receiver. Phase-lock loop techniques, and FDM, TDM and QM-multiplexing methods. Matched filter and correlation receiver principles. Basic characteristics and modelling of radio channels. Influence of band-limiting channel and multi-path propagation: inter-symbol interference (ISI) and fading, and their influence on system performance. Diversity, channel equalizing and MCM/OFDM methods for reducing channel interference. Spread-spectrum technique in brief, and benefits & limitations & applications of that principle. Cellular system idea. Basics of information theory, source coding and error-control coding methods.

Learning outcomes

After completing course a student

1. understands essential similarities and differences of analog and digital modulation methods, and can tell and explain the essential blocks and their operation in time & frequency domains for frequently used analog and digital carrier and pulse modulation methods.
2. understands essential differences both between linear and non-linear modulations, and between coherent and non-coherent modulations, and knows where those are typically used.
3. understands in which system applications each analog or digital modulation is typically used.
4. can tell limitations on system performance, caused by noise interference and various transmission channels, and can propose methods to suppress interference both in analog and digital transmission.
5. is able to explain which types of modulation are particularly important and how they are implemented in modern wireless systems.
6. can perform system analysis, and can calculate performances of analog and digital modulations, measured with either signal-to noise-ratio or bit error probability, based on simple assumptions regarding channel models.
7. can compare modulations from the standpoints of resource use (transmitted power and bandwidth needed) and implementation complexity.
8. understands the meanings of various equalizing, diversity, OFDM, spread-spectrum and coding methods from the standpoint of improvement for digital transmission reliability.
9. understands various standards and specifications of new digital transmission systems.
10. can apply gained knowledge in working life to design of systems and their sub-system units, and can also perform computer simulations.
11. understands the principles of information theory, source coding and error-control coding, and masters various most commonly used coding methods.
12. is able to describe the most important error correction methods currently in use and their decoding implementation.
13. is able to identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities.
14. is able to compare the differences and similarities between their own field of study and related disciplines.
15. is able to communicate and discuss in their mother tongue and second domestic language (this learning outcome only applies to degrees in Finnish)

The course teaches the basics of digital communication and the internet. The course requires the ability to use the necessary information and computer systems. As a final result, the student is expected to have a comprehensive understanding of the roles and cooperation of different protocol layers and the ability to apply this understanding in practice. The student is expected to be able to identify their role and responsibilities in relation to their studies, as well as the ability to plan their time and implement and monitor their implementation. Later, laboratory and practical work requires and develops generic skills, such as teamwork skills, reporting, information acquisition and source criticism. The course involves participants from different study backgrounds and cultures.

[Official course record: 521330A](#)

521322S | Telecommunication Engineering Project

5 ECTS | Communications Engineering | Advanced Studies | Finnish, English

Person in charge: Harri Saarnisaari, Kimmo Rasilainen

Content

Varies depending on the topic.

Learning outcomes

After completing the course student can

1. depending on the work subject, either solve, design, construct, measure, simulate, test or analyze limited telecommunication and radio system and sub-system problems.
2. apply the technical knowledge acquired from advanced sources into practical engineering tasks.
3. document technical and scientific results.

[Official course record: 521322S](#)

522001J | Telecommunication Engineering, thesis

0 ECTS | Communications Engineering | Post-graduate Studies | Finnish, English

Person in charge: Harri Oinas-Kukkonen

No description supplied in the collected record.

[Official course record: 522001J](#)

521402S | Telecommunications Circuit Design

6 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Timo Rahkonen

Content

The course gives the background needed in the design of RFICs and other analog telecommunication circuit blocks.

Learning outcomes

After completing the course the student

- knows the most usual schematic structures and dimensioning principles of typical telecommunication circuit blocks
- can sketch the spectral effects of non-linear and time-varying circuit blocks
- can evaluate the performance of the available IC process node

Also:

- * Making exercises and design tasks trains in analytical, critical thinking and handling with uncertainty.
- * In general, electronic design targets in reducing energy consumption.
- * Student population is generally international

[Official course record: 521402S](#)

521098S | Testing Techniques of Electronics and Printed Electronics

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Rafal Sliz

Content

Overview of different testing methods and systems, construction of testing equipment. Methods of data analysis and interpretation. Automatic and embedded testing, design for testability, boundary scan, test applications. Real-life testing systems and applications presented by industry representatives.

Learning outcomes

During this course, students will learn about various aspects of testing electronic components, modules, and systems. Students will also gain knowledge that will allow them to apply different testing strategies according to different requirements and specifications. After completing the course, students will be able to understand the following aspects related to electronics testing:

- Interconnection testing and verification,
- Reliability testing and statistical analysis of results,
- Standards in testing,
- Battery testing and data analysis,
- Photovoltaics testing and data analysis.
- Printed and flexible components testing and analysis,
- Fundamental physicochemical analysis of various components and systems,
- Industrial approach to electronics testing, (testing design)
- The business of testing electronics.
- Practical knowledge of the product components

Official course record: 5210985

485981A | The Maturity Test for Bachelor's Degree

0 ECTS | Civil Engineering | Intermediate Studies | Finnish

Content

Depends on the topic of the thesis.

Learning outcomes

The student can produce mature text in popular form of the research field and thus show ones familiarity to the field.

Official course record: 485981A

469080A | The Maturity Test for Bachelor`s Degree

0 ECTS | Mechanical Engineering | Intermediate Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

Official course record: 469080A

469090S | The Maturity Test for Master`s Degree

0 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Reijo Saari

No description supplied in the collected record.

Official course record: 469090S

477415S | Thermodynamic and process modelling in metallurgy

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Eetu-Pekka Heikkinen

Content

Course is divided in two parts. Part I focuses on thermodynamic modelling in the contexts of metallurgy: How to use HSC Chemistry as well as its modules (Reaction equations, Equilibrium compositions, Heat & Material balances, H, S, CP, G diagrams, Stability diagrams, Eh-pH diagrams, Measure units, Periodic chart, Species converter) and database? How to define a system? How to interpret results? Part II focuses on general information and exercises in HSC-Sim (Flowsheet simulation -module): HSC-Sim structure and user interface, toolbar, drawing a flowsheets with HSC Sim, data necessary for building up a simulation, structure of HSC Sim Distribution mode, simulation of metallurgical balance.

Learning outcomes

Students passing the course can use computational methods (i.e. HSC Chemistry -software) to investigate the thermodynamic equilibria (e.g. in metallurgy). These thermodynamic considerations include 1) equilibrium calculations, 2) mass and heat balances as well as 3) phase diagrams. Additionally, they can use commercial process simulation software (i.e. HSC Sim -software) to model metallurgical processes. This means that the student will know how to 1) model flowsheets for various processes, 2) apply simulation in practical problems and 3) run calculation and analyse the results.

[Official course record: 477415S](#)

477401A | Thermodynamic Equilibria

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Anne Hietava

Content

Concepts of enthalpy (H), entropy (S) and Gibbs free energy (G). The effect of temperature and pressure on H, S and G. Chemical and phase equilibria. Activity and activity coefficient. Calculation of thermodynamic equilibria using equilibrium constant as well as Gibbs free energy minimisation.

Learning outcomes

Student is capable of defining chemical equilibria of the systems that are related to industrial processes and understands the relevance of equilibria (and their computational determination) as a part of process analysis, planning and control. Additionally, (s)he can define a meaningful system to be considered in computation thermodynamics; i.e. (s)he can create a computationally solvable problem based on technical problem that in itself is not solvable computationally.

[Official course record: 477401A](#)

485107A | Timber construction and product technology

5 ECTS | Civil Engineering | Intermediate Studies | Finnish

Person in charge: Hannu Lahtinen

Content

Timber construction terminology, official regulations, wood as a raw material for houses, basics of wood construction, building materials, construction options, frame systems, prefabricated structures, CLT structures, log construction, wood facades and production and house technology.

Learning outcomes

After completing the course, the student will master the general terminology related to wood construction. He is familiar with the nature and scope of official regulations on timber construction. He is also familiar with the properties of wood as a raw material and is familiar with the basics of wood construction. The student knows the most common building materials made of wood and the different construction options for wooden houses. In addition, he is able to describe the different frame systems, prefabricated structures, CLT structures, log construction and wooden facades of wooden houses. He is also familiar with the production and house technology of houses.

[Official course record: 485107A](#)

080915S | Tissue Biomechanics

5 ECTS | Medical Technology | Advanced Studies | English

Person in charge: Victor Casula

Content

Introduction to tissue biomechanics. Most important biomechanical parameters and material models. Experimental measurements of biomechanical properties of tissues. Structure, composition and mechanical properties of different tissues. Cell biomechanics. Biomechanical modeling of tissues.

Learning outcomes

The student can describe the main biomechanical characteristics of different tissues and cells as well as failure mechanisms of tissues.

The student understands relationship between biomechanical properties and tissue composition and structure.

The student can perform practical biomechanical experiments, analyze measurement data, interpret results, and report them using good scientific reporting practice.

The student understands how numerical modeling can be used to solve problems in tissue biomechanics.

[Official course record: 080915S](#)

462115S | Tolerance Design

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Mika Pylvänäinen

Content

- Introduction
- Basic concepts
- Process capability
- Definition of tolerance
- Determining and calculating tolerance chains
- Utilizing measurement data in tolerance design

Learning outcomes

After completing the course, the student

- understands the importance of tolerance analysis as an essential part of the product development process and can independently apply it as a basic design tool,
- understands that there is variation in the manufacturing process of product parts and knows how to use the available information on part variation in setting realistic tolerances,
- knows how to convert the requirements related to the product's key functions and assembly into critical dimensions in the product structure, and knows how to determine the tolerance chains affecting them and calculate the total variation arising in the chains,
- can evaluate the structures of the products from the point of view of their sensitivity to dimensional variation of the parts,
- and knows how to optimize the product structure in such a way that the effect of the variation in the dimensions of the parts on the critical dimensions in the product structure and further on the reliability of the product's key functions is as small as possible.

Official course record: 4621155

TY00AH35 | Towards circularity

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Virpi Väisänen

Content

Definitions and principles of linear and circular economies. Sustainability challenges. Use of resources. National and EU policies for CE. Circular business models. Instruments to enhance circular economy. Measurement of circularity. Sustainability of circular economy.

Learning outcomes

After completing the course, the student is able to explain the concepts of linear and circular economies (CE) and the underlying sustainability challenges that force us to a shift from a linear economy to circular business models. The student can find information about the national and EU policies and action plans for CE. In addition, the student can explain and utilize circular economy business models, as well as various tools that are used to promote the transition to the circular economy. The student is able to analyze the capability of the selected products, processes and services to fulfill the requirements of the circular economy. In connection with the above, the student can judiciously suggest development needs and practical actions in order to achieve circularity targets and support sustainability. After completing the course, the student is also able to work constructively and responsibly in a team and contribute to the achievement of the team's goals.

Official course record: TY00AH35

464109S | Ultrahigh-strength steels in machine design

5 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Lassi Keränen

Content

Machine design and standards; Manufacture, characteristics and usability of special-strength steels; Fatigue of special-strength machinery parts.

Learning outcomes

After completing the course, the student will recognize the typical manufacturing processes of high-strength structural steels and will be able to explain the key characteristics of high-strength steels in machine design. Students are able to use high-strength steels in statically and dynamically loaded machine structures. In addition, students are able to choose suitable manufacturing methods for high-strength steel components. After the course, students will be able to design a new product together with the design team or develop the performance of an existing product using high-strength steels.

TA00AJ85 | Urban Design and Planning 1

5 ECTS | Architecture, Urban Design | Basic Studies | Finnish

Person in charge: Helka-Liisa Hentilä, Aale Luusua

Content

The study unit introduces and discusses the key elements of urban form, urban space and townscape, the methods of urban analysis, the historical development of Finnish cities, with an emphasis of the 20th and 21st centuries. The course exercise consists of a small-scale urban design project.

Learning outcomes

After completing the course, the student is able to explain the key components and concepts related to urban structure, urban space and townscape. The student can explain the key stages of Finnish urban development and the artistic main features of urban architecture from different eras. The student has the ability recognise the United Nations' (UN) Sustainable Development Goals. The student can analyse, explain in writing and present visually the key elements of urban form, urban structure, urban space and townscape. The student can work constructively in a group. The student is able to evaluate and analyse the development needs of an urban public space and apply the insights in preparing a small-scale urban space design project. The student can present design goals and the main points of design solutions orally and in writing. The student can produce hand-drawn plans. The student can schedule his/her own studies according to the course schedule.

Official course record: TA00AJ85

TA00AJ97 | Urban Design and Planning 2

10 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Anssi Joutsiniemi, Aale Luusua

Content

The course provides foundational knowledge and skills in the planning of residential-focused areas. During lectures, various planning tasks are addressed, including specific issues related to landscape structure, traffic planning, stormwater management, community engineering, and the planning of residential area functions from the perspective of well-being and sustainable development. Learning activities include familiarization with reference cases, analysis of the planning area, and the creation of an area plan. The course also includes workshop and seminar work where students practice presentation and argumentation skills.

Learning outcomes

Upon completion of the course, the student understands urban planning as an interaction between people, nature, and the built environment, and is able to grasp the key spatial and functional principles of planning. The student is familiar with the basic principles of urban space dimensioning and can examine the relationships between plots, blocks, squares, and streets as an integrated whole.

Through the course exercises, the student learns to apply fundamental planning principles to different planning situations and to identify the key local characteristics and constraints of a planning area. The student is able to analyse and compare alternative planning solutions and to justify their own design choices in relation to the stated objectives.

During the course, the student develops the ability to participate in discussions on urban planning and to evaluate current planning issues from a spatial and functional perspective, and learns to manage a weekly structured design process, follow given instructions, and work within established schedules. The course also supports the development of generic academic skills, such as analytical thinking, argumentation, and visual communication, as well as the critical and purposeful use of artificial intelligence as part of planning analysis.

Official course record: TA00AJ97

TA00AK09 | Urban Design and Planning 3

8 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Helka-Liisa Hentilä

Content

Lectures discuss the planning of sustainable communities from the perspectives of land use, traffic, infrastructure and landscape planning, as well as the Finnish land use planning system, planning process and regulations. There are three learning tasks: 1) lecture assignments, 2) plan documents (including zoning plan) and 3) evaluation of another student's project in the final seminar. The design project consists of planning an area with several blocks.

Learning outcomes

After completing the study unit the student can explain the main principles of the Finnish land use planning system, the process of town planning and identify the key regulations related to town planning. The student is able to define the objectives of planning and the appearance of a town plan document. The student can also describe the main principles of sustainable planning. The student is able to describe and recognize the various technical symbols and regulations in planning. Furthermore, the student is able to apply the acquired knowledge to a town plan design exercise, critically analyze the starting points and development goals of the project, create town planning solutions that support sustainable development and produce an example of the necessary planning documents, corresponding to an official town plan. He/she recognizes the perspectives of experts in different fields related to town planning and the interfaces with the work of an architect. The student is able to describe and observe his/her own learning and give feedback to others that promotes learning.

[Official course record: TA00AK09](#)

TA00AT19 | Urban Design and Planning Project Studies

5 ECTS | Architecture | Intermediate Studies | Finnish, English

Person in charge: Helka-Liisa Hentilä

Content

Current features of planning, urban design, and urban development, such as urban design projects in a northern context.

Learning outcomes

After completing the study unit the student can identify current features in planning and urban design as well as describe their impacts to functional and spatial planning of human settlements. The student can implement learning outcomes in different planning and urban design tasks.

[Official course record: TA00AT19](#)

TA00AE48 | Urban Lighting

10 ECTS | Architecture | Advanced Studies | English

Person in charge: Henrika Pihlajaniemi

Content

The study unit deals with the basic concepts, principles and theory of the design of urban, outdoor and street lighting. Existing urban lighting solutions will be analysed. Students will devise in groups a lighting plan into an urban context and make computer-aided visualizations of it. During the study unit, user-oriented design methods and scenario working will be introduced, as well as different luminaire and lighting control solutions. The contents of the study unit include working with lighting visualization and calculation programs. The program includes excursions to realized urban lighting projects and environments, and a workshop, where students design and carry out lighting tests and/or create lighting installations. The study unit includes lectures about basic principles of lighting design, urban lighting, façade lighting and lighting visualization and calculation.

Learning outcomes

Learning outcomes

After completing the study unit the student will be able to understand the principles of urban lighting and can design lighting solutions to urban environments and outdoor spaces. The student will be able to apply lighting theory to outdoor lighting design solutions and to take into consideration the needs of users and activities within urban environments. The student will be able to understand the phases of a lighting design process and can prepare design documents relating to them. The student will be able to carry out lighting calculations in relation to urban environments and consider suitable illuminance levels for different use situations. The student will have knowledge of luminaire types and intelligent lighting control solutions used in outdoor environments and understand how the properties of light sources and lighting fixtures influence the final lighting solution. The student can visualize the effects of lighting in urban environments utilizing visual presentation and visualization programs. The student will be able to perceive the ecological and economic aspects of urban lighting.

[Official course record: TA00AE48](#)

TA00BA47 | Urban Space Design

10 ECTS | Architecture | Advanced Studies | English

Person in charge: Anssi Joutsiniemi

Content

The study unit focuses on neighborhood-scale urban design in post-industrial and transforming urban environments. The course examines how existing urban structures, infrastructures, landscapes, and cultural layers can be reinterpreted and integrated into future-oriented urban development.

The course content is structured around a design-led and problem-based process in which students explore urban form through successive thematic perspectives. These include the analysis of existing urban environments and stakeholder contexts, typomorphological studies of blocks, streets, and public spaces, the structuring of street and mobility networks, the role of green and blue infrastructure and recreational systems, and the development of cultural, civic, and public space frameworks. These thematic explorations are progressively synthesized into a coherent neighborhood-scale urban vision.

Throughout the course, particular attention is given to the relationship between urban structure, everyday life, and spatial experience. Questions of density, scale, public-private transitions, accessibility, and identity are explored through design thinking, alongside regulatory constraints. Quantitative aspects such as capacity, density, and parking are introduced as tools to support and test design decisions.

Urban design is approached as an iterative and integrative process in which analytical insights, design exploration, and collective discussion continuously inform one another. The course focuses on conceptual, structural, and spatial design as a foundation for further urban development processes, over statutory planning or zoning.

Learning outcomes

Upon successful completion of this study unit, students will be able to conceptualize, analyze, and synthesize neighborhood-scale urban design proposals for post-industrial urban sites within a complex and evolving urban context.

Students will develop the ability to analyze urban environments from spatial, social, ecological, and infrastructural perspectives; formulate clear design questions; apply typomorphological thinking to urban structures; and integrate alternative design strategies into a coherent neighborhood vision supported by both quantitative reasoning and qualitative argumentation. Students will also learn to communicate urban design concepts clearly through drawings, diagrams, and structured presentations.

The course is based on problem-based and collaborative learning in multidisciplinary and multicultural groups. Through this process, students strengthen key generic skills such as teamwork, critical thinking, problem-solving, and the ability to justify design decisions within an international design context.

[Official course record: TA00BA47](#)

455521S | Urban Space Detailing

10 ECTS | Architecture | Advanced Studies | English

Person in charge: Aulikki Herneoja

Content

The course aims to go deeply into issues of detailing urban space by focusing on the overall concept. The purpose is to initiate the students to utilize outdoor furniture, accessories and lighting in outdoor design and to acquaint the students with the materials and requirements for designing green areas. Lectures introduce students to the requirements of detailing outdoor areas according to the course objectives. The students make a detailed design for the site studied as an exercise work within the Urban Space Design course.

Learning outcomes

After completing the course, the student can make a detailed plan for an urban space, considering various sectors and approaches of urban space detailing, including material alternatives. In the assignment, the student can apply significant scale variations to detail the urban spaces. The student can consider sustainable development when choosing materials and making design solutions.

[Official course record: 455521S](#)

485405S | Urban Transport Planning and Engineering

5 ECTS | Civil Engineering | Advanced Studies | Finnish

Person in charge: Virve Merisalo

Content

The course focuses on urban transport and street planning from a traffic engineering perspective. The emphasis is on analysing the functionality, safety and sustainability of urban transport as part of the urban structure and transport system. The course contents are applied in a comprehensive group-based design project.

Key topics:

- Transport as part of the urban vision, land use and the transport system
- Traffic engineering design of transport networks, streets and intersections
- Functionality, safety and accessibility of the street environment
- Planning of walking and cycling as part of urban transport
- Traffic control and management in the urban environment

Learning outcomes

After completing the course, the student is able to:

- analyse the functioning of urban transport systems and identify key problem areas in the traffic environment as part of the urban transport system
- apply the principles of the urban traffic and street planning process and analyse traffic data in a practical planning task
- develop and justify traffic engineering-based street and transport planning solutions that take into account, among others, traffic safety, functionality, sustainability and cost-efficiency
- assess street and transport planning solutions as part of the wider land use and transport system context
- work purposefully in a group, communicate planning solutions clearly in written and oral form, and give and receive constructive feedback as part of a large-scale design project

[Official course record: 485405S](#)

488146S | Urban water management

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Pekka Rossi

Content

During the course, student studies quantitative and qualitative design standards for storm water systems. Rainfall recurrence intervals for quantitative design and flood conditions are discussed. The implemented quantitative design exercise includes manual and modelling approach for storm water system. Future climate conditions and green infrastructure approaches of LIDs (Low infrastructure development) are implemented and critically analysed. Course includes a short seminar where students work in international groups presenting their findings.

Learning outcomes

Upon completion of the course student has knowledge of quantitative and qualitative management of waters in urban settings. This includes design of stormwater system design, which are analyzed critically from modelling perspective. Course also studies the connections of planning architecture to urban water management. Approaches in the course include utilization of e.g. green infrastructure and nature-based solutions as a part of the urban water management and the aim is more sustainable and resilient urban settlements (UN SDG 11) also for future climate.

[Official course record: 488146S](#)

TA00AJ92 | Visual Arts 1A

4 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Ari Björn

Content

The student will study different techniques of producing a work of art through drawing, painting and 3D art. The course approaches visual art from the perspective of contemporary art. Thematically art studies are based on human relationship with society and its phenomena. Through exercises, the course explores topics such as object and space drawing, the interaction of light and colour, and plastic art. Assignments are based on space, time and the body.

During the course we will discuss about the relation and importance of the work of art and the author's intentions. Lectures will introduce each medium and the different artists and their approaches through artist presentations.

Learning outcomes

After completing the course, the student can comprehend different aspects of visual expression and will be able to apply them in practice.

TA00AJ94 | Visual Arts 1B

4 ECTS | Architecture | Basic Studies | Finnish

Person in charge: Ari Björn

Content

The course approaches visual art from the perspective of contemporary art. Thematically art studies are based on human relationship with society and its phenomena. Assignments are based on space, time and the body.

Visual Art 1B is an advanced part of visual art teaching, where the content and context of the work of art and independent artistic work are more strongly integrated. The course begins with an introduction to photography and video as media. Lectures will introduce both media, as well as the different artists and their approaches through work and artist presentations. After the photography and video component, each student will focus on their chosen medium and produce a work of art through it. The media can be chosen based on the media covered in the Kuvataide 1A and 1B courses. During Spring Period one, student will develop a written plan and a draft. The sketch produced in Spring Period 1 will be taken forward in Spring Period 2 to its final form. The course ends with an exhibition.

Learning outcomes

After completing the course the student will be able to practice independent creative work and understand the importance of content and context in creating a work of art. Having familiarized themselves with the related sector and its practices, students will be able to recognize and to implement the synergies of an alternative perspective and apply artistic thinking, medias and techniques to their practice

Official course record: [TA00AJ94](#)

455514A | Visual Arts IV / Architectural Photography

4 ECTS | Architecture | Intermediate Studies | Finnish

Person in charge: Asko Leinonen

Content

The course covers the key areas of architectural photography and the stages of the digital imaging process. Students learn the structure and operation of a digital single-lens reflex camera as well as the technical basics of photography, including exposure, focusing, and depth-of-field control. The course also deepens understanding of compositional principles for representing architectural space, form, light, and material. Through lectures, students are introduced to major developments in the history of photography and to the ways in which photographic practices have influenced the documentation and visual representation of the built environment. The practical components of the course include hands-on photography assignments and training in digital image processing, including the creation of high-dynamic-range (HDR) images and panoramic photographs.

Learning outcomes

The course provides students with the essential foundations of architectural photography and the use of digital photographic equipment. Students learn the operating principles of a digital single-lens reflex camera and the technical basics of photography, such as exposure, focusing, and depth-of-field control. The course also covers the principles of composition for representing architectural space, light, and materials. Through lectures, students are introduced to key developments in the history of photography and to the ways in which photography has shaped the documentation and representation of the built environment.

After completing the course, students are able to apply the photographic and compositional methods they have learned to produce purposeful and visually informative photographs of architectural subjects.

Official course record: [455514A](#)

488505A | Waste management and recycling

5 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Jenni Ylä-Mella

Content

Waste management is one of the core services of municipal infrastructure and a central part of people's everyday life. Functional waste management system guarantees a comfortable and safe living environment and is also a key part of the circular economy. In this course, you will learn about waste regulation, responsibilities for organizing waste management, waste collection and treatment methods, as well as consumer responsibilities and consumption habits. The course is related to the UN's Sustainable Development Goals (SDGs) #12 Responsible consumption and production, #11 Sustainable cities and communities and #9 Sustainable industry, innovation and infrastructure.

Key topics: Waste legislation in the EU and Finland. Waste Act and Regulations, waste hierarchy. Sorting of household waste: waste containers, collection points, reception and transport, responsibilities. Producer responsibility schemes and fractions subject to producer responsibility. Collection, recycling and recovery rates of wastes, waste recycling and energy recovery technologies. Food waste and losses, utilization of bio-waste. Construction and demolition waste, hazardous waste. Waste Center operations, safe treatment and disposal of waste. Consumers responsibilities and consumer habits.

Learning outcomes

After completing the course, the student will be familiar with the main features and objectives of waste legislation, and other policy instruments used in waste management. The student understands the key concepts of waste management, can apply the waste hierarchy and use the waste-related terminology correctly. The student is also able to identify the main stakeholders and understands their roles and responsibilities in the municipal solid waste (MSW) management system. The student is able to comprehensively analyse the current waste management system, identify unsustainable practices built into it, and propose more sustainable solutions to replace them. The student is also able to reflect on their own household's practices and critically evaluate their own consumption patterns and habits, as well as consider how they could be more sustainable.

The student knows the main MSW fractions and their key treatment technologies and can also choose appropriate methods for different situations. The student knows the requirements related to waste prevention, separate collection and treatment of MSW set by the legislations and is able to calculate the recycling and recovery rates of waste fractions.

[Official course record: 488505A](#)

AY00AZ23 | Waste management and recycling: Regulation and organization of waste management

3 ECTS | Process and Environmental Engineering | Intermediate Studies | Finnish

Person in charge: Jenni Ylä-Mella

Content

Waste management is one of the core services of municipal infrastructure and a central part of people's everyday life. Functional waste management system guarantees a comfortable and safe living environment and is also a key part of the circular economy. In the course, you will learn about waste regulation, waste management organisation and responsibilities, and waste collection and treatment methods, as well as consumer responsibilities and consumption habits. The course is related to the UN's Sustainable Development Goals (SDG's) #12 Responsible consumption and production, #11 Sustainable cities and communities and #9 Sustainable industry, innovation and infrastructure.

Key topics: Waste legislation in the EU and Finland. Waste Act and Regulations, waste hierarchy. Sorting of household waste: waste containers, collection points, reception and transport, responsibilities. Producer responsibility schemes and fractions subject to producer responsibility. Collection, recycling and recovery rates of wastes, waste recycling and energy recovery technologies. Food waste and losses, utilization of bio-waste. Construction and demolition waste, hazardous waste. Waste Center operations, safe treatment and disposal of waste.

Learning outcomes

After completing the course, the student will be familiar with the main features and objectives of waste legislation, and other policy instruments used in waste management. The student understands the key concepts of waste management, can apply the waste hierarchy and use the terminology correctly. The student is also able to identify the main stakeholders and understands their roles and responsibilities in the municipal solid waste (MSW) management system. The student knows the main municipal waste fractions and their key treatment technologies and can choose appropriate methods for different situations. The student also knows the requirements related to waste prevention, separate collection and treatment of MSW set by the legislation, and how to calculate the recycling and recovery rates for waste fractions.

[Official course record: AY00AZ23](#)

488110S | Water and Wastewater Treatment

5 ECTS | Process and Environmental Engineering | Advanced Studies | English

Person in charge: Elisangela Heiderscheidt

Content

Water quality characteristics of source water; basic principles of purification processes (coagulation/flocculation, sedimentation, biological treatment, filtration, disinfection, etc.); process units in water and wastewater treatment; selection of process units; dimensioning of treatment structures and unit processes

Learning outcomes

Upon completion of the course, the student will be able to understand the theory and practicalities behind the most used purification processes in water and wastewater treatment. The student will also be capable of performing basic dimensioning calculations. Therefore, they will be able to dimension structures/units of water and wastewater treatment plants and comprehend the basic requirements of different purification processes. Course content and teaching methods support the development of generic skills crucial for working life, such as (i) critical and systematic thinking for the assessment of water and wastewater treatment systems and processes suitable for communities of different sizes located in different climates, (ii) sustainability awareness and the whole of the water sector in reaching Sustainable Development Goals (SDGs) 6 (Clean Water and Sanitation) and 11 (Sustainable Cities and Communities). Furthermore, students engage in (iii) multidisciplinary and interdisciplinary work and communication through group activities where they are guided to identify the multidisciplinary principles and processes used in water/wastewater treatment and utilise the diverse backgrounds of group members for solving engineering and communication problems.

[Official course record: 488110S](#)

488144A | Water distribution and sewage networks

5 ECTS | Process and Environmental Engineering | Intermediate Studies | English

Person in charge: Elisangela Heiderscheidt,

Content

Water distribution and wastewater network design and dimensioning requirements, pumping and storage tanks needed for water distribution and wastewater collection, interaction between pipe materials and water, physical integrity of network infrastructure and pipeline renovation, special circumstances in water distribution, effects of cold climate and adverse hydraulic conditions

Learning outcomes

Upon completion of the course, the student will be able to understand the functionality and operational dynamics of water distribution and wastewater collection networks. The student will be able to perform basic hydraulic calculations and dimensioning steps, including the use of modelling tools for the design of a water distribution network and sewer system for an urban area. Course content and teaching methods support the development of work-life skills, such as (i) critical and systematic thinking via the development of networks which meet hydraulic, construction and climate requirements, (ii) sustainability awareness via discussions regarding the whole of the water sector in reaching Sustainable Development Goals (SDGs) 6 (Clean Water and Sanitation) and 11 (Sustainable Cities and Communities), (iii) multidisciplinary and interdisciplinary work and communication through group activities where students are guided to identify the multidisciplinary principles and processes needed for network design, operation and status assessment.

[Official course record: 488144A](#)

TE00AG67 | Wearable Sensors

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Jari Hannu, Jarkko Tolvanen

Content

- Wearable sensor technologies
- Physical sensor operation principles
- Flexible and stretchable sensors
- Case-studies

Learning outcomes

Learning outcomes

1. After completing the course, student can explain the basic concepts of sensor theory and technology, classification of sensors, properties of ideal and real sensors, pros and cons of integrated smart sensor systems, and the interface between sensor and processing unit.
2. Student understand the physical operation principles of wearable sensors.
3. Student can explain the fabrication methods for wearable sensors including micromachining and printed electronics methods.
4. Student can choose the best sensor technologies for wearable devices.
5. Student knows the state-of-the-art of wearable devices from the research perspective.

[Official course record: TE00AG67](#)

465111S | Welding metallurgy

8 ECTS | Mechanical Engineering | Advanced Studies | Finnish

Person in charge: Timo Kauppi

Content

Heat distribution in welded joints; Solidification and segregation; Microstructures of the heat-affected zone; Weldability: structural steels, low-alloyed steels, stainless steels, cast irons, nonferrous metals; Welding defects and weldability testing.

Learning outcomes

The course gives essential background information on the phenomena taking place in welding and their influence on microstructures and mechanical properties and also provides skills in select materials and welding methods.

Learning outcomes: Upon completing of the required coursework, student is able to:

- explain the influence of welding conditions on temperature distribution and solidification morphology of a welded joint,
- classify typical microstructures present in the heat-affected zone of low carbon steel weldments,
- compare the importance of microstructure on mechanical properties of the joint, and
- explain the microstructure changes occurring in welding of alloyed steels, cast irons and non-ferrous metals and their influence on properties.

After the course the student also has skills to select a proper weldability test for estimating the risk of cold and hot cracking.

Official course record: [4651115](#)

521389S | Wireless Body Area Networks

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Matti Hämäläinen

Content

Introduction, existing short range radio technologies, application, WBAN architecture, sensors & actuators & wearables, WBAN protocols, signal propagation within a human, WBAN antennas, WBAN transceivers, conclusion.

Learning outcomes

Upon completing of the course, the student will be able to

1. distinguish the basic short range communications technologies used in the wireless body area network context,
2. understand the most relevant standards,
3. differentiate and compare the key points behind these standardized technologies and what are their advantages and disadvantages.
4. understand the major characteristics and applications utilizing WBAN and
5. understand the impact of wireless channels on the WBAN system and how channel affects to the WBAN system performance.

Official course record: [521389S](#)

521395S | Wireless Communications I

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Jari Linatti, Timo Kokkonen

Content

Radio channel models, digital modulation and detection methods, carrier and symbol synchronization, performance of digital modulation in AWGN and fading channel, diversity techniques, coding for wireless channel, multicarrier modulation, spread spectrum, cellular systems. Analytical and critical thinking, interdisciplinary problem solving, and adaptation to new knowledge. Collaboration in international and multicultural environments and understanding of global engineering practices.

Learning outcomes

Student

1. can analyze the performance of multilevel digital modulation methods in AWGN channel
2. can explain the effect of fading channel on the performance of the modulation method and can analyze the performance
3. recognizes and understand suitable diversity methods for fading channel and related combining methods
4. can understand and explain coding methods for wireless channels
5. recognizes different wideband systems
6. understands the cellular system principle
7. is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge (generic skill)
8. is able to work in international cooperation and take the international operating environment into account in their activities (generic skill, especially in the fall implementation for the degree program students).

Official course record: 5213955

521349S | Wireless Communications II

5 ECTS | Communications Engineering | Advanced Studies | English

Person in charge: Antti-Heikki Tölli

Content

Capacity of wireless channels, multiuser communications, adaptive modulation and coding, equalization, point-to-point MIMO communications and space-time coding.

Learning outcomes

1. The student is familiarised with the channel capacity as the fundamental performance measure of wireless communication links, and can explain the effect of fading channel on the capacity in a single-user single-antenna scenarios.
2. The student understands the basic principles for multiuser communications in fading channels, apprehends the notion of capacity region for multi-access and broadcast channels, and is familiarised with different practical multiple access, random access and scheduling methods.
3. The student is acquainted with core principles of adaptive transmission, which requires accurate channel estimates at the receiver and a reliable information exchange mechanisms between the receiver and transmitter. Practical variable-rate variable-power MQAM modulation techniques for fading channels are introduced.
4. The student understands the principles of transmitter and receiver design in the presence of channel distortion. The student is familiarised with various (adaptive) equalization solutions to combat intersymbol interference.
5. Finally, the student is acquainted with the capacity optimal multi-antenna transmission and reception scheme, as well as, with basic multiantenna space-time coding schemes in a single-user multiple-input multiple-output (MIMO) communications scenario.

Official course record: 521349S

521097S | Wireless Measurements

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Christian Schuss

Content

Basics of wireless measurement technologies and standards, wireless sensors and sensor networks, wireless building and smart home applications, wireless measurement applications in traffic, wireless environmental measurements and wireless human health monitoring.

Learning outcomes

After completing the course, the student

1. can tell and justifying argument the benefits and challenges of using wireless measurement solutions.
2. can apply the most important standards when designing wireless measurement solutions.
3. can apply wireless technologies in industrial, traffic, environmental, home and healthcare measurements.
4. develops and applies cognitive, digital, information-management, and self-leadership skills throughout the different phases of the course.

[Official course record: 5210975](#)

521168S | Wireless Measurements Project

5-10 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Christian Schuss

Content

The content and scope of the project will be confirmed on a case-by-case basis. Students can either work individually, in pairs or in groups. Please note that the size of the group affects the overall workload and scope of the project.

The focus of the project lies on applications of wireless measurements. Potential applications are for example SmartHome, industrial process monitoring and control, human health monitoring (i.e. wireless body area networks), building monitoring, traffic monitoring, environmental monitoring, and autonomous driving in order to name a few.

Learning outcomes

After completing the course, the student

1. is able to understand and solve challenges of using wireless measurement solutions in practice.
2. is able to apply the most important standards when designing wireless measurement solutions.'
3. is able to set up wireless measurement systems for specific target applications (e.g.industrial, traffic, environmental, home or healthcare measurements).

Also, during the course, the student

- develops and applies cognitive, digital, information-management, self-leadership, and project-working skills throughout the different phases of the course,
- can work fluently in the laboratory, applies learned methods in practical measurement situations, and uses the equipment safely and appropriately.

[Official course record: 521168S](#)

555214A | Working in The University Community

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish, English

Person in charge: Osmo Kauppila

Content

Communication, collaboration, creativity, problem solving, project management, learning skills, technical skills, international skills, commercial and financial skills.

Learning outcomes

Upon completion of the course, the student will be able to:

- has improved his/her professional skills through applying them in university communal tasks (communication, co-operation, creativity, problem solving, project management, learning, technical skills, international skills, commercial and financial skills)
- has improved his/her skills to carry out responsible tasks in a responsible manner
- has practiced how analyse and find development targets related to one's own working environment

555215A | Working Life Project

5 ECTS | Industrial Engineering and Management | Intermediate Studies | Finnish, English

Person in charge: Osmo Kauppila

Content

Communication, collaboration, creativity, problem solving, project management, learning, technical skills, international skills, commercial and financial skills.

Learning outcomes

Upon completion of the course, the student will be able to:

- * apply learnt professional skills in practice (communication, co-operation, creativity, problem solving, project management, learning, technical skills, international skills, commercial and financial skills)
- * take responsibility for a project in a responsible manner
- * analyse and find development targets related to the project

[Official course record: 555215A](#)

521080S | X-ray Diffraction

5 ECTS | Electrical Engineering | Advanced Studies | English

Person in charge: Jani Peräntie

Content

Main content:

1. Generation, properties, and safety of X-ray radiation
2. Absorption of X-rays and scattering by atom
3. Basics of crystalline material and reciprocal lattice
4. General diffraction conditions and diffraction by crystal
5. Ewald's construction, structure factor and integrated intensity
6. X-ray detectors and some common diffraction methods
7. Analysis of material properties by XRD
8. Intro to electron and neutron diffraction

Learning outcomes

After completion of the course, the student is be able to

1. explain and evaluate the interaction of X-rays and solid state matter together with the underlying physical principles.
2. explain, identify and evaluate how different X-ray diffraction methods can be used in materials research (e.g. analysis of crystal structure, phase ratio, grain size and stress state of a solid-state material).
3. identify and explain the basic principles of X-ray radiation safety.
4. apply analytical and critical thinking skills in a manner appropriate to X-ray diffraction, considering the interfaces between fields and new knowledge
5. apply creative thinking and problem solving in their work to develop new knowledge and new procedures

[Official course record: 521080S](#)

General & uncategorized

KE00AQ67 | (Eco)critical sustainability

5 ECTS | Subject not supplied | Basic Studies | English

Person in charge: Joffy Conolly

Content

The course critically examines the assumptions that underpin concepts such as sustainable development across different disciplines. After an introduction to critical thinking principles, participants explore ecocritical, multispecies and more-than-human approaches and how they apply to their own fields. Participants will also distinguish and compare power relations within sustainability narratives, how sustainability knowledge is constructed, and reflect on their own positionality. Topics for discussion will include comparing anthropocentric with ecocentric approaches; whether there is a need to decolonise sustainability thinking; and what ecocritical sustainability might mean in practice.

Pedagogically the course is participatory and student-centred. Participants are encouraged to suggest relevant topics and questions for discussion and will have the opportunity to investigate and compare critical approaches to sustainability across different disciplines.

Key questions the course aims to explore include:

- What does it mean to think critically about sustainability? How do we distinguish it with counter-cultural thinking / resistance to mainstream thinking / conspiracy thinking?
- What assumptions underlie the three pillars of sustainability: environment, social & economic?
- How human-centred (anthropocentric) are current sustainability narratives?
- What power-structures and value-hierarchies underpin sustainability knowledge(s) in various fields?
- How is the concept of sustainability influenced by dominant Western industrial culture (especially modernity)? Do we need to decolonise sustainability?
- What might genuinely transformative sustainability education look like?

CONTENTS:

- Critical thinking: key principles, concepts and issues and how they apply to sustainability.
- The three pillars of sustainability (environment, social & economic): critical tensions and assumptions.
- Anthropocentrism in sustainability: ecocritical, multispecies, relational and more-than-human approaches to sustainability narratives and human-nature discourses.
- Western modernity & decolonising sustainability: decolonial critiques of sustainability and the reproduction of power inequalities in sustainability discourses.
- Transformative / critical sustainability: putting transformative sustainability ideas into practice; transformative sustainability education.

Learning outcomes

On completion, participants will be able to:

- Critically examine the concepts of sustainability and sustainable development and underlying assumptions.
- Contrast and compare anthropocentric and ecocentric approaches to sustainability.
- Describe, analyse and reflect on the values and power relations that underpin concepts of sustainable development and how these relate to sustainability in their own disciplines.
- Reflect on and articulate their own positionality, and how that relates to and affects their approaches to sustainability in their fields of study.
- Develop transformative and/or critical approaches to sustainability.
- Apply the contents and learning of the course to their own discipline/field(s).

Official course record: KE00AQ67

419123J | Academic Publishing in Educational Sciences

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Sonja Lutovac

Content

The content includes:

- basics about publishing in academic journals
- common structure of an article and drafting an article
- choosing the appropriate journal
- submitting an article, common problems, revising an article

Participants' wishes regarding the content will be considered.

Learning outcomes

After the completion of the course, the participants can:

- assess the suitability of various journals for their work
- plan the publication process
- apply the knowledge gained in drafting an article

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

[Official course record: 419123J](#)

920020J | Acceptance and Grading of the Thesis

0 ECTS | Other studies | Post-graduate Studies | Finnish

Person in charge: Elina Pernu

Learning outcomes

Doctoral thesis will be accepted and graded in the meeting of Doctoral Programme Committee.

Doctoral researcher can make an application to graduate, after the thesis has been accepted and all the studies required for the degree are registered.

[Official course record: 920020J](#)

010130Y | Acting as a tutor student

3 ECTS | Subject not supplied | General Studies | Finnish

No description supplied in the collected record.

[Official course record: 010130Y](#)

BO00AW71 | Activities in the University Community, Bachelor's Degree, Economics and Business Administration

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Anniina Rantakari

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [BO00AW71](#)

BO00BC68 | Activities in the University Community, Bachelor's Degree, International Business Management

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Lauri Haapanen

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [BO00BC68](#)

BO00AW72 | Activities in the University Community, Master's Degree, Economics and Business Administration

1-6 ECTS | Other studies | | Finnish, English

Person in charge: Ilkka Ojansivu: KTM, Kauppatieteet / MSc, Economics and Business Administration, Timo Koivumäki: KTM, Liiketoiminta-analytiikka / MSc, Business Analytics

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [BO00AW72](#)

010131Y | Activities in University and Student Organizations

1-10 ECTS | Working Life Studies | General Studies | Finnish, English

Person in charge: Satu Selkälä

Content

- Student Union Board, 1 year: Chair 5 credits, Member 4 credits
- Student Union representatives, 2 years, 2 credits
- University Board of Directors, 1 year, 2 credits
- University Collegium, 2 years, 2 credits
- Education Council, 1 year, 2 credits
- Education Steering Group, 1 year, 2 credits
- Faculty Steering Group, 1 year, 2 credits
- Faculty Board, 2 years, 2 credits
- Faculty Education Committee, 2 years, 2 credits
- Board of a subject organization or guild or interest society of the Student Union, 1 year: Chair 1 year, 3 credits, Member 1 year, 1 credit
- National student organization such as SYL, 1 year, 1-5 credits: Chair 5 credits, Member 1-4 credits
- Other important functions in the field of education policy and/or development of teaching, i.e. Degree Programme Committee 1 year, 1 credit - i.e. developing study plan or internship 1 year, 2 credits

The number of credits to be awarded to the student is determined by the Faculty's Lead Specialist based on available documentation following the principles mentioned above.

Learning outcomes

Upon completion of the course, the student will be able to

- apply the skills needed in academic positions of trust (interaction skills, meeting techniques, working in a group, cooperation skills, leadership skills)
- evaluate critically the issues to be decided, take a stand on them and justify his or her viewpoint
- attend to the functions related to his or her position of trust in a responsible manner

[Official course record: 010131Y](#)

044150Y | Activities in University and Student Organizations

1-10 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Opintojakso voi koostua useammasta luottamustehtävässä toimimisesta seuraavasti:

Ylioppilaskunnan hallitus: 1 vuosi 4–5 op

Ylioppilaskunnan edustajisto: 2 vuotta 2 op

Yliopiston hallitus: 2 vuotta 5 op

Yliopistokollegio: 2 vuotta 2 op

Koulutusneuvosto: 2 vuotta 2 op

Koulutuksen johtoryhmä: 2 vuotta 4 op

Tiedekunnan johtoryhmä: 2 vuotta 2 op

Tiedekuntahallitus: 2 vuotta 2 op

Tiedekunnan koulutustoimikunta: 2 vuotta 2 op

Ainejärjestön hallitus: 1 vuosi 1–3 op

Valtakunnallinen opiskelijajärjestö: 1 vuosi esim. SYL tai ammattijärjestö (SOOL, Ekonomit, Loimu, TEK, Medisiinarit jne) 1–5 op

UNIC Student Board 1 vuosi 3 op

Tasa-arvo- ja yhdenvertaisuustoimikunta 2 vuotta 4 op

Muut yliopistotasoiset viralliset työryhmät 2 vuotta 2 op

Muu toiminta yliopistoyhteisöissä vastuutehtävissä (esim. tiedekunnan tutkinto-ohjelmatoimikunta, konferenssin avustamistehtävät tai OYY:n jaoston jäsen), opintopisteytys työmäärän mukaan.

Tuutorointi /kv-kummius 1 vuosi 1 op

Tuutorointi hyväksytään kokonaisuuteen, mikäli siitä ei ole aiemmin saatu opintopisteitä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

arvioida kriittisesti ratkaistavaksi tulevia asioita, ottaa kantaa päätettäväksi tuleviin asioihin ja perustella näkemyksiään.

hoitaa luottamustoimeen liittyvät tehtävät vastuullisella tavalla.

toimia moniammatillisen työryhmän jäsenenä ja soveltaa kokoustekniikkaa.

osaa kommunikoida ryhmässä selkeästi, kuunnella aktiivisesti muita, antaa rakentavaa palautetta ja ratkaista konflikteja rakentavasti.

osaa kuvata osaamistaan, kehittää omaa ammatillista identiteettiään, edistää ryhmän oppimista ja kehitystä sekä tunnistaa elinikäisen oppimisen tarpeen.

Official course record: 044150Y

300003Y | Activities in university and student organizations

1-10 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Jussi Malila, Pekka Salmi, Sanna Varanka, Lumi Viljakainen

Content

The course may consist of participation in several positions of university community related trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

[Official course record: 300003Y](#)

920035J | Administrative tasks

1 ECTS | Subject not supplied | Post-graduate Studies | Finnish

Person in charge: Elina Pernu

Content

Doctoral researcher can receive credits from UniOGS administrative tasks.

Student representative in administration, UniOGS management group or Doctoral Education Committee, active participation at least 4 times /year (1 credit / year, for a maximum of 4 years).

After the year, the member can apply the credit by contacting UniOGS coordinator

[Official course record: 920035J](#)

DP00AS86 | Advanced Course on Light and Electron Microscopy

1-1.5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Ilkka Miinalainen, Veli-Pekka Ronkainen

Content

Students get acquainted with advanced light and electron microscopy volumetric imaging methods of living and fixed specimens of different sizes. Students learn how to apply suitable techniques for image analysis. LM part includes in vivo imaging, confocal fluorescence and multiphoton microscopy with fluorescence lifetime imaging (FLIM). EM part focuses on serial section imaging (Array Tomography).

[Official course record: DP00AS86](#)

300002M | Advanced Information Skills

1 ECTS | Subject not supplied | Other Studies | Finnish

Person in charge: Pertti Martinmäki, Minttu Luomala

Content

Scientific information retrieval and the search terms, the most important databases and publication channels of the discipline, tools for evaluating the quality of scientific information and reference management.

Learning outcomes

Upon completion of the course, the students:

- * can search scientific information for their thesis,
- * know how to evaluate search results and information sources,
- * understands the principles of scientific publishing,
- * can use the reference management tool.

The course develops students' ethical, responsible and critical use of information, as well as their digital and AI skills.

[Official course record: 300002M](#)

DP00BE98 | Advanced population genetics with genomic data

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Juan Galarza Pavia

Content

- fundamental population genetic theory and its application to genomic data
- genetic diversity and its estimation from genomic data
- population differentiation and F-statistics
- the site frequency spectrum (SFS) and its applications in population genomic analyses
- coalescent theory and its application to genomic data
- inference of population demographic history from genomic data
- assumptions and calculations underlying commonly used population genetic methods and software
- comparison of alternative analytical approaches and their advantages and limitations

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the fundamental population genetic principles underlying commonly used methods for analysing genomic data, including the site frequency spectrum (SFS), coalescent theory, and F-statistics
- explain the main assumptions and calculations underlying commonly used population genetic analyses and relate them to their implementation in analytical software
- interpret results from genomic analyses of genetic diversity, population differentiation, and demographic history using population genetic theory
- compare alternative approaches for analysing population genomic data and explain their advantages, limitations, and assumptions
- critically evaluate the output of population genetic software rather than treating analytical methods as “black boxes”

Official course record: DP00BE98

DP00BE97 | AI Regulation for Non-Lawyers

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Arto Lanamäki

Content

The course provides a comprehensive overview of AI regulation through a transition from legal theory to practical application. The content is divided into two main themes:

1. Foundations of AI law and policy

- Introduction to legal ontology: what law is and how it functions as a social infrastructure.
- The conceptual scope of the EU AI Act and its core content.
- The Why of regulation: exploring fundamental rights, risk management, and the balancing of innovation with safety.

2. Applied compliance and critical perspectives

- Structural analysis of the EU AI Act: obligations for developers, providers, and deployers.
- Hands-on examples: risk classification and lifecycle requirements for AI systems.
- The limits of law: critical discussion on regulatory gaps, the role of technical standards, and the future of AI governance.

Learning outcomes

Upon completion of the seminar, participants will be able to:

- Analyse the nature of law: Distinguish between legal rules, technical code, and ethical norms, and understand how legal reasoning operates.
- Interpret the core elements of AI regulation: Identify and apply key legal definitions, such as AI system and General-Purpose AI model, within the context of the EU AI Act.
- Evaluate regulatory drivers: Understand the societal, ethical, and economic trade-offs between ensuring safety and fostering technological innovation.
- Apply compliance in practice: Classify AI systems according to risk categories (prohibited, high-risk, limited-risk) and identify the necessary documentation and procedures for compliance.
- Exercise critical thinking: Identify potential loopholes in current frameworks and analyse the impact of regulation on open innovation and research.

Official course record: [DP00BE97](#)

DP00BE96 | AI-Driven Behavioural Interventions

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mehrdad Rostami

Content

The course covers the foundations and practical methods of AI-driven behavioural interventions, including:

- causal inference and identification from experimental and observational data;
- average and heterogeneous treatment-effect estimation;
- causal machine learning and uplift modelling;
- personalised intervention assignment and policy learning;
- contextual bandits and adaptive intervention design;
- evaluation of intervention effectiveness, policy value, fairness, and uncertainty;
- ethical issues related to autonomy, privacy, bias, and unintended behavioural effects;
- practical exercises and a small project applying these methods to behavioural data.

Learning outcomes

This course introduces doctoral researchers to the methodological foundations and practical design of AI-driven behavioural interventions. It focuses on distinguishing causal effects from predictive associations, estimating how intervention effects vary across individuals and contexts, and designing adaptive policies that select interventions based on accumulating evidence.

The course combines causal inference, machine learning, behavioural data analysis, and sequential decision-making. Particular attention is given to observational and experimental identification strategies, heterogeneous treatment-effect estimation, uplift modelling, policy learning, contextual bandits, and the responsible deployment of personalised interventions.

Applications may include digital health, recommender systems, education, behavioural economics, public services, human-computer interaction, and other domains in which AI systems are used to influence or support human behaviour.

Upon completion of the course, the student will be able to:

- explain the distinction between prediction, association, and causal effect estimation in AI-driven behavioural interventions;
- formulate behavioural intervention problems using potential-outcomes and causal graphical frameworks;
- identify the assumptions required for estimating causal effects from randomised and observational data;
- select and apply appropriate causal identification strategies, including randomised experiments, covariate adjustment, propensity-score methods, instrumental variables, regression discontinuity, and difference-in-differences;
- explain the principles of adaptive experimentation, contextual bandits, and sequential policy learning;
- evaluate intervention policies using appropriate causal, predictive, behavioural, and policy-level metrics;
- critically analyse challenges related to confounding, selection bias, interference, delayed outcomes, distribution shift, fairness, privacy, and ethical intervention design;
- design and implement a small-scale research project involving causal effect estimation or adaptive policy design;

Official course record: DP00BE96

KE00BA00 | Aineenopettajakoulutuksen soveltuvuuskoe 0 op (läsnäolevat tutkinto-opiskelijat ainetiedekunnista)

0 ECTS | Subject not supplied | |

Person in charge: Emilia Manninen

Content

Subject teacher studies aptitude tests are held in the autumn (usually in weeks 44–45) and spring (usually in weeks 19–20), with each subject taught having its own selection quota.

Registration for the aptitude test opens annually in September and March.

Learning outcomes

The aim of the aptitude test is to assess the student's suitability for pedagogical studies as a subject teacher.

Official course record: KE00BA00

MM00AX56 | Anaesthesiology and intensive care 1

5 ECTS | Subject not supplied | |

Person in charge: Janne Liisanantti

Content

Lectures (3 cu)
Resuscitation seminar 8 (cu)
IV-cannulation exercise (2cu)*
Station training in resuscitation skills and equipment (8cu)*
Resuscitation group teaching (simulation)* (2 cu) and included pre-assignment*
Resuscitation-exam (online)*
"Care of critically ill patients" seminar (8h)*
"Fluid therapy theme" station training (8 cu)*
Group-teaching (total 4 cu)*
Operation room demo (2 cu)
Final exam*

*obligatory

Learning outcomes

Upon completing the course, the student:

- Masters the resuscitation protocol (ALS) and has practiced leading a resuscitation team
- Knows the medications and equipment used in resuscitation
- Masters the identification and initial treatment of critically ill patients, and systematic examination of critically ill patients
- Knows the key medications and equipment used in the care of critically ill patients
- Knows the principles of acute pain management
- Knows the basics of operating room anesthesiology and is familiar with the operating room environment

[Official course record: MM00AX56](#)

MM00AY16 | Anaesthesiology and intensive care 2

3 ECTS | Subject not supplied | |

Person in charge: Janne Liisanantti

Content

Lectures (8 cu)
Acute pain management seminar (8 cu)
Group-teaching (2 cu)
Online course (2 ec)
Online exam

Learning outcomes

After the course the student

- knows the principles of acute pain management
- knows the principles of chronic pain management
- knows the principles of cancer pain management
- knows the principles of the use of different types of pain medications

[Official course record: MM00AY16](#)

MM00AY57 | Anaesthesiology and intensive care 3

4 ECTS | Subject not supplied | |

Person in charge: Janne Liisanantti

Content

Online course (3 ec)
Lectures (4 cu)*
Resuscitation exercise (simulation) (2 cu)*
Station training (18 cu)
Simulation (4cu)

obligatory*

Learning outcomes

During the course the student reviews and deepens the skills and knowledge learned during Anesteologia & tehohoito 1 & 2.

- Masters resuscitation and the necessary medications and equipment, and has practiced leading a resuscitation team
- Masters the identification of critically ill patients, initiation of treatment, and early diagnostics, as well as the key medications and equipment needed for these. The student has practiced leading a treatment team

Official course record: [MM00AY57](#)

412150S | Applied methods in Learning Sciences

5 ECTS | Subject not supplied | Advanced Studies | Finnish

Person in charge: Jonna Malmberg

Content [Finnish source]

- Monimenetelmällisen tutkimuksen peruspiirteet
- Tutkimusprosessin eteneminen ja päävaiheet
- Tietosuojan periaatteet ja käytännön toteutus
- Tutkimuksen eettiset periaatteet
- Tutkimussuunnitelman kirjoittaminen ja sen merkitys tieteellisessä tutkimuksessa
- Oppimisanalytiikka ja oppimisprosessianalyysi oppimisen tutkimisen välineenä

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tunnistaa oppimistieteelliselle tutkimukselle keskeiset piirteet sekä tieteellisen tutkimuksen perusperiaatteet ilmiölähtöisesti.

- Opiskelija ymmärtää tämänhetkiset oppimistieteiden tutkimusalan suuntaukset ja menetelmät.
- Opiskelija osaa arvioida kriittisesti eri menetelmien soveltuvuutta.
- Opiskelija osaa suunnitella tutkimusprosessin ja aineistonkeruun.
- Opiskelija ymmärtää mitä tarkoitetaan tietosuojalla tutkimuksessa.
- Opiskelija osaa suunnitella ja arvioida oppimisanalytiikan käyttöä osana tieteellistä tutkimusta.

Geneeriset taidot

- Osaa arvioida oman alansa tietoa kriittisesti ja soveltaa sitä tarkoituksenmukaisella tavalla osana tieteellistä ajattelua.
- Tunnistaa analyyttisen, kriittisen ja luovan ajattelun keskeiset taidot.

Official course record: [412150S](#)

KE00AM72 | Aptitude Test for Secondary Teacher Education, Autumn

0 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

Subject teacher studies aptitude tests are held in the autumn (usually in weeks 44–45) and spring (usually in weeks 19–20), with each subject taught having its own selection quota.

Registration for the aptitude test opens annually in September and March.

Learning outcomes

The aim of the aptitude test is to assess the student's suitability for pedagogical studies as a subject teacher.

[Official course record: KE00AM72](#)

KE00AM71 | Aptitude Test for Secondary Teacher Education, Spring

0 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

Subject teacher studies aptitude tests are held in the autumn (usually in weeks 44–45) and spring (usually in weeks 19–20), with each subject taught having its own selection quota.

Registration for the aptitude test opens annually in September and March.

Learning outcomes

The aim of the aptitude test is to assess the student's suitability for pedagogical studies as a subject teacher.

[Official course record: KE00AM71](#)

KE00AQ45 | Art and skills education to support development and learning I

5 ECTS | Subject not supplied | | Finnish

Person in charge: Laura Rahikkala

Content

Contents

- Different equipments, methods and learning environments in PE and music
- The child's world of imagery and play as a starting point
- Stories and play supporting thinking, realization and development

Learning outcomes

Having completed the course, the student knows how to:

- identify and apply in practice the special characteristics of teaching arts and crafts in pre-primary and primary education
- use arts and crafts (physical education, music) for development of children's thinking, expression, creativity and imagination
- design, implement and evaluate an integrative entity in pre-primary and primary learning settings
 - understands the principles of embodiment and safe space in teaching
 - develops both their own and their pupils' emotional and interaction skills
 - identifies key factors related to their own well-being

[Official course record: KE00AQ45](#)

KE00AQ51 | Art and skills education to support development and learning II

5 ECTS | Subject not supplied | | Finnish

Person in charge: Minna Myllykangas

Content

Contents

- Various tools, methods, and learning environments in arts and practical subjects.
- Children's literature, fairy tales, and stories.
- Teaching is grounded in utilizing the child's world of imagination and play.

Learning outcomes

After completing the course, the student will be able to:

identify the specific characteristics of teaching arts and practical subjects in early childhood and primary education, and apply these in practice.

use arts and practical subjects (visual arts, crafts, physical education, music, and mother tongue/literary arts) to support the development of children's thinking, expression, creativity, and imagination.

recognise and take into account the significance of embodied learning in early childhood and primary education.

select, use, and apply children's literature in teaching.

plan, implement, and evaluate an integrated learning module in early childhood and primary education learning environments.

adopt multiliteracy-based learning environments, approaches, and materials in the planning and implementation of teaching.

Official course record: [KE00AQ51](#)

DP00AT81 | Article analysis

3 ECTS | Subject not supplied | Post-graduate Studies | English, Finnish

Person in charge: Harri Haapasalo

Content

The main elements of scientific articles in terms of content and structure especially from the perspective of external review.

Learning outcomes

After the completion of the course the student is able to:

- critically review scientific writings
- identify the main elements of scientific articles
- analyse the contents and structure of scientific articles
- utilise reviewing on the content and structure of their own articles

Official course record: [DP00AT81](#)

KE00AL38 | Artificial intelligence in education

5 ECTS | Subject not supplied | Other Studies | Finnish

Person in charge: Jari Laru

Content [Finnish source]

Opintojaksolla perehdytään tekoälyn ja koneoppimisen peruskäsitteisiin ja mekanismeihin sekä niiden opettamiseen ja oppimiseen. Lisäksi tutustutaan datalähtöiseen suunnitteluun sekä tekoälyn soveltamiseen luovuuden välineenä. Suunnitellaan ryhmässä pieni koneoppimisen opetuskokonaisuus hyödyntäen olemassa olevia oppimisympäristöjä ja -välineitä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * on tutustunut tekoälyn perusteisiin
- * osaa käyttää tekoälyä työkaluna
- * tuntee tekoälyn ja koneoppimisen opettamiseen soveltuvia pedagogisia ratkaisuja
- * on saanut valmiuksia tukea oppijoiden tekoälylukutaitoja, datalukutaitoja, datatoimijuutta ja luovuutta tekoälyyn liittyvissä oppimisprojekteissa
- * on tutustunut käynnissä oleviin tekoälyn pedagogiikkaan liittyviin kehittämis- ja tutkimushankkeisiin

Official course record: [KE00AL38](#)

AY00AL94 | Audiovisual Expression and Analysis (OPEN UNI)

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the stylistic characteristics of film.

Learning outcomes

Upon completion of this course, the students will be able to identify and define the key techniques of audiovisual/cinematic expression and explain and demonstrate how they function in a film.

Official course record: [AY00AL94](#)

MM00AX60 | Bachelor's Thesis (BM)

6 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Kandidaatin tutkielma (6 OP). Kirjallisuuskatsaus tai pienimuotoinen tutkimusprojekti. Tutkintoa varten opiskelijan on kirjoitettava kypsyysnäyte, joka osoittaa perehtyneisyyttä tutkielman alaan sekä suomen- tai ruotsinkielen taidon.

Learning outcomes [Finnish source]

Opiskelija osaa toteuttaa kirjallisuuskatsauksen tai pienimuotoisen tutkimuksen ja raportoida tulokset. Tutkielman teossa hän oppii soveltamaan tutkimusmenetelmiä sekä kehittää tiedonhankinnan, kriittisen ajattelun ja tieteellisen viestinnän taitoja.

Official course record: [MM00AX60](#)

KE00AT65 | Basic Academic English and communication skills

3 ECTS | Subject not supplied | General Studies | English

Person in charge: Marika Oikarinen

Content

- Critical approaches to reading
- Introduction to information retrieval
- Ethics of academic communication
- Oral presentation practice
- Ethics of academic communication
- Reading different academic texts
- Critical approaches to writing
- AI use and its threats

Learning outcomes

After completing the course, the student is able to

- Demonstrate oral and written academic English language skills in the field of education
- Knows the basics of writing an academic text
- Knows the basics of critically analysing literature
- Identify and use the academic APA standard and style
- Knows how to use AI feasibly and identifies its risks and threats
- Identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities
- Communicate clearly orally and in writing to both experts in their field and to other audiences, including in a foreign language
- Identify key elements related to their own well-being and self-management
- Knows how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.

Official course record: [KE00AT65](#)

DP00AS85 | Basic Course on Light and Electron Microscopy

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Ilkka Miinalainen, Veli-Pekka Ronkainen

Learning outcomes

Students get acquainted with light and electron microscopy imaging methods of living and fixed specimens of different sizes. Students learn how to apply suitable techniques for image analysis.

Official course record: [DP00AS85](#)

YK00BB33 | Basic Finnish for Staff, level 1

0 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Päivi Jokinen

No description supplied in the collected record.

Official course record: [YK00BB33](#)

YK00BB34 | Basic Finnish for Staff, level 2

0 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Päivi Jokinen

No description supplied in the collected record.

[Official course record: YK00BB34](#)

YK00BB35 | Basic Finnish for Staff, level 3

0 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Päivi Jokinen

No description supplied in the collected record.

[Official course record: YK00BB35](#)

KE00BC98 | Basics of Band Instruments and Music Technology

5 ECTS | Subject not supplied | | Finnish

Person in charge: Jere Tulirinta

Content

- writing music notation with notation software
- processing and recording audio with studio software
- becoming familiar with band instruments and their basic techniques
- using a sound reinforcement system in a school environment

Learning outcomes

After completing the course, the student will be able to:

- utilize the basic functions of studio software in pedagogical work
- use sound reinforcement equipment in teaching
- produce clear and well-structured sheet music with modern notation software
- identify and apply the most common basic techniques of band instruments

[Official course record: KE00BC98](#)

AY00BB18 | Basics of Economic Management and Value in Social and Health Care (OPEN UNI)

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- basic concepts, methods, and indicators related to the assessment of value
- utilization of assessment of value in management and decision-making
- key concepts and principles of health economics
- economic competence as part of social and healthcare management

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize key concepts, approaches, and theories related to value in social and health care
- recognize mechanisms for value-based management in social and health care
- understand the basic principles of health economics
- understand the tasks and responsibilities related to economic management in social and health care

[Official course record: AY00BB18](#)

MM00AU33 | Basics of Environmental Health

1-2 ECTS | Subject not supplied | | Finnish

Person in charge: Timo Hugg

Content

- Environment and health (introduction)
- The risk factors of outdoor and indoor air and health
- Climate change, temperatures and health
- Environmental radiation, noise and health
- Microbiological and chemical risk factors of drinking water and food items and health
- Supervision of municipal environmental health care and special situations of environmental health
- The role of the health care professional in environmental health care

Learning outcomes

- Identify the key environmental factors that endanger health and the health risks and effects they cause
- Understand the main features of the environmental healthcare system and its operation
- Understand the role of different actors in the field of environmental healthcare

Official course record: MM00AU33

AY00AU02 | Beginners` Finnish Course 1 (OPEN UNI), 3 credits

3 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Heidi Niskanen

Content

This lower elementary course aims to help students to learn communication skills in ordinary everyday situations. During the course, students broaden their vocabulary and knowledge of grammar and principles of pronunciation. They also practise to understand easy Finnish talk about everyday subjects, and reading and writing short and simple texts/messages.

The topics and communicative situations that are covered in the course are the following:

- talking about oneself, one's family, studies and daily routines, as well as asking about these things from others
- food, drink and transactions in the grocery store
- accommodation and describing it; colours and adjectives.

The structures studied are the following:

- verb types
- basics of the change of the consonants k, p and t in nouns
- basics of the partitive and genitive cases
- possessive structure
- some declension types for nouns (word types) and the basics of the local cases.

Learning outcomes

By the end of the course, students

- can understand and use some very familiar and common everyday expressions relating to themselves and everyday situations
- can read short and simple texts and messages dealing with familiar topics
- can communicate in easy and routine tasks requiring a simple and direct exchange of information on familiar everyday matters
- have deepened their understanding of the Finnish language and communication styles.

Official course record: AY00AU02

YK00AM49 | Between Cultures

3-5 ECTS | Subject not supplied | Language and Communication Studies | French

Person in charge: Maritta Riekk

Content

The topics of the course include vocabulary and grammar related to, working life as well as every-day situations, studying, and travelling. Cultural differences will be discussed through the course. Students will create their CV, practice job interviews and talk about various work tasks, work rhythm, practice how to decline and accept proposals. Cultural knowledge, politeness, savoir-vivre and meaningful ways of interacting in multicultural environments will be studied. The course is built on versatile exercises for interaction and understanding both linguistic and cultural phenomena.

Learning outcomes

The students will learn interaction skills needed in working life and studies in different cultures. The understanding of French grammar, clause structures and vocabulary will become more accurate.

Official course record: [YK00AM49](#)

MM00AZ55 | BM Maturity exam (native language)

0 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

Official course record: [MM00AZ55](#)

920030J | Business Development for Researchers

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Matti Muhos

Content

The course focuses on the basic concepts of early stage business development including experimentation and testing of a new business idea, business model development and business planning, and management of business growth and change.

Learning outcomes

The participating doctoral researchers familiarize with basic business concepts and theories applicable for business-oriented researchers. On successful completion of the course, the doctoral researchers understand the business development process from establishment to a launch and development of a sustainable business. The doctoral researchers are able to identify basic business processes in practice.

Official course record: [920030J](#)

AY00AH37 | Business Studies for English Competence

4 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Magdalini Lontou

Content

This project-based course includes the practice of major language learning skills such as reading, writing, speaking, and listening. A great focus is placed on reading and field-related vocabulary expansion. The course includes several projects that were completed through the adoption of entrepreneurial ways of thinking and operating, including creative and strategic thinking and planning, flexibility, and commitment. These skills are practised within the context of different fields of business as the course is partially integrated with courses in the subject studies through the shared use of textbooks, e.g. in Management, Accounting, Marketing and Economics. This course supports the students as they make their first contact with the linguistic world of these areas of study.

The course includes individual and group work. All projects must be completed successfully and within all deadlines.

The open university course groups are held entirely in Zoom and Moodle. Active participation in the course is mandatory.

Learning outcomes

By the end of the course, the student will be able to:

- define and demonstrate the acquisition and use of vocabulary and specialized terms related to his or her field of study
- demonstrate the ability to listen to field-related podcasts and interpret and understand field-related texts at a satisfactory level of understanding
- demonstrate the ability to verbally discuss, explore and organize information to complete various verbal and written tasks interactively and collaboratively
- experience and apply communication and interaction skills in the tasks of the course

Official course record: [AY00AH37](#)

BO00AG83 | Business Theory and Thought

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Hanna Komulainen,

Content

The course consists of five topic specific seminars. Titles will be announced later.

Learning outcomes

Upon completion of the course, the doctoral researcher has developed analytical and interdisciplinary thinking by actively attending seminars, reading scientific articles, discussing and commenting on them. The doctoral researcher has acquired a deeper understanding of diverse business phenomena, research methods, and approaches. The doctoral researcher has acquired the skill of critical scientific literature reading and evaluation.

In terms of generic skills, after completing the course, the student:

- is able to apply innovative approaches to problem solving and is able to build and evaluate well-founded arguments from different perspectives.
- is able to use and actively develop self-management skills.
- is able to promote international cooperation in seminar discussions and group works.
- is able to act responsibly and proactively in accordance with professional ethics and good scientific practice.
- is able to integrate methods from their own discipline and other fields into their research.
- is able to communicate effectively and discuss dialogically with the scientific community about their own research and discipline.

Official course record: [BO00AG83](#)

MM00AX47 | Cardiology

4 ECTS | Subject not supplied | |

Person in charge: Juhani Junttila

Content

Clinical examination of a cardiological patient (anamnesis, status).

Diagnostics, treatment and follow-up of coronary artery disease.

The different types of acute coronary syndrome, acute treatment and the principles of long-term treatment.

Etiology, diagnostics, treatment and follow-up of heart failure.

Diagnostics, follow-up and treatment of valvular diseases.

Etiology, diagnostics and treatment of myocarditis and the most common cardiomyopathies.

Diagnostics and treatment of cardiac arrhythmias:

- Significance, evaluation and possible treatment of premature depolarizations

- Evaluation and general treatment principles of atrial fibrillation

- Evaluation and treatment of supraventricular tachycardias

- Significance and treatment of ventricular tachyarrhythmias

- Bradyarrhythmias, atrio-ventricular conduction disturbances, sick sinus syndrome

Interpretation of ECG:_

- Normal ECG

- Myocardial infarction, ischemia and differential diagnostic aspects

- Hypertrophy and bundle branch blocks

- Tachyarrhythmias

- Disturbances of atrio-ventricular conduction

- Sick sinus syndrome

- Evaluation of QT interval

Learning outcomes

After completion of a course a student can.

- Knows how to examine a cardiological patient.
- Understands the principles of diagnostics, treatment and follow-up of coronary artery disease.
- Is able to recognize the different types of acute coronary syndrome, knows their acute and long-term treatment.
- Knows the etiology of heart failure, its diagnostics, treatment and follow-up.
- Understands the principles of diagnostics, follow-up and treatment of valvular diseases.
- Knows the etiological factors of myocarditis and the most common cardiomyopathies and their diagnostics and the principles of treatment
- Understands the general principles of the follow-up of the most common congenital heart diseases in adults.
- Knows the significance of cardiac premature depolarizations in different conditions, is able to adjust the needed further examinations in different situations and is able to assess, if the cardiac premature depolarizations need any specific treatment.
- Knows the most important risk factors of atrial fibrillation, is able to recognize atrial fibrillation, knows its classification, the strategies of rhythm and rate control, the indications and contraindications of anticoagulant treatment in different situations as well as the general principles of medical and electrical cardioversion. Knows the drugs used in the anticoagulant treatment.

- Is able to recognize supraventricular tachycardias, is aware of the principles of their acute and long-term treatment. Is also able to recognize WPW syndrome from an electrocardiogram during sinus rhythm.
- Is able to recognize ventricular tachyarrhythmias: ventricular fibrillation, sustained and nonsustained ventricular tachycardia. Knows their acute treatment and understands the principles of their long-term treatment. Understands in general the electrocardiographic and etiological differences of monomorphic, polymorphic and torsades de pointes ventricular tachycardias.
- Knows the factors which may cause cardiogenic syncope and knows the principles of their treatment.
- Is able to recognize pacemaker rhythm. Knows the general indications and basic treatment principles of pacemakers, implantable cardioverter-defibrillators and cardiac resynchronization therapy.
- Can measure QT interval from ECG and correct it for heart rate. Knows when one should suspect congenital or acquired (e.g., caused by drugs) long QT syndrome and how to manage with them.
- Understands the genesis of different waves and intervals of ECG in normal and pathological conditions. Can interpret normal ECG and understands when there is something abnormal. Knows how to register ECG.
- Particularly, is able to recognize the ECG abnormalities in acute coronary syndrome (ST elevation myocardial infarction, non-ST elevation myocardial infarction, unstable angina pectoris) and knows the differential diagnostics of these changes.
- Is able to recognize left ventricular hypertrophy and atrial load from ECG.
- Is able to recognize bundle branch blocks and hemiblocks from ECG.
- Can recognize the different degrees of the disturbances of atrial-ventricular conduction from ECG, understands the significance and possible need for treatment of these changes. Can also suspect sick sinus syndrome as a cause of bradycardia.
- Knows the basic principles of specific cardiological examinations, such as echocardiography, bicycle ergometer stress test, 24-hour electrocardiographic recording, coronary angiography and electrophysiological examinations.
- Knows the basic principles of specific cardiological treatments, such as percutaneous coronary intervention (PCI), the catheter ablation of arrhythmias and the implantation of pacemakers.

Analytical, critical, and creative thinking skills:

-After completing the course, the student is able to make analytical and critical conclusions based on clinical cardiac findings.

Well-being and self-development skills:

-After completing the course, the student is able to follow developments in scientific and professional knowledge in their field.

International and multicultural competence:

-The student is able to take multicultural backgrounds into account in patient care.

Sustainability, responsibility, and ethical competence:

- The student recognizes the fundamentals of professional ethics in the field of cardiology and is able to act in

accordance with them.

[Official course record: MM00AX47](#)

DP00BF18 | Career Planning for Biology and Geography PhD Researchers

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Fredriika Jakola-Ylilauri

Content

The course provides knowledge for PhD researchers about different career paths and the current and future skill requirements for non-university working life. It also offers an opportunity for PhD researchers to identify and reflect on their own professional and personal strengths in relation to these opportunities and skill expectations. The course is integrated into biology and geography doctoral programs' ongoing NOSTE project, which aims to incorporate career guidance and the changing competence needs of working life more closely into doctoral education programs. As a part of the project, a career event is organized in co-operation with key non-university employers. The event forms the main content for the course. The career event consists of employer presentations, a doctoral alumni panel, presentation from career services (University of Oulu), and discussion sessions. Learning assignments related to career planning and job seeking will be done independently in Moodle before and after the career event. In addition, course includes peer-feedback discussions which will be organized via Zoom. Also, students will receive feedback from course teachers.

Learning outcomes

Upon completion of the course, the student will

- have a better knowledge about the key field-specific and transferable skills required in non-university working life for biology and geography doctoral graduates.
- have a broader understanding of possible career paths and the critical phases of career planning for biology and geography doctoral graduates.
- be able to write a compelling motivation letter as well to identify and articulate their own competences relevant to future career paths.

[Official course record: DP00BF18](#)

MM00AY36 | Child neurology

3 ECTS | Subject not supplied | |

Person in charge: Johanna Uusimaa

No description supplied in the collected record.

[Official course record: MM00AY36](#)

044300A | Child Psychiatry

2 ECTS | Child Psychiatry | Intermediate Studies | Finnish

Person in charge: Mirjami Mäntymaa

Content

- 1) Risk and protective factors of child psychiatric disorders, prevention of problems.
- 2) The common child psychiatric problems and disorders in respect of normal development. Etiology, epidemiology, diagnostics and treatment.
- 3) Understanding the importance of multiprofessional work in child psychiatry

Learning outcomes

The student

- knows the normal psychological development of children
- can distinguish psychiatric disorders of children from normal developmental differences
- knows the main risk and protective factors of mental health development
- knows the main mental health problems of children and adolescents
- knows the main aspects of the treatment of child mental health problems

[Official course record: 044300A](#)

MM00AY38 | Child psychiatry

3 ECTS | Subject not supplied | |

Person in charge: Mirjami Mäntymaa

Content

- 1) Risk and protective factors of child psychiatric disorders, prevention of problems.
- 2) The common child psychiatric problems and disorders in respect of normal development. Etiology, epidemiology, diagnostics and treatment.
- 3) Understanding the importance of multiprofessional work in child psychiatry

Learning outcomes

After passing the course

The student

- knows the normal psychological development of children
- can distinguish psychiatric disorders of children from normal developmental differences
- knows the main risk and protective factors of mental health development
- knows the main mental health problems of children and adolescents
- knows the main aspects of the treatment of child mental health problems
- knows how child psychiatric and mental health services are organised in Finland
- knows the legislation central to child psychiatric services, child welfare and child protection

[Official course record: MM00AY38](#)

DP00BE34 | Children and AI: Industry, research, design, and policy perspectives

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Sumita Sharma

Content

This is a two-day doctoral course for researchers from interdisciplinary backgrounds (HCI, education, psychology, computer science, policy, design). Experts and researchers working on children and AI across design, research, industry, and policy will conduct lectures and workshops exploring multiple perspectives, tensions, trade-offs, and opportunities in AI for and with children. The lectures are divided into four parts: Industry, Design, Research, and Policy: and experts in each will present current trends, challenges, and opportunities. Participants will also work in groups to complete discussion and design activities.

Learning outcomes

Learning Outcomes: Upon completion of the course, the student will be able to:

- Identify ethical, societal, and safety concerns including dependency, manipulation, privacy, and agency with children's increasing use of AI.
- Articulate tensions and trade-offs between design, industry, research, and policy frameworks and practices.
- Propose design, policy, and/or research frameworks for ethical, safe, and developmentally supportive AI applications, tools, and systems for children.
- Identify and understand rigorous research studies addressing children and AI.

Official course record: [DP00BE34](#)

KE00BD67 | Children's culture project

8 ECTS | Subject not supplied | Other Studies | Finnish

No description supplied in the collected record.

Official course record: [KE00BD67](#)

DP00BE56 | Citizen science in research practice: from concept to implementation

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mykyta Peregrym

Content

The course introduces the concept, principles, and methodological foundations of citizen science in contemporary research. Students become familiar with ethical considerations, stakeholder engagement, interdisciplinary collaboration, and the societal relevance of citizen science approaches. The course includes expert presentations and case studies from ongoing citizen science projects across different disciplines. Participants work collaboratively in small interdisciplinary groups to design, develop, and implement their own citizen science project proposals, including research planning, participant involvement, communication strategies, and practical implementation. The course also addresses the evaluation of project outcomes, impact assessment, and reflection on challenges and lessons learned during project implementation.

Learning outcomes

Upon completion of the course, the student will be able to:

- know the theoretical foundations, principles, and ethical considerations of citizen science in contemporary research practice;
- identify and critically evaluate different methodological approaches and models of citizen science across disciplines;
- design a citizen science project, including defining research questions, stakeholder engagement strategies, data collection methods, and implementation plans;
- collaborate effectively in interdisciplinary teams to develop and manage research initiatives involving public participation;
- apply practical skills in implementing and evaluating citizen science activities in real-world contexts;
- communicate project goals, processes, and results to both academic and non-academic audiences;
- assess the scientific, societal, and participatory impact of citizen science projects and reflect on challenges and lessons learned during implementation.

Official course record: [DP00BE56](#)

KE00BC95 | Class Instruments

5 ECTS | Subject not supplied | | Finnish

Person in charge: Oula Mommo

Content

- playing techniques: percussion-, string-, and wind instruments, band instruments in a classroom context
- group music-making and related pedagogical approaches and learning materials
- differentiation in the context of classroom music-making
- inclusive practices in the context of classroom music-making
- arranging music-making exercises suitable for group instruction for different age groups in basic education
- a final collaborative production (e.g., a group project performance based on the course content)

Learning outcomes

After completing the course, the student will be able to:

- identify the instruments used in school music classrooms
- make music using instruments commonly used in basic education and teach the foundational playing techniques of these instruments
- apply pedagogical approaches in the context of classroom music-making
- develop the practical skills needed in the work of a music educator
- arrange music for instruments used in basic education

Official course record: KE00BC95

MM00AX42 | Clinical chemistry 1

2 ECTS | Subject not supplied | | Finnish

Person in charge: Tuija Männistö

Content

Laboratory services in Finland: how and who produces laboratory services in Finland publicly and privately, ordering laboratory tests and data transfer, service selection, on-call laboratory operations, the importance of the laboratory in screening.

Patient guidance, identification and sampling: the importance of patient identification in sampling, directing the patient to laboratory tests, the importance of substances, medicines and supplements for laboratory tests, different sample forms and locations.

Interpretation of results: reference values, target values, decision-making limits, use of the laboratory manual for information acquisition, laboratory consultation, clinical prior and posterior probability, the importance of quality assurance.

Laboratory tests related to common diseases: cardiovascular diseases, hypertension, thyroid diseases, diabetes, kidney diseases, the effect of different stages of life on laboratory tests (childhood, pregnancy, elderly).

Laboratory tests related to acute diseases: pancreatitis, liver cell damage, cholecystitis, inflammatory markers and acute phase proteins, heavy consumption of alcohol and other intoxicants, acid-base disturbances, electrolyte disturbances.

Point-of-care testing: operation of the laboratory and healthcare in POC testing and introduction of the new POC test.

Urinalysis: effects of kidney diseases on urine findings, reliability of urine sample, proteinuria, hematuria, diagnostics of urinary tract infections (not incl. microbiology).

Laboratory methods: chemical and immunochemical methods including automation laboratory operation, chromatographic and mass spectrometric determination methods.

Learning outcomes

The student understands the structure of the Finnish laboratory service system and the roles of different parties.

The student knows how to order the right laboratory tests for a patient based on the patient's clinical condition and history.

The student knows how to advise and guide the patient in preparing for laboratory tests and correctly identify the patient.

The student knows the different sample formats and the importance of successful sampling.

The student can interpret laboratory results in relation to reference values and decision-making limits.

The student knows how to search for information related to laboratory tests and how to act in a situation where the result of the test does not match the patient's clinical condition.

The student knows the roles of the laboratory and other health care in point-of-care testing and knows how to use these tests in a suitable clinical situation.

The student can order and interpret basic urine tests.

The student knows how to order and interpret laboratory tests related to the most common and acute diseases.

The student can use databases related to laboratory tests critically

The student can describe the clinical reasoning behind diagnostic decisions

The students understands the economical and environmental actions related to their diagnostic activities.

Official course record: [MM00AX42](#)

MM00AX53 | Clinical chemistry 2

1 ECTS | Subject not supplied | |

Person in charge: Tuija Männistö

Content

Blood transfusion: different blood products and their indications and safety, blood groups, blood group antibody screening, identification and clinical significance, compatibility test, blood transfusion reactions.

Blood count and coagulation tests: interpretation of blood count tests and warning signs, anemia, examination of hemostasis, coagulation disorders and their investigation, anticoagulation monitoring.

Laboratory methods: principle of operation of flow cytometry and cell counters

The work of a specialist in clinical chemistry: where applicable, included in the contents mentioned above.

Learning outcomes

The student can order the correct transfusion tests and blood products for the patient.

The student can interpret basic blood panel and recognize most common abnormalities.

The student can order the correct coagulation studies for the patient.

The student can critically appraise different information sources related to laboratory tests.

Official course record: [MM00AX53](#)

MM00AY41 | Clinical genetics 2

3 ECTS | Subject not supplied | | Finnish

Person in charge: Jukka Moilanen

Content

Clinical genetics as a medical specialty. Collection and assessment of medical family history. Modes of inheritance. Chromosomal disorders, principles and indications of chromosomal analyses. Principles and clinical applications of DNA analyses. Hereditary cancer, diagnosis, examination and counseling. Congenital malformations, basics of dysmorphology and syndrome diagnostics. Prenatal diagnostics, genetic screening and counselling. Genetics of complex diseases in clinical practice. Most important genetic disorders by disease groups. Pharmacogenetics and tumor genetics. Ethical issues in clinical genetics. Principles and practice of genetic counseling. Clinical genetics services in Finland.

Learning outcomes

The student familiarises themselves with the principles and practice of clinical genetics from the perspective of a general practitioner or other physician, so that upon completion the student will be able to:

- identify/suspect a genetic disease in the patient/family
- identify patients who need genetic diagnostics and/or genetic counselling and refer them to a clinical genetics unit
- describe the concepts of chromosomes and genes, their most common analysis methods, and interpret the results of chromosome and DNA analyses as necessary in patient work
- explain the recurrence risks in different modes of inheritance and to discuss their significance for family members and the possibilities of prenatal and preimplantation diagnostics
- explain the unique spectrum of genetic diseases in Finland
- recognize the most important genetic disorders in different disease groups and describe their diagnostics, treatment, surveillance, prevention, and the hierarchy of care and the role of genetics in multidisciplinary collaboration
- explain and assess how pharmacogenetics and tumor genetics can be utilized in the patient's treatment
- recognize the ethical problems related to genetic testing
- recognize the need of support for families with a child suffering from congenital malformations/genetic disease and adult patients with serious genetic conditions
- use genetic information sources and provide patients with comprehensible information

Official course record: [MM00AY41](#)

MM00AX26 | Clinical Genetics I

3 ECTS | Subject not supplied | | Finnish

Person in charge: Jukka Moilanen

Content

The role of genetics in advancing medicine. Definition of medical genetics and clinical genetics as a medical specialty. Genome structure, function, and gene regulation. Genetic variation. Population genetics, rare disorders, the Finnish Disease Heritage. Pedigree and its applications. Modes of inheritance, their significance and recognition in practice. Monogenic inheritance, atypical inheritance, multifactorial inheritance, and their role in diseases. Practical applications and limitations of DNA and chromosomal analyses in monogenic diseases, chromosomal disorders, multifactorial diseases, fetal diagnostics, screening and scientific research. Legislation and professional standards. Ethical issues in genetics. Introduction to genetic counseling.

Learning outcomes

The student familiarises themselves with the fundamentals of clinical genetics, so that upon completion the student will be able to

- explain the role of medical genetics and clinical genetics in medicine
- explain the structure and function of the genome
- use genetic information sources and assess the role of genetic variation in diseases and disease risks
- explain the rules of Mendelian inheritance, atypical inheritance and multifactorial inheritance
- use a pedigree to collect family history and to identify the mode of inheritance
- explain the basics of population genetics and the concept of Finnish Disease Heritage
- explain how genetic variation in humans can be analyzed in medical practice and in scientific research and how laws and professional standards regulate analyses and the use of information
- recognize and explain ethical issues related to genetic diagnostics

[Official course record: MM00AX26](#)

MM00AY43 | Clinical pharmacology

1 ECTS | Subject not supplied | |

Person in charge: Miia Turpeinen

No description supplied in the collected record.

[Official course record: MM00AY43](#)

MM00AY62 | Clinical refresher course

2 ECTS | Subject not supplied | |

Person in charge: Mikko Karjalainen

Content [Finnish source]

Kerrataan peruskoulutuksen ja käytännön työn kannalta keskeisten kliinisten oppiaineiden sisältöä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa valikoitujen kliinisten oppiaineiden keskeistä sisältöä.

Opiskelija kehittää valmiuksiaan jäsentää kliinisiä ongelmia, tehdä perusteltuja päätöksiä, sekä suunnata omaa oppimistaan tavoitteellisesti ja kriittisesti.

[Official course record: MM00AY62](#)

046037J | Clinical research training organized by ClinMed research unit

4 ECTS | Subject not supplied | Post-graduate Studies | Finnish

Person in charge: Eero Kajantie

Content

Key aspects that a researcher needs to know to analyse and interpret study result findings and to communicate them.

Learning outcomes

After completing the course, the graduate student

- * Is able to evaluate critically scientific methods used in health sciences, to recognize the most important sources of error and to take them into account in own research.
- * Is familiar with the basics of data management and cleaning of raw data in health sciences research
- * Is familiar with the basics of key statistical methods in health sciences (comparison of two or more groups with parametric and non-parametric tests, logistic and linear regression)
- * Is familiar with the basics of societal interaction and communication in science.

Official course record: 046037J

046036J | Clinical research training organized by ClinMed research unit, general studies

5 ECTS | Subject not supplied | Post-graduate Studies | Finnish

Person in charge: Eero Kajantie

Content

Key aspects that a researcher needs to know to plan and start a study and to interpret study findings.

Learning outcomes

After completing the course, the graduate student

- * knows key study designs and data sources and their benefits and disadvantages
- * is aware of important epidemiological and statistical concepts (study design, sample size, power) and is able to use these concepts in planning a study
- * is able to read literature in health sciences, recognize the most common sources of error and take them into account when planning own research.
- * is aware of key ethical issues in health research, the ethics approval process and permissions for a study
- * is able to present own research project, to use feedback to improve the study protocol and to evaluate colleagues' research projects.

Official course record: 046036J

DP00BE48 | Co-design - an inclusive research method

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mari Juntunen

Content

The course will offer critical and innovative insights into:

- Participatory research methodologies
- Co-design values and mindset
- Co-design methods, process and tools
- Ethical considerations in co-design research
- Creating collaborative research environments
- Designing inclusive research methodologies to engage marginalised and underrepresented participants
- Using online collaborative research tools
- Planning a co-design method instrument
- Analysing co-designed data

Learning outcomes

Doctoral researchers will gain knowledge, confidence and competence in selecting and applying genuine co-design as a participatory method in their field of study and relevant to their PhD research topic. After completing this course students will be able to:

- Deeply understand co-design as a research methodology to include people who are traditionally marginalised or underrepresented in research.
- Critically evaluate and justify co-design as a creative form of participatory research methodology.
- Apply co-design as a methodology that can be used for difficult, multidimensional problems that need to consider the experiences, needs and interests of a range of people.
- Use collaborative online technology such as MIRO to design a co-design research instrument.

[Official course record: DP00BE48](#)

DP00AS49 | Commercialization of research results

0.5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Maarit Jokela

Content

The aim of the course is to become familiar with:

- How to identify ideas having commercial potential?
- How to validate the ideas?
- How to pitch?
- How to find funding possibilities?

Learning outcomes

Research produces a lot of important information, but every and now also results that can have commercial potential. It important to learn, how to identify ideas, evaluate their novelty and need as well as how to pitch ideas e.g. to collaborators and funders.

[Official course record: DP00AS49](#)

DP00AT85 | Conducting literature reviews

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: vastuopettaja

Content

Purpose, scope and type of literature reviews (e.g. systematic, narrative, scoping)

Method of systematic literature reviews

Planning a literature review (research questions and research strategy

Search strategies, assessing the quality of the literature sources

Databases, reference management, AI driven tools

Analyzing, evaluating and synthesizing literature

Writing a literature review

Assessing the quality of literature reviews

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the purpose of literature reviews and describe the features of well-conducted literature reviews
- know different types of literature reviews and their methodological considerations
- describe the typical structure and process stages of central literature review types (such as systematic literature reviews)
- plan one's own literature review
- search for literature from different sources
- know and be able to utilize different reference management systems and tools that can be used on literature reviews
- analyze the quality of literature reviews
- synthesize and analyze existing research by utilizing a literature review method presented in the course

Official course record: [DP00AT85](#)

KE00AZ35 | Continuous learning in university pedagogy as a teacher

3 ECTS | Subject not supplied | Other Studies |

Person in charge: Merja Maikkola

Content

- teacher professional growth
- well-being
- current issues in higher education pedagogy

Learning outcomes

Upon the completion of the course, the participants will be able to:

- to reflect and find ways of strengthening their pedagogical competence as a teacher
- to analyse their strengths and areas of development as a teacher
- to identify how to take care of one's well-being and coping as a teacher

Official course record: [KE00AZ35](#)

KE00AF40 | Contributing to the University Community, Bachelor's Degree

1-10 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Hennariikka Valppu-Paaso

Content

The course may consist of participation in several positions of trust as follows:

- * Board of the Student Union: 1 year *4–5 ECTS credits*
- * Student Council of the Student Union: 2 years *2 ECTS credits*
- * Board of Directors of the University: 2 years *5 ECTS credits*
- * University Collegium: 2 years *2 ECTS credits*
- * Education Council: 2 year *5 ECTS credits*
- * University Management Group 2 years *4 ECTS credits*
- * Faculty Management Group 2 years *2 ECTS credits*
- * The Faculty Board 2 years *2 ECTS credits*
- * FEP Education Committee 2 years *2 ECTS credits*
- * Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- * National student organisation 1 year e.g. SYL/SOOL/Specia board *1–5 ECTS credits*
- * UNIC Student Board: 1 year *3 ECTS credits*
- * Equality and Diversity Committee 2 years *4 ECTS credits*
- * Other official working groups at the University e.g. Equality and Diversity Working group, Wellbeing Working Group, Restaurant Working Group, Ethics Working Group, Working group for sustainability and responsibility, FSHS's Health Working Group, FSHS Council 2 years *2 ECTS credits*
- * Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Education designer will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- * Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- * Carry out the responsibilities associated with a position of trust in a responsible manner.
- * Act as a member of a multidisciplinary team and apply meeting procedures.
- * Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- * Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [KE00AF40](#)

KE00AF41 | Contributing to the University Community, Master's Degree

1-10 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Hennariikka Valppu-Paaso

Content

The course may consist of participation in several positions of trust as follows:

- * Board of the Student Union: 1 year *4–5 ECTS credits*
- * Student Council of the Student Union: 2 years *2 ECTS credits*
- * Board of Directors of the University: 2 years *5 ECTS credits*
- * University Collegium: 2 years *2 ECTS credits*
- * Education Council: 2 year *5 ECTS credits*
- * University Management Group 2 years *4 ECTS credits*
- * Faculty Management Group 2 years *2 ECTS credits*
- * The Faculty Board 2 years *2 ECTS credits*
- * FEP Education Committee 2 years *2 ECTS credits*
- * Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- * National student organisation 1 year e.g. SYL/SOOL/Specia board *1–5 ECTS credits*
- * UNIC Student Board: 1 year *3 ECTS credits*
- * Equality and Diversity Committee 2 years *4 ECTS credits*
- * Other official working groups at the University e.g. Equality and Diversity Working group, Wellbeing Working Group, Restaurant Working Group, Ethics Working Group, Working group for sustainability and responsibility, FSHS's Health Working Group, FSHS Council 2 years *2 ECTS credits*
- * Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Education designer will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- * Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- * Carry out the responsibilities associated with a position of trust in a responsible manner.
- * Act as a member of a multidisciplinary team and apply meeting procedures.
- * Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- * Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [KE00AF41](#)

AY00AH28 | Corso Intermedio 2

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

Come and strengthen your Italian language skills to the next level! This course is ideal for you if you want to develop your ability to converse in Italian on a variety of topics. Through a variety of tasks and conversation exercises, you will be able to actively use the language and prepare yourself for situations such as travel or work.

The course will deepen your knowledge of the Italian language by learning more Italian language structures and practising practical situations, while getting to know Italian culture through different texts, listening, video tapes. The lessons include exercises in structure and listening, as well as conversation and pronunciation exercises in pairs/small groups.

During the course, the basic structures of the language are deepened and practised. New structural topics include the differences between the use of the imperfect and the passato prossimo, the imperfect tense, the si-passive, the conditional, compound pronouns and the subjunctive. Topics include technology, food culture, going to the airport, clothing and talking about pains and ailments.

Learning outcomes

To stimulate interest and activate existing language skills.

After completion of the course, the student

- can tell about themselves
- can cope with everyday conversation and speaking situations
- produce texts in general language
- has become familiar with Italian conversation habits and culture, life and history of Italians
- has increased their vocabulary and active language skills on topics of interest to them

Official course record: [AY00AH28](#)

DP00AZ38 | Create - Protect - Innovate: Bringing ideas to market (Advanced level)

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Maarit Jokela

Content

The course offers you unique opportunities to follow inventors' real-life stories, understand why and how they patent their inventions and learn how intellectual property rights (IPRs) can be integrated into business strategies. Each module is based on a carefully selected set of case studies, many of which involve inventors who have been nominated for or won the European Patent Office's European Inventor Award.

Students can independently complete the modules at their own pace. The modules consist of high-quality videos, podcasts and interactive educational elements. These explain the theory behind new concepts and provide exercises and case studies to help learners consolidate their knowledge. There is also a multiple-choice quiz at the end of each module. In addition, a wide variety of resources are included for further study. A final assignment, marked by experts in intellectual property (IP), will serve to test your knowledge.

This course is continuation of Entry level.

Advanced level has five modules:

1. Grant of Patents
2. Enforcement of Patents
3. Scouting and Assessment of Technology
4. IP Commercialization
5. Use of IPRs

See more detailed program in [the Advanced Level](<https://www.epo.org/en/learning/learning-resources-profile/universities-research-centres-and-technology-transfer-centres/modular-ip-education-framework>).

Learning outcomes

The online course "Create – Protect – Innovate: Bringing ideas to market" developed by the European Patent Office is aimed at master's and PhD students and will teach you how to protect inventions and bring them to market and provide you with valuable insights into the world of innovation.

Official course record: DP00AZ38

DP00AU63 | Create - Protect - Innovate: Bringing ideas to market (Entry level)

3 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Maarit Jokela

Content

The course offers you unique opportunities to follow inventors' real-life stories, understand why and how they patent their inventions and learn how intellectual property rights (IPRs) can be integrated into business strategies. Each module is based on a carefully selected set of case studies, many of which involve inventors who have been nominated for or won the European Patent Office's European Inventor Award.

Entry level has five modules:

1. Introduction to Intellectual Property (IP) (15 hours)
2. Patent Essentials (what is the patent and what are the requirements to get a patent) (20 hours)
3. Introduction to Patent Information (10 hours)
4. Patent Information in Practice (15 hours)
5. Developing an IPR Strategy (15 hours)

See more detailed program: <https://www.epo.org/en/learning/learning-resources-profile/universities-research-centres-and-technology-transfer-centres/modular-ip-education-framework>

Learning outcomes

The online course “Create – Protect – Innovate: Bringing ideas to market” developed by the European Patent Office is aimed at master’s and PhD students and will teach you how to protect inventions and bring them to market and provide you with valuable insights into the world of innovation.

[Official course record: DP00AU63](#)

DP00BE45 | Creative feminisms: Material-Affective Approaches to Knowledge Making

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Suvi Pihkala

Content

Creative Feminisms: Material-Affective Approaches to Knowledge Making is a PhD course (3 ects) that explores creativity as a feminist mode of knowing and world making. Anchored in longstanding feminist traditions of attention to diversity, belonging and everyday life and drawing on feminist new materialist, posthuman and affect scholarship the course approaches creativity as relational, situated and always already at work in mundane practices, vernacular traditions and communal care.

Through participatory lectures and workshops the course explores how somatic, material and affective methods and making can open up otherwise, more hopeful and transformative, ways of engaging our social and ecological worlds.

What to expect

The course is organized in conjunction to ‘Remixing folk feminisms’ cultural programme that brings together international scholars, artists and creative makers to explore what happens when everyday vernacular creativity meets contemporary feminisms.

The course consists of participatory lectures, collective gatherings and creative making sessions (16h), including bog somatics, crown making, storying, handicrafts, remixing of feminist figures and icons, and collective reflection. These practices function as methodological interventions, enabling participants to experiment with material-affective research approaches, reflect on their ethical and political possibilities, and develop care full, non extractive research praxis suited to contemporary social and ecological questions.

Learning outcomes

Upon completing the course, participants have learned to

- Consider multiple forms of creativity as feminist knowledge making (artistic, crafting, storying, somatic)
- understand how materiality and affectivity shape creative knowledge making
- reflect on the methodological, ethical and political possibilities of creative material-affective approaches

[Official course record: DP00BE45](#)

YK00AU03 | Culture and Current Topics in Finnish

5 ECTS | Subject not supplied | Finnish

Person in charge: Anne Koskela

Content

Getting to know different cultural phenomena (e.g. through popular culture, literature, music and television entertainment). Current phenomena (e.g. news of the day/week, public figures and celebrities, social media discussions and podcasts). Text reading and listening exercises. Oral exercises (e.g. exchanging opinions, sharing personal experiences). Use of idiomatic expressions and phrases. Assessment and reflection on one's own learning. Visits to different places.

Learning outcomes

The aim of the course is to familiarize students with Finnish culture and current affairs and to develop their communication and interaction skills in Finnish. In addition, the aim is to develop the following generic skills: cultural awareness and sensitivity, setting personal goals, and self-assessment and reflection skills.

By the end of the course, student

- has become familiar with a wide range of phenomena of Finnish culture
- is able to follow Finnish media and current topics
- be able to read, listen to and write texts related to the topic
- can explain and discuss cultural and topical issues by applying what they have learned
- can critically interpret the media and express and argue their own opinions.

[Official course record: YK00AU03](#)

YK00BB32 | Culture Mix

2 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Jukka Käräjälä

Content

Characteristics of target societies' everyday life and culture. Some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation.

Learning outcomes

By the end of the course, the student

- understands basic characteristics of target countries' culture and society.
- can understand and use some very common everyday expressions and phrases.

[Official course record: YK00BB32](#)

DP00BE32 | Current methods in epidemiology and medical data science

0.5-2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Anna Pulakka

Content

This course provides an advanced, research-oriented overview of current methods in epidemiology and data science. Through a year-long seminar series led by experts from various fields of epidemiology, participants explore modern analytical approaches used in contemporary epidemiological research. Each session focuses on one methodological theme, combining theory with concrete research applications.

Learning outcomes

By the end of the course, participants will be able to:

- be familiar with key advanced methods in epidemiology and data science and their applicability in different study designs.
- critically assess assumptions, strengths, and limitations of these methods.
- understand strategies for handling time-varying confounding and mediation in longitudinal data.
- interpret causal effect estimates in research contexts.
- recognise approaches for bias detection and sensitivity analysis.
- use a learning diary to reflect on how these methods relate to their own research projects and future applications.

[Official course record: DP00BE32](#)

KE00BD60 | Current topics in early childhood education research Literature Course

5 ECTS | Subject not supplied | Other Studies |

No description supplied in the collected record.

[Official course record: KE00BD60](#)

IC00AJ64 | Cyber Security I: Ethical Hacking

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Juha Partala

Content

This introductory course in Ethical Hacking offers students a comprehensive foundation in offensive cyber security operations, specifically in the realm of Red Teaming. The course encompasses a broad spectrum of topics crucial for aspiring cyber security professionals. The course begins with a thorough understanding of cyber security fundamentals, where students learn about key concepts, terminology, and technologies. It then progresses to hands-on skills in penetration testing, teaching students to apply various techniques and methodologies effectively.

The course begins with web hacking methods, providing students with practical skills to identify and exploit web application vulnerabilities, utilizing tools like Burp Suite. Network security principles are also covered, providing insights into network reconnaissance and common protocol vulnerabilities. The course delves into resources and methods for finding and exploiting system vulnerabilities, guiding students through the exploration of different methods and tools.

Practical application is a key aspect, with students becoming proficient in performing network reconnaissance and utilizing exploitation frameworks such as Metasploit for initial system access, learning about post-exploitation and performing privilege escalation. The course covers installing and configuring a secure Lab environment for penetration testing, allowing students to apply their skills in a controlled setting.

In addition to technical skills, the course emphasizes the importance of staying updated with the state of the art in cyber security, ensuring students are aware of the latest developments in the field. Lastly, the ethical implications of hacking are thoroughly discussed to instill a sense of responsibility and ethics in penetration testing practices.

The course is organised into the following thematic units:

Topic 1: Penetration Testing Fundamentals: Understand what a penetration test involves, including testing techniques, methodologies and reporting.

Topic 2. Web Hacking: Learn about enumeration and exploit some of the most popular web application vulnerabilities seen in the industry using tools like Burp Suite.

Topic 3. Network Reconnaissance and Protocols: Learn the basics of passive and active network reconnaissance. Understand how common protocols work and their attack vectors using tools like Nmap.

Topic 4. Finding and Exploiting Vulnerabilities: Familiarize yourself with the skills, methods, and resources used to exploit vulnerable applications and systems. Learn how to use Exploitation frameworks like Metasploit to gain initial access.

Topic 5. Post-Exploitation: Learn about post-exploitation after gaining initial access. Understand the fundamental techniques that will allow you to elevate account privileges.

Learning outcomes

After completing this course, the student will:

- Gain a thorough understanding of cyber security concepts, terminology, and tools.
- Know how to install and configure a secure Lab environment for penetration testing.
- Learn to apply techniques and methodologies essential for effective penetration testing.
- Gain an understanding of web application vulnerabilities, with practical application using tools like Burp Suite.
- Understand the basics of network reconnaissance and common protocol vulnerabilities.
- Develop competence in finding and exploiting system vulnerabilities.
- Know how to use frameworks like Metasploit for initial system access.
- Learn about post-exploitation and essential techniques for privilege escalation.
- Recognize the ethical considerations in Penetration testing.

Official course record: [IC00AJ64](#)

MM00AX30 | Data analysis

3 ECTS | Subject not supplied | | Finnish

Person in charge: Hannu Vähäniikkilä

Content

Aims and phases of statistical research, planning statistical research, obtaining data, variable distributions (frequencies, graphs and statistics), basics in statistical inference and methods (estimates, significance tests and confidence limits), basic methods in comparing groups and estimating associations between variables, specific methods applied in medical research.

Learning outcomes

The student is familiar with statistical computing in the fields of medicine, dentistry and health sciences. Further, the student is able to analyze data with basic statistical methods, use basic statistical significance tests and inference methods, and evaluate critically scientific research reports.

Generic skills

After completing the course, the student:

- is able to independently make analytical and critical conclusions based on multidimensional and extensive data, as well as creatively produce new and apply it
- is able to apply statistical methods appropriate to the data

Official course record: [MM00AX30](#)

7600AE41 | Density matrix theory of NMR

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Juha Vaara

Content

The course develops a basic density-matrix description of nuclear magnetic resonance, as opposed to the simplified model involving magnetization vectors. A matrix formalism is established for the quantum dynamical evolution of spin systems in the laboratory frame and rotating frame, the effect of excitation pulses, calculation of magnetization and thereby spectra and relaxation properties from the density matrix, both for a single spin and for coupled spin systems. The course also includes the basic theory of spin dynamics simulations.

Learning outcomes

The student understands the concept of density matrix in the context of magnetic resonance and is able to apply it to analyse basic magnetic resonance experiments. She/he possesses the necessary background information for starting to apply the concept to designing advanced magnetic resonance experiments in materials and molecular research.

[Official course record: 7600AE41](#)

MD00AX86 | Dental Materials

1 ECTS | Subject not supplied | | Finnish

Person in charge: Ritva Näpänkangas, Ritva Kuoppala

Content

Materials used in dentistry

Learning outcomes

Student knows the properties of the basic materials used in dentistry. Student understands the importance of continuous learning as materials, techniques, and evidence-based knowledge develop.

[Official course record: MD00AX86](#)

MM00AY40 | Dermatology and venereology

4 ECTS | Subject not supplied | |

Person in charge: Laura Huilaja

Content

Theoretical teaching: Special features of status and anamnesis. Structure of skin. Basics of local treatments. Basics of allergology. Common skin diseases and their clinical findings. Skin tumours. Hereditary skin diseases. Dermatopathology. Venereal diseases.

Practical teaching: Patient examination and bedside teaching, self study in the web-based study system. Tuition is given in Finnish.

Learning outcomes

After the course student:

- has the knowledge and skills in diagnostics and treatment of common skin diseases in order to be able to work as a general practitioner or house officer.
- has the basic skills to diagnose and treat allergological and venereal diseases

[Official course record: MM00AY40](#)

352255A | Development of Science - Research Retrieval and Synthesis

5 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Heidi Siira, Mira Hammarén, Jonna Juntunen

Content

Information retrieval from different scientific databases, assessing the trustworthiness or reliability and validity of scientific articles, practicing scientific writing, planning and scheduling a research process, creating an idea paper for a bachelor's thesis.

Learning outcomes

Upon completion of the course, the student will be able to:

- independently retrieve information from different databases
- critically evaluate the trustworthiness or reliability and validity of the retrieved information
- review scientific writing from a process perspective
- justify the need for research in one's own discipline and identify a research gap
- plan a research process on a topic of one's choice
- write scientific synthesis

Official course record: [352255A](#)

HD00AW60 | Digital cultural heritage

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

The digitalising world also extends to our understanding of cultural heritage. We share pictures of heritage sites on SOME, visit VR exhibitions in museums and dive into historical worlds in computer games. Researchers can explore meanings and processes related to cultural heritage by using digital material from museums and archives, for example, but increasingly material is also being created in digital form. Research can also focus on how people interact with cultural heritage in digital environments.

Key content:

- definition of digital cultural heritage
- the construction of cultural heritage in the digital environment
- digital materials in cultural heritage research

Learning outcomes

On completion of the course, the student will:

- be able to explain the meaning of the concept of digital cultural heritage
- be able to search for key digital cultural heritage resources
- understand the research aspects and ethical issues of digital cultural heritage research

Official course record: [HD00AW60](#)

TM00BE50 | Digital Twins in Product Development and Production Facilities

5 ECTS | Engineering Design | Advanced Studies | Finnish

Person in charge: Lauri Kunnari

No description supplied in the collected record.

Official course record: [TM00BE50](#)

DP00AT87 | Dissertation analysis

3 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Harri Haapasalo

Content

The main elements of a doctoral dissertation in terms of content and structure especially from the perspective of external review.

Learning outcomes

After completing the course the student is able to:

- put oneself in the position of a reviewer of a doctoral dissertation
- critically review doctoral dissertations
- identify the main elements of a doctoral dissertation
- analyse the content and structure of a doctoral dissertation
- utilise reviewing on the content and structure of their own doctoral dissertation

[Official course record: DP00AT87](#)

DP00AH88 | Doctoral supervision training for supervisors

1-2 ECTS | Other studies | Other Studies | English

Person in charge: Minna Uitto, Sonja Lutovac

Content

The content of the training will include basic knowledge of

- supervision from research-based perspective
- quality supervision
- challenging points in supervision
- ethics in supervision
- expectations in supervision
- supervision as interaction

Learning outcomes

The aims of the training are:

- to provide targeted support for supervisors
- to learn about research-based best practices for supervision
- to share experiences and knowledge and learn from each other

[Official course record: DP00AH88](#)

419105J | Doctoral thesis

0 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Pauliina Rautio

No description supplied in the collected record.

[Official course record: 419105J](#)

DP00AV54 | Doctoral Thesis

0 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Aulikki Herneoja

No description supplied in the collected record.

[Official course record: DP00AV54](#)

356001J | Doctoral Thesis in Health Sciences

0 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Mika Martikainen

No description supplied in the collected record.

920012J | Doctoral Training Plan

3 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Heli Ruotsalainen

Content

- * The establishment and writing of the doctoral training plan, which includes detailed research, career and personal study plan.
- * Presentation of the doctoral training plan to the follow-up group

Doctoral training plan is accepted by Graduate School.

Learning outcomes

After the course the doctoral researcher knows how to develop a doctoral training plan and research progress in written. The doctoral researcher has established a realistic four-year plan (including content, schedule and funding) for their doctoral training.

[Official course record: 920012J](#)

YK00BB37 | Doctoral Writing Toolkit: The Art and Craft of Writing for Emerging Scholars

0.5-2 ECTS | Subject not supplied | Language and Communication Studies | English, Finnish

Person in charge: Magda Karjalainen

Content

The lectures will introduce key aspects of doctoral research writing in the Finnish and international context, the role of writing in science, and the process of becoming a researcher-writer. Topics will include writing as a social, emotional, and situated practice, the diversity of writing/publishing cultures, ethics of research writing, including use of AI, as well as practical strategies for engaging with feedback and revision.

The seminars will provide an interactive space for doctoral researchers to actively engage in small-group work, offering and receiving constructive feedback while learning from one another's experiences and offering peer support. Through collaborative activities and peer discussions, participants will develop not only their scientific communication skills but also a sense of academic responsibility and community. Seminars will explore topics such as: field-specific typical article structures, literature reviews, writing abstracts and engaging with peer and supervisor feedback.

Learning outcomes

This course provides doctoral researchers with essential tools and perspectives to navigate the complexities of scientific writing. The course explores writing as a site of knowledge creation and sociocultural, discipline-specific practice through which researchers become members of academic community.

By the end of the course, participants will have a deeper awareness of scientific writing as both a process and a product, along with some practical strategies for developing their academic voice within a supportive scholarly environment. The course aims to lay foundations, which will empower researchers to build their professional skills further in the process of their doctoral studies. As such it is recommended to complete the course at the early stages of the studies. Various forms of pedagogical engagement, including flexible use of English and Finnish, are used in the implementation of the course.

[Official course record: YK00BB37](#)

DP00AT92 | Electron microscopy in biomedical and material sciences

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mika Kaakinen

Content

This course is designed to provide graduate students with a basic understanding of advanced electron microscopy techniques and their applications in both biomedical and material sciences. Emphasis will be placed on the integration of multiple microscopy techniques to address complex research questions in these interdisciplinary fields. Students will gain practical experience in sample preparation, imaging, and analysis using various electron microscopy and focused ion beam (FIB) technology.

Learning outcomes

Upon completion of the course, the student will understand

- Basic operation principles of electron microscopes
- Sample preparation in bio- and material sciences
- sample contrasting techniques
- analytical electron microscopy techniques
- practical works with electron microscopes and sample preparation
- basic image analysis techniques in electron microscopy

Official course record: [DP00AT92](#)

AY905082Y | Elementary Course in Portuguese I (OPEN UNI)

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

The course introduces the basic structures of Portuguese grammar and the basic vocabulary. Listening, reading and pronunciation exercises, as well as discussion and writing exercises. The course will help you develop your interaction skills in Portuguese and introduce you to the cultures of Portuguese-speaking countries.

Topics include e.g., customs, parties, talking about one self, family and studies, interests and hobbies, housing, making appointments, services, restaurant and travel situations.

Grammatical structures include e.g., the present tense of the indicative, modal verbs, reflexive verbs and pronouns, the simple perfect, subject, accusative and dative pronouns, possessive words, prepositions, indefinites, numbers, dates, conjunctions, word order in the main sentence and question sentence.

Learning outcomes

Welcome to study Portuguese! After completing the course, you are able to communicate in Portuguese both orally and in writing with simple sentences in everyday routine language situations. The students are familiar with the basics of Portuguese-speaking countries, their lives and customs.

Official course record: [AY905082Y](#)

AY905083Y | Elementary Course in Portuguese II (OPEN UNI)

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

The course introduces the basic structures of Portuguese grammar and the basic vocabulary. Listening, reading and pronunciation exercises, as well as discussion and writing exercises. The course will help you develop your interaction skills in Portuguese and introduce you to the cultures of Portuguese-speaking countries.

Topics include e.g., information technology, working life, hometown, environment, free time, hobbies, health, asking for services, making telephone calls, booking a hotel room, holiday trips, Portuguese-speaking countries and their cultures. Talking about past events.

Grammatical structures include e.g., present of indicative and conjunctive, imperative, simple perfect, conjunctive perfect, past tense, conditional, conjunctions, relative pronouns, word order in main clause and subordinate clause.

Learning outcomes

After completing the elementary course, the students will be able to communicate orally and in writing in simple sentences in a variety of everyday easy language situations. They can express their opinions, briefly discuss plans and past events. The student knows the basics of Portuguese-speaking countries and their cultures.

Official course record: AY905083Y

YK00AU10 | Elementary Course in Spanish 2

5 ECTS | Subject not supplied | Language and Communication Studies | Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

The course contains a variety of speaking and interaction exercises as well as listening, reading and writing exercises.

Topics covered include expressing opinions, housing, describing people, small talk, talking about the past, working life, historical and cultural topics relating to Spanish-speaking countries.

Grammatical structures include, for example, present perfect tense, adjective comparison, object pronouns, simple past tenses (imperfect and preterite).

Learning outcomes

Upon successful completion of the course, students will be able to:

- express their opinions
- talk about their lives in more detail
- talk about past events
- manage in everyday situations and carry out short dialogues
- understand a variety of cultural aspects about Spanish-speaking countries.

Official course record: YK00AU10

AY00AV55 | Elementary Course in Ukrainian 1 (OPEN UNI)

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

- pronunciation exercises
- studying and practicing Ukrainian grammar and language structures
- writing and vocabulary exercises

Learning outcomes

After completing the course, the student:

- recognizes Cyrillic letters and knows how to write them and pronounce the sounds of the Ukrainian language
- partially knows the basic structures of the language
- understands clear and simple speech related to their everyday life (getting to know each other, introducing yourself, family, professions, hobbies, shopping, etc.)
- can read and write simple sentences
- can ask and answer simple questions
- understands and can produce language in the most common business situations of everyday life

Official course record: [AY00AV55](#)

YK00AI88 | Elementary Course in Ukrainian 2

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Ari Hepo-aho

Content

Telling about the news, shopping, clothes and colors, home crafts, the city, tourist situations, introducing the apartment and the surroundings, buying tickets, theater, making an appointment, weather.

Learning outcomes

The student's language skills become stronger, the vocabulary becomes more diverse and communication in Ukrainian becomes easier. Knowledge of grammar is more versatile.

Official course record: [YK00AI88](#)

AY00AV56 | Elementary Course in Ukrainian 2 (OPEN UNI)

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

Telling about the news, shopping, clothes and colors, home crafts, the city, tourist situations, introducing the apartment and the surroundings, buying tickets, theater, making an appointment, weather.

Learning outcomes

The student's language skills become stronger, the vocabulary becomes more diverse and communication in Ukrainian becomes easier. Knowledge of grammar is more versatile.

Official course record: [AY00AV56](#)

IC00AJ65 | Empirical Research in Cyber Security

5 ECTS | Subject not supplied | | English

Person in charge: Christian Wieser

Content

Course provides students a good ability to leverage scientific work to engineering application. Students learn to replicate scientific experiments and to evaluate the quality of the results. Topics of the course include state-of-the-art and classic work, particularly in the area of cyber security topics.

Learning outcomes

Upon completion of this course, students will be able to

1. Replicate scientific experiments based on research papers
2. Evaluate the scientific method used
3. Communicate with science stakeholders
4. Recognize dubious scientific behavior
5. Recognize dubious scientific forums

Official course record: [IC00AJ65](#)

MM00AX50 | Endocrinology

2 ECTS | Subject not supplied | |

Person in charge: Olavi Ukkola

Content

Endocrinology and metabolic disorders

Learning outcomes

Learning objectives in endocrinology: • differential diagnostics, symptoms, treatment and prevention of diabetes mellitus type 1 and 2 • to measure blood pressure, to examine patient with hypertension, treatment, care chain and complications of hypertension • thyroid related disorders (physiologic basics of thyroid gland, examination of thyroid, disorders of thyroid, examination of a lump in thyroid gland, pain in thyroid gland, follow-up of a patient with thyroid cancer in primary health care) • endocrine hypertension • hyperparathyroidism • other disorders of adrenal gland • endocrine habitus • disorders of pituitary gland • disorders of bone, diagnostics, treatment and prevention of osteoporosis, secondary osteoporosis • clinical picture, diagnostics, differential diagnostics, treatment and prevention of atherosclerosis • diagnostics, differential diagnostics and treatment of dyslipidemia, familial hypercholesterolemia, secondary hyperlipidemias • obesity and its etiology, obesity related diseases, treatment of morbid obesity, pharmacological and surgical treatment of obesity, eating disorders • essential endocrine problems in primary health care

Generic Competences

1. Analytical, Critical, and Creative Thinking

The student is able to analyse whether a patient has type 1 or type 2 diabetes based on clinical presentation, laboratory findings, and risk factors.

The student critically evaluates elevated blood pressure measurements and considers whether the findings represent white-coat hypertension, secondary hypertension, or true hypertension.

The student is able to consider creative alternative diagnostic approaches in situations where thyroid function tests are atypical or contradictory.

The student can weigh the benefits and risks of different treatment strategies, for example when considering pharmacological or surgical treatment of obesity.

2. Multidisciplinarity and Interdisciplinarity

The student evaluates diabetes management from the perspectives of nutritional science and medicine.

The student understands how cardiology, nephrology, neurology and endocrinology interact in the development of end-organ complications of hypertension.

3. Communication, Interaction, and Digital Skills

The student can clearly and comprehensibly explain thyroid function, treatment options, and follow-up to a patient.

The student practises empathetic communication with patients whose obesity is associated with stigma or psychological factors.

The student uses digital tools (electronic health records, telemedicine platforms, digital blood pressure and glucose monitoring devices) for planning and monitoring treatment.

The student is able to produce a clearly structured and concise consultation or referral letter regarding suspected endocrine hypertension or osteoporosis.

Official course record: [MM00AX50](#)

DP00BE73 | Energy-Aware Ambient IoT

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Onel Alcaraz López, Mateen Ashraf

Content

The course consists of 3 modules combining theoretical lectures, hands-on exercise, and homework assignments. These modules are:

- Module 1: Basics of Ambient IoT: history, overview, and enabling technologies (3.5-hour lecture)
- Module 2: Low-power wireless communications and networking: backscatter, active communications, standards (3.5-hour lecture)
- Module 3: Energy-aware computing: intermittent computing techniques, tinyML, distributed ML, and edge-cloud offloading strategies. At the end of the lecture, the course project will be introduced. (3.5-hour lecture + 1.5-hour project introduction)

Learning outcomes

Upon completion of the course, the student will be able to explain and understand:

- What is Ambient IoT (history and overview)?
- Energy harvesting, wireless power transfer, and power management
- Low-power wireless communications and networking technologies
- Intermittent and energy aware computing strategies
- Ambient IoT in the device-edge-cloud continuum
- Embedded AI and tinyML
- Distributed AI and offloading strategies for ambient IoT
- Over-the-air computing and advanced topics
- Real-world examples, applications, and proof of concepts

Official course record: [DP00BE73](#)

AY00AR48 | English for Education (OPEN UNI)

3 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Sari Törmänen

Content

This course aims to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities will enable students to collaborate and explore field-related topics through the medium of English. The course will consist of a compulsory classroom or online lessons component, as well as compulsory self-study packages to be completed independently.

The course activities include, but are not limited to:

- texts and short videos related to education and teaching
- formal and semi-formal reading, writing and vocabulary practice
- oral presentation practice
- communicative activities

Learning outcomes

Tämä kurssi opetetaan englanniksi, joten opintojaksokuvaus on vain englanniksi.

Objectives:

- to develop students' English language skills needed for effective communication on different topics related to education and teaching
- to practice comprehending and producing oral presentations and written texts using formal or semi-formal English
- to use digital tools to support language learning.

Learning outcomes - by the end of the course, students are expected to be able to:

- interpret, discuss and write about topics related to the field of education, utilising formal or semi-formal styles for both academic assignments and professional discussions
- search for information on a chosen educational theme, as well as analyse and explain the ideas
- better communicate with parents and colleagues from foreign backgrounds.

Official course record: [AY00AR48](#)

MM00AS89 | Exam of Rheumatology

1 ECTS | Subject not supplied | Intermediate Studies | English

Person in charge: Tero Pääkkö

Content

The diseases with public health importance and selected rarer diseases of the subspecialty (Rheumatology) are covered during the course, including diagnostic strategies, differential diagnoses, treatments available and management of these conditions.

Learning outcomes

Upon completion of the course the student is familiar with diseases of the internal medicine subspecialty in question (Rheumatology) as well as diagnostics and treatment of these diseases. The student understands the connection between these subspecialties and other medical and internal medicine specialties. The student learns independent problem solving and critical thinking and is able to cooperate and coordinate treatment with various healthcare professionals.

Official course record: [MM00AS89](#)

IC00AV42 | Fab Lab Seminar: Innovation, Sustainability, and Impact through Digital Fabrication

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Sohail Soomro

Content

Topics may change to answer the challenges for the future society, they can include for example: Fab Labs making Fab Labs, Fab City, Sustainability, Safety, Value (co-)creation and impact.

Learning outcomes

By completing the course, the student will be equipped with the knowledge necessary to understand and support the development and sustainability of Fab Labs and Fab cities. Through emphasizing sustainability, safety, and value co-creation, students will learn how to create and innovate in Fab Labs. The course also highlights the social, environmental, and economic impacts of digital fabrication in Fab Labs, aiming to prepare students to engage in ethical and responsible practices that drives long-term positive changes.

[Official course record: IC00AV42](#)

HD00AW65 | Familiarization with an optional subject area of digital humanities

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

What is corpus linguistics? What sources and methods are used in digital history research? What kind of material does the some offer and what are the ethical issues involved in its use?

In this course, students will study a topic of their choice in the field of digital humanities, deepening their understanding by reading the literature or by working on an assignment agreed with the teacher.

Learning outcomes

On completion of the course, the student will:

- have deepened their knowledge of digital materials and their analytical methods from the perspective of their own special field (e.g. digital cultural heritage, language technology, humanities technology studies, some and online studies, or digital history).
- understand the potential of digital humanities
- be aware of the ethical dimensions of research

[Official course record: HD00AW65](#)

KE00AL07 | Final teaching practice

6 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Emilia Manninen

Content

- Planning and implementing assessment
- Cooperation with the actors in the educational field and multiprofessional teams
- Independent responsibility for the subject teacher's work

Learning outcomes

Having completed the course, the student knows how to:

- apply their pedagogical and subject didactic thinking when working with learners and other actors in the field of education
- structure the significance of assessment in the subject teacher's work and apply this knowledge in planning and implementing the assessment
- explain the importance of multiprofessional cooperation in the subject teacher's work
- analyze and apply the knowledge and skills they have learnt and bear independent responsibility for the teacher's work.

[Official course record: KE00AL07](#)

407051A | Finnish as a Second Language, Optional

5 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Minna Sääskilahti

Content

The course deals with the teaching of Finnish as a second language in practice and theory, especially from the viewpoint of the work of a primary teacher; how, in practice, to teach Finnish and support the student linguistically in mainstream education, teaching of Finnish as a second language, and in instruction preparing for basic education.

The topics covered by the course include learning and teaching of Finnish, spoken and written language, Finnish as a second language in the curricula, assessment of language skills and the European frame of reference, learning materials in Finnish as a second language and development of teaching Finnish as a second language

Learning outcomes

Having completed the study module, the student:

- * knows how to describe the goals, arrangements and assessment in the teaching, especially of Finnish as a second language, of people with immigrant background in curricula and in practice from the viewpoint of a primary teacher's work.
- * knows how to explain the most important theoretical ways from the viewpoint of a teacher's work to perceive multilingualism, learning and teaching a second language, and the everyday life of a culturally diverse school.
- * knows how to describe linguistically aware teaching and how to evaluate in his/her own work as a primary teacher the linguistic needs of a multilingual student in mainstream education, teaching Finnish as a second language, and in instruction preparing for basic education.
- * is familiar with essential literature and materials in the field of Finnish as a second language

[Official course record: 407051A](#)

900022Y | Finnish for Teaching

2 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Päivi Jokinen

Content

The course introduces participants to Finnish language of teaching and communication in different academic fields.

During the course, participants

- familiarise with teaching a university course in Finnish
- reflect on their own strengths as teachers in Finnish
- compile vocabulary and central concepts in Finnish in their own field of expertise
- produce a poster covering an issue in one's own field and introduce the poster to other participants
- familiarise with current multidisciplinary issues as part of participating in peer teaching sessions
- give feedback about peer presentations.

The topics and communicative situations in the course: emails, meetings and negotiations, pedagogical language (giving instructions, guiding students, teaching dialogue, concepts of digital pedagogy) and information retrieval in an article of one's own field. The participants can also influence the content themselves.

Learning outcomes

By the end of the course the participant

- can understand basic professional communication in a university education context
- knows basic concepts of teaching in Finnish in their own field of expertise.

[Official course record: 900022Y](#)

MM00AX14 | First aid

1 ECTS | Subject not supplied | | Finnish

Person in charge: Janne Liisanantti

Content

Lecture

Online course

Group teaching (3cu)

Learning outcomes

After participation the student

- knows the basics of first aid and is able to use different types of first-aid devises
- knows the basic life support protocol
- is able to use public defibrillator

Official course record: MM00AX14

920017J | First Follow-up Group Meeting

0 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Heli Ruotsalainen

Content

The doctoral researcher arranges the first follow-up meeting during the first year of doctoral training. For the meeting, the doctoral researcher prepares a [Doctoral Training Plan](<https://www.oulu.fi/en/science-arctic-attitude/graduate-school/thesis-and-study-requirements/study-requirements/instructions-writing-doctoral-training-plan>) together with the principal supervisor. During the meeting, the doctoral researcher presents his/her doctoral training plan and a summary of the goals for the next year.

The doctoral researcher submits the Doctoral Training Plan (accepted by the supervisors) and other needed materials to the follow-up group members before the meeting.

Learning outcomes

A follow-up group is formed by 2-3 external experts to support the doctoral researcher and follow the progress of the doctoral research and studies. The follow-up group gives constructive feedback on research, study and career plans of the doctoral researcher.

The follow-up group gives feedback on the plans and gives possible suggestions for corrections. This meeting is important for training in how to write a research plan, which is an important skill for research-oriented careers. To aid the development of this skill, the follow-up group plays the role of an expert panel responsible for the evaluation of research funding applications. The aim is to train the doctoral researcher to become skilled in applying for funding

Doctoral researcher is able to

- * to report effectively on the plans and accomplishments of his/her training.
- * to reflect own progress and plans of the doctoral training.

Official course record: 920017J

MD00AX85 | Fixed Prosthodontics I

2 ECTS | Subject not supplied | | Finnish

Person in charge: Ritva Näpänkangas, Kirsi Sipilä

Content

Indications/contraindications, treatment planning, principles of preparation, metal crowns, porcelain fused to metal, all-ceramic crowns/fixed partial dentures, resin-bonded fixed partial dentures, impression techniques, temporary restorations, cementation procedure, complications/prognosis.

Learning outcomes

Upon completion of the course the student will

- have skills to examine the patient for prosthetic treatment with crowns and fixed partial dentures
- know the indications and contraindications for fixed prostheses.
- be able to explain different treatment options to the patient and to design, schedule, and carry out the prosthetic treatment according to the treatment plan.
- perform the clinical phases of the treatment.
- knows the importance of the maintenance phase in success of the treatment.
- understands the importance of continuous learning in development of materials, techniques, and evidence-based knowledge.

Official course record: MD00AX85

920007J | Follow-up Group Reporting and meetings

1 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Heli Ruotsalainen

Content

A final follow-up meeting is arranged approx. one year before the defense. Before the meeting, the doctoral researcher submits all the needed material, the possible updated version of their Doctoral Training Plan and a progress report (accepted by the supervisors) to the follow-up group members.

During the meeting, the doctoral researcher presents their progress and the key results of the research during the past year, the current status of the articles and/or the thesis manuscript, the goals for the following year, any possible changes made to the Doctoral Training Plan, a plan for finishing the degree, and the career plans after graduation. The doctoral researcher should also report how they have taken into account the recommendations that the follow-up group gave in the previous meeting.

Learning outcomes

A follow-up group is formed by 2-3 external experts to support the doctoral researcher and follow the progress of the doctoral research and studies. The follow-up group gives constructive feedback on research, study and career plans of the doctoral researcher.

The follow-up group gives feedback on the plans and gives possible suggestions for corrections. This meeting is important for training in how to write a research plan, which is an important skill for research-oriented careers. To aid the development of this skill, the follow-up group plays the role of an expert panel responsible for the evaluation of research funding applications. The aim is to train the doctoral researcher to become skilled in applying for funding.

Doctoral researcher is able to

- * to report effectively on the plans and accomplishments of his/her training.
- * to reflect own progress and plans of the doctoral training.

Official course record: 920007J

405525Y | Foreign language

2 ECTS | Subject not supplied | General Studies | Finnish

No description supplied in the collected record.

902179Y | Foreign language other than English

3 ECTS | Subject not supplied | Language and Communication Studies | English

Person in charge: Kaisu Jarde, Maritta Riekkö

Content

The students study various texts and complete various assignments related to the texts. Oral activities and short presentations.

Learning outcomes

Foreign language other than English, can be French or German.

Upon completion of the course the students

- understand French or German standard language texts as well as scientific texts related to education and teaching
- can comment on the context of the texts and summarize them in French or German
- can use various reading strategies
- knows the special features of French/German written expression
- are able to discuss general and scientific topics related to the field of education.

Official course record: 902179Y

MM00AY22 | Forensic Medicine

2 ECTS | Subject not supplied | |

Person in charge: Lasse Pakanen

Content [Finnish source]

- Oikeuslääketieteen toiminnot Suomessa
- Lääkärin tehtävät kuoleman tapauksessa: kuoleman toteaminen, vainajan ulkotarkastus, kuolemansyyn selvittäminen, kuolintodistuksen laatiminen
- Traumatologinen oikeuslääketiede
- Kliininen oikeuslääketiede
- Oikeuskemia
- Poliisin ja lääkärin yhteistyö

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- Tuntee Suomen oikeuslääkintäjärjestelmän
- Tuntee keskeisen lääkäriä koskevan lainsäädännön (mm. salassapito, ilmoitusvelvollisuus, potilaan ja lääkärin oikeudellinen asema, kuolemansyyn selvittäminen)
- Ymmärtää lääkärin velvollisuudet kuolemantapauksessa ja osaa tehdä asianmukaisen kuoleman toteamisen ja vainajan ulkotarkastuksen
- Ymmärtää kuolemansyyn selvittämisen periaatteet ja osaa soveltaa niitä käytäntöön
- Osaa määrittää luonnolliset kuolemansyyt
- Ymmärtää periaatteet erityyppisten ulkoisen väkivallan aiheuttamien vammojen sekä niiden syntymekanismien ja iän määrittämisessä
- Tuntee/ymmärtää keskeiset kliiniset oikeuslääketieteelliset tutkimukset (seksuaalirikokset, pahoinpitelyt, päihdetutkimukset, kuriiritutkimukset) toimien voimassa olevien säädösten mukaisesti
- Tietää, miten laaditaan asianmukainen (rikosoikeudellinen) lääkärinlausunto
- Osaa laatia asianmukaisen kuolintodistuksen

Geneeriset taidot:

Opintojakson suoritettuaan opiskelija

- Osaa suhtautua kriittisesti mm. potilastyössä saamaansa tietoon ja muistaa, ettei kaikki ole aina sitä miltä näyttää (Analyttisen, kriittisen ja luovan ajattelun taidot).
- Osaa yhdistää eri erikoisalojen tietoja mm. kuolemansyyn selvittämisessä (Monitieteisyys- ja tieteidenvälisyystaidot).
- Osaa kiinnittää huomiota laatimiensa lausuntojen ja todistusten kieliasuun sen mukaan, mitä tarkoitusta ja ketä varten asiakirja laaditaan (Viestintä-, vuorovaikutus- ja digitaidot).

Official course record: [MM00AY22](#)

MD00AF87 | Four Years of Dental Studies completed

0 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Completed the first four years of dental undergraduate studies.

Learning outcomes

Dentistry: Completed the first four years of dental undergraduate studies.

Official course record: [MD00AF87](#)

DP00BE80 | From doctoral studies in biosciences to working life: Working life skills and networks

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mirva Saaranen, Kaija Autio

Content

The course covers different aspects of both field-specific and generic working life skills. The course gives tools to doctoral researchers to identify their strengths and articulate their skills and provides information on various employment opportunities after doctoral studies. The students will have a chance to develop their career plans and practice how to write attractive CV and how to market themselves as professionals outside academia. The course provides opportunities for networking via attractive LinkedIn profile as well as during a networking event organized as part of the course.

Learning outcomes

The aim of the course is to increase interaction between non-academic working life and doctoral researchers in the field of biosciences, broadening their understanding of career opportunities outside academia. After the course students will be able to:

- recognize their own competences and reflect on their developmental needs
- market themselves as professionals in job markets outside academia
- develop their networking skills and grow their professional networks

Generic skills covered during the course:

- Well-being, and self-development skills: Student will be able to set professional goals and plan their career
- International and multicultural skills: Student will be able to build and utilise global networks
- Communication, interaction and digital skills: Student will be able to communicate effectively with stakeholders beyond academia about their own competencies

[Official course record: DP00BE80](#)

HY00AR19 | From Latin to modern languages

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic grammar and vocabulary of Latin and the significance of the Latin language in the context of modern European languages

Learning outcomes

Upon completing the course the student will be able to

- translate simple Latin texts and recall the central points of grammar
- memorize the basic vocabulary of Latin
- define the influence of Latin on modern European languages

[Official course record: HY00AR19](#)

DP00BE31 | Fundamentals of Microwave Heating and Applications

3-5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mamdouh Omran

Content

This course will introduce the participants in the fields of microwave heating systems and its applications in many scientific processes. The course will provide a comprehensive introduction to the fundamentals of microwave heating and its applications in materials processing, mineral processing, chemical reactions, waste treatment, recycling technologies, and sustainable process development.

The course covers the principles of microwave generation and propagation, components of microwave system, interaction mechanism of electromagnetic fields with materials, dielectric properties, and energy absorption mechanisms. Students will explore how microwave heating differs from conventional thermal processing and how these differences influence reaction kinetics, transport phenomena, and energy efficiency.

The course can be taken for 3 or 5 ECTS credits. The first part (3 ECTS) is mandatory, and students may choose to complete only this part without participating in the optional project work (2 ECTS).

3 ECTS credits (mandatory):

- Attend contact lectures and participate in group work
- Attend laboratory sessions
- Complete assigned readings and written assignments

2 ECTS credits (optional):

- Project work on a topic agreed upon by the instructor and the student

The course combines theoretical fundamentals, experimental laboratory work, and project-based assignments to enable students to integrate microwave heating concepts into their own research.

Learning outcomes

By the end of the course, students will be able to:

- Explain and analyze microwave generation and interaction with materials;
- Explore how microwave heating differs from conventional thermal processing and how these differences influence reaction kinetics, transport phenomena, and energy efficiency;
- Familiarize with the different microwave applications in materials processing, chemical reactions, waste treatment, and sustainable recycling processes;
- Assess the suitability and limitation of microwave technology for specific applications.

Official course record: [DP00BE31](#)

419122J | Funding workshop

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Pauliina Rautio

Content

In this workshop the participants will receive information about applying for funding and will prepare a full funding application for a selected funding source. Participants will also receive feedback from both peers and the teacher and can revise their applications accordingly.

Learning outcomes

After the completion of the course, the participants are able to:

- implement practical and strategical information for funding application of their own research
- construct a full funding application for a selected funding source
- evaluate and revise their application based on received peer and teacher feedback

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

Official course record: [419122J](#)

DP00BB36 | Future PhD: Designing an expert career

2 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Iina Tolonen

Content

The course provides a foundation for understanding career development theories and guides participants in career reflection and planning. Participants will articulate their expertise, deepen self-assessment skills, and identify effective job search strategies. Emphasis is placed on future-oriented thinking and the ability to adapt to a changing labour market. Through critical reflection, theoretical understanding, and planning, participants will gain tools to make informed career decisions and build meaningful career paths.

The course consists of lectures and practical assignments that combine theoretical insight with self-reflection.

Key content:

- Career theories
- Identifying and articulating skills
- Job search
- Futures thinking

Learning outcomes

The aim of the course is to strengthen the doctoral researcher's interest in developing self-awareness and career planning skills, while supporting the construction of their professional identity.

Upon completing the course, the doctoral researcher will be able to:

- Apply comprehensive career planning skills
- Reflect on and articulate their expertise, competencies, and career direction
- Search for and assess labour market information to support career decisions
- Create a clear and goal-oriented career plan
- Use future-oriented thinking to identify evolving career opportunities

Official course record: DP00BB36

MM00AX51 | Gastrosurgery and gastroenterology

7 ECTS | Subject not supplied | |

Person in charge: Juha Saarnio

Content

The basic concepts of gastroenterological and gastrosurgical diseases, their diagnostics and treatment.

Learning outcomes

Knows the key gastroenterological and gastrointestinal surgical diseases, as well as the principles of their diagnosis, treatment, and treatment hierarchy.

Is able to perform a clinical examination of a patient with abdominal symptoms (including history and physical examination) and document the findings in the medical record.

Is capable of independently diagnosing the most common diseases of the abdominal organs based on medical history, clinical findings (physical status), and additional investigations (laboratory tests, imaging, endoscopy, histopathology).

Recognizes diseases of the abdominal organs that require consultation with a specialist and is able to assess the degree of urgency for such consultation.

Can initiate acute-phase treatment for abdominal organ diseases that do not require immediate specialist consultation.

Recognizes acute situations where immediate referral to a gastrointestinal surgeon is necessary (emergency referral) and is able to initiate first-line emergency treatment in primary care in such situations.

Would you like me to adapt the wording to a more formal/academic tone, for example suitable for a medical curriculum or professional competency document?

Official course record: [MM00AX51](#)

HH00BD92 | Gender and migration

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Seija Jalagin

Content

This course looks into how migration is both a gendered and a gendering process. The students will learn different perspectives, e.g. how migration is governed by states and international systems, and how gender appears in and affects migrants' lives. The course will engage the students with the emerging themes of temporalities and critical approaches to migration and urban transformations. The students will also learn about migrant agency and subjectivities. During the course we look into how gender is (pre)configured in cross-border processes, asylum claims, resettling practices, integration, and representations of migrants and migration.

Learning outcomes

Upon completion of the course students will be able to critically evaluate the socio-political and temporal constructions of migration, superdiversity and mechanisms of inclusion/exclusion and how they intersect with gender. They will gain an in-depth knowledge of transnational migration processes and the role of agency and social activism.

Official course record: [HH00BD92](#)

MM00AX13 | General practice / Family medicine 1

2 ECTS | Subject not supplied | Finnish

Person in charge: Jussa-Pekka Väitalo

Content

Professionalism, various roles of a medical doctor and dentist (CanMEDS), becoming a doctor and dentist, collegiality, management of one's time and work.

Various roles of a medical doctor and dentist in the healthcare system, multidisciplinary, understanding the roles of different professions, key concepts in healthcare ethics, principles of good practice

Learning outcomes

Upon completion of the course, the student:

- Understands the significance of interactive skills and humane doctor-patient interaction in the medical and dental profession
- Become aware of one's own strengths and areas for development in interaction situations and understand that it is possible to develop those skills
- Understands the significance of reflection skills in the context of both in future work life and during studies
- Is oriented to studying at the university (medicine or dentistry)
- Is able to manage one's work and time usage
- Is aware of various roles of medical doctor and dentist in work life
- Understands the significance of professionalism and collegiality in studies and in work life
- Knows the specific features and principles of medical ethics
- Is able to name and perceive the structure and function of health care system
- Perceives that there are many ways to organize health services within the framework of the law - Knows the functions in health centers
- Is able to name the professionals working in the health center - Understands the versatility of the work (medicine and dentistry) and the necessity of teamwork in patient care

Official course record: [MM00AX13](#)

MM00AX52 | General practice / Family medicine 2

1 ECTS | Subject not supplied | |

Person in charge: Janne Liimatainen

No description supplied in the collected record.

Official course record: [MM00AX52](#)

MM00AY15 | General practice / Family medicine 3

4 ECTS | Subject not supplied | |

Person in charge: Mikko Karjalainen

Content [Finnish source]

Perehdytään terveyskeskuksen vuodeosastoon toimintaympäristönä ja harjoitellaan siellä lääkärinä toimista. Perehdytään sekä harjoitellaan elämän loppuvaiheen hoidon toteutusta ja kuolevan potilaan sekä hänen omaistensa kohtaamista. Harjoitellaan iäkkään ja monisairaana potilaan kokonaisvaltaisen hoidon erityispiirteitä ja suunnittelua sekä hoitoneuvotteluita käytännössä; moniammatillisessa tiimissä toimimista, perhe- ja potilaskeskeistä hoitoa sekä vaikeiden aiheiden kuten hoidon rajausten puheeksi ottamista.

Learning outcomes [Finnish source]

Osaa soveltaa potilas- ja perhekeskeistä lähestymistapaa potilaan kohtaamisessa ja hoidossa sekä ymmärtää sen merkityksen hoidon laadulle.

Tuntee terveyskeskuksen vuodeosaston toimintaympäristön ja osaa toimia moniammatillisessa tiimissä ja hoitoneuvottelussa, ymmärtäen eri ammattilaisten roolit ja yhteistyön periaatteet. Osaa soveltaa potilaan kokonaisvaltaisen arvioinnin ja hoidon peruseriaatteita.

Tuntee iäkkään tai muutoin avun tarpeessa olevan potilaan hoitoon liittyvät palvelurakenteet, tukipalvelut, etuudet (esim. kotihoito, kotisairaala, palveluasuminen, hoitotuki), osaa soveltaa näitä potilaan hoidossa, ohjata potilasta niiden piiriin sekä laatia tarpeelliset lausunnot.

Tunnistaa palliatiivisen ja saattohoidon tarpeen, osaa soveltaa niiden ja oireenmukaisen hoidon peruseriaatteita (esim. hoidon rajaukset ja kivunhoito) käytännössä.

Opiskelija kehittää kriittisen ajattelun, rakentavan vuorovaikutuksen ja eettisen toiminnan valmiuksiaan.

Official course record: [MM00AY15](#)

MM00AY42 | General practice / Family medicine 4

4 ECTS | Subject not supplied | |

Person in charge: Jussa-Pekka Väliälä

Content

The course includes theoretical learning of the key principles of general practice and practical training in different areas of general practice: scheduled and acute appointment at the health centre; antenatal- and maternity-, paediatric-, family-planning- and school-services, inpatient care on the health care centre wards, and inpatient care on long-term wards, community care. In addition, factors affecting drug selection, dosage and therapy will be discussed applying knowledge of basic pharmacology. Furthermore, the common problem cases of drug therapy will be discussed. Use of major classes of drugs, special treatment situations and most common intoxications will also be discussed.

Learning outcomes

Upon completion of the course, the student:

- is familiar with the main examination and management strategies used in general practice, and understands the role which the probability of disease has for the selection of a management strategy.
- gains experience in: management of a range of clinical problems which present to primary care; coordination and organization of treatment; and working using a patient-centred approach.
- gains insight into: disease prevention and health promotion in paediatric, antenatal-care and school-based health care settings; main examination and treatment strategies in general practice; issuing expert statements in matters of social security system, rehabilitation and employment; time management and coordination of clinical work in primary care; multidisciplinary team work.
- have ability to safe, efficient and cost effective drug therapy.
- understand the basis for drug therapy from the point of view of general practitioner and the treatment of most common intoxications.

Official course record: [MM00AY42](#)

MM00AY51 | General practice / Family medicine 5

6 ECTS | Subject not supplied | |

Person in charge: Taru Tanhua

Content

Healthcare legislation, encountering patients with multiple or complex problems in primary care, the implementation of patient care in primary healthcare, and the critical appraisal and application of research evidence in clinical practice.

Learning outcomes

After completing the course, the student will be able to:

- identify the basic principles, overall structure, and role of the healthcare system in health promotion from a general practitioner's perspective;
- recognize a patient with multiple or complex problems and understand the importance of multidisciplinary work and supervision in the care of such patients;
- function as a member of a multidisciplinary team and make effective use of the expertise of other team members
- reflect on their own thoughts, emotions, and actions, and understand the role of self-assessment and reflection as tools for learning.

Official course record: MM00AY51

YK00AJ43 | Geographers as Communicators

4 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Arja Haapakoski

Content [Finnish source]

Vuorovaikutus- ja yhteistyötaidot, esiintymistaidot, työelämään liittyvät tekstit, (tieteellinen) kirjoittaminen.

Learning outcomes [Finnish source]

Opintojaksolla tavoitteena on kehittää opiskelussa ja työelämässä tarvittavien tekstitaitojen lisäksi viestintä-, vuorovaikutus- ja yhteistyötaitoja sekä oman asiantuntijuuden tunnistamista.

Opintojakson jälkeen opiskelija

- tunnistaa viestinnän ja vuorovaikutuksen merkityksen ammatillisissa ja akateemisissa tilanteissa
- tunnistaa omat vahvuutensa ja osaa viestiä niistä
- osaa viestiä selkeästi suullisesti ja kirjallisesti sekä oman alan asiantuntijoille että muulle yleisölle
- osaa kommunikoida ryhmässä selkeästi, kuunnella aktiivisesti muita, antaa rakentavaa palautetta ja ratkaista konflikteja rakentavasti
- osaa kehittää viestintä-, vuorovaikutus- ja monilukutaitojaan
- osaa viestiä ja keskustella äidinkielellään

Official course record: YK00AJ43

HD00AW62 | Geographic information, maps and spatial methods

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

Spatial information can include historical events, movement of people, place names, archaeological sites, and even settings in books. Spatial methods to study this information can be used in various fields. In this online course, the student gets to explore some basic spatial methods using GIS tools, and to increase her/his understanding of the interpretation of maps.

Main contents:

- using digital geospatial data
- producing maps considering basic elements
- indicating change, regional differences, proximity, and movement by spatial analyses

Learning outcomes

After completing the course the student will:

- understand the basics of geospatial data
- know how to export geospatial data into a GIS program
- know how to manage basic geospatial data analyses
- understand the possibilities and restrictions of spatial methods

Official course record: [HD00AW62](#)

MM00AY56 | Geriatrics

4 ECTS | Subject not supplied | |

Person in charge: Susanna Hujanen

Learning outcomes

After completing the course, the student:

- masters basic knowledge of changes in organ systems related to old age and their effects on the treatment of diseases.
- understands the benefits of comprehensive geriatric assessment (CGA) of a geriatric patient when planning patient treatments.
- can assess the clinical degree of frailty in geriatric patients and their significance when planning the patient's treatments.
- understands the basic principles of geriatric syndrome and can apply their knowledge in practical work.
- can evaluate the medication of an elderly person according to inappropriate medications, interactions and treatment goals.
- knows memory disorders and their progression.
- identifies the end of life of a geriatric patient and can arrange the necessary symptomatic treatment.
- understands the importance of encounters between patients and relatives.
- outlines the service system and available services and benefits for the elderly.
- is familiar with the Act on Services for the Elderly and the Act on the Status and Rights of Patients.

Official course record: [MM00AY56](#)

DP00AS48 | Get to know agreements

0.5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Maarit Jokela

Content

- What should a researcher know about contracts?
- What is the difference between a contract and a commitment?
- Why are contracts necessary?
- What types of contracts are used? The course covers the fundamentals of various contract types, such as NDA, MTA, DTA, project, transfer of rights, license, and publishing agreements.
- What is agreed in agreements? What should be paid attention to?
- What obligations and responsibilities do contracts bring to the researcher's work?
- Who owns the results generated in research?
- How are agreed from intellectual property rights (copyright, patent)?

Learning outcomes

When conducting research, one often encounters various agreements that need to be made before, for example, gaining access to the necessary materials or data or when wanting to publish the research results in a scientific journal. Funding entities for research projects also require that participating organizations enter into collaboration agreements.

Agreements are also necessary when negotiating with companies and handling confidential information.

The goal of the course is to learn why agreements are necessary, what types of agreements are used, what obligations agreements impose on the researcher's work, and what the key elements of agreements are.

Official course record: [DP00AS48](#)

920032J | Get to know copyrights!

0.5 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Maarit Jokela

Content

What it is good for teachers, students and researchers to know about copyright, the use of works in teaching and research, intellectual property rights in university agreements.

Learning outcomes

After completing the course, the student gets an overview of copyright

- * What is protected by copyright?
- * Who owns the copyrighted works?
- * How can copyrighted works be used? When is a permit required?
- * What is allowed by copyright law?
- * How should a teacher and researcher consider copyright in their own work?
- * What rights does the student have, for example, for his / her assignments?

Official course record: [920032J](#)

YK00AH38 | Global English Skills

2 ECTS | Subject not supplied | |

Person in charge: Magdalini Lontou

Learning outcomes

This course is to be used in credit transfers for those Oulu Business School students who have matriculated with an L or E in English. This course can be included in the compulsory foreign language studies in business bachelor's degrees, but it is not counted as a business field-specific course.

Official course record: [YK00AH38](#)

DP00BE76 | Good work IV- symposium

1-2 ECTS | Subject not supplied | Post-graduate Studies | Finnish

Person in charge: Heli Kiema-Junes

Learning outcomes

- The student familiarizes themselves with the multidisciplinary work life research conducted at the University of Oulu and with the different stages of an academic research career.
- The student expands their professional network and gains an understanding of how different academic disciplines approach work life research and related phenomena.
- The student can structure and report the key elements relevant to their own research and present them orally.

[Official course record: DP00BE76](#)

DP00BE94 | Graph Neural Network

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mourad Oussalah

Content

1. Introduction to Graph Neural Networks
 - Graph theory basics: nodes, edges, adjacency matrix
 - Graph representations and types
 - Introduction to message passing and graph convolutions
2. Core GNN Architectures
 - Graph Convolutional Networks (GCN)
 - Graph Attention Networks (GAT)
 - GraphSAGE and Aggregation Mechanisms
3. Applications of GNNs
 - Node classification
 - Link prediction
 - Graph classification
4. Advanced GNN Topics
 - Heterogeneous and dynamic graphs
 - Graph pooling and hierarchical GNNs
 - Explainability and interpretability in GNNs
 - Neuro-Symbolic reasoning in GNNs
5. Implementing GNNs
 - Using PyTorch Geometric and DGL
 - Model training, loss functions, and evaluation
 - Best practices and debugging tips

Learning outcomes

- Model real-world data using graphs
- Design and train Graph Neural Network architectures
- Solve classical graph Machine Learning tasks with GNNs
- Learn foundation of Neuro-Symbolic architectures and application of graph neural networks
- Apply GNNs to practical domains such as social networks and biology

[Official course record: DP00BE94](#)

MM00AY33 | Gynecology and obstetrics

10 ECTS | Subject not supplied | |

Person in charge: Jenni Kinnunen

Content

- Gynecological anatomy and clinical examination
- Normal menstrual cycle regulation and irregular menstruations
- Fertility assessments in women and men
- Normal and abnormal pregnancy and delivery
- Pregnancy follow-up and maternity clinic
- Contraception and induced abortion
- Benign gynecological conditions and pelvic floor dysfunctions
- Gynecological cancer and premalignant states

Learning outcomes

Upon completion of the course of obstetrics and gynecology the student

- will have knowledge and practical skills on obstetrics and gynecology and related anatomy, diseases, investigations, diagnostics, treatment and prevention
- will have knowledge on normal and abnormal pregnancy, delivery and postpartum period
- can treat obstetric and gynecological patients as well acute cases related to the discipline
- can act sensitively in diverse clinical interactions

[Official course record: MM00AY33](#)

MM00AY18 | Hand surgery

1 ECTS | Subject not supplied | |

No description supplied in the collected record.

[Official course record: MM00AY18](#)

MM00BE55 | Health care system

1 ECTS | Subject not supplied | |

Person in charge: Timo Hugg

Content

Lectures:

- Structure and operation of the healthcare system
- Healthcare resources and costs
- Healthcare legislation
- Guidance and expert services supporting the operation of the healthcare system
- The welfare area as a health promoter
- Health economics 1-2

Theme days:

- Insurance medicine theme days 1-2

Learning outcomes

After completing the course, the student:

- will gain an understanding of the structure, operations, resources and costs of the healthcare system, as well as the field of actors that guides and supports the system
- will know the key concepts and methods of health economics and be able to apply what he/she has learned in the healthcare framework
- will be familiar with the requirements of the legislation related to the organization of healthcare that obligates healthcare professionals
- will know the field of insurance medicine and understand the differences in the tasks and roles of a treating physician and an insurance physician
- The student is able to analyze, utilize and apply well-being information as part of management, decision-making, service development and effectiveness assessment

[Official course record: MM00BE55](#)

MM00AX48 | Heart, thoracic and vascular surgery

2 ECTS | Subject not supplied | |

Person in charge: Tatu Juvonen

No description supplied in the collected record.

[Official course record: MM00AX48](#)

MM00AX49 | Hematology

2 ECTS | Subject not supplied | |

Person in charge: Jocke Hannuksela

Content

Course of hematology introduce essential blood count abnormalities and blood disorders from primary health care perspective.

Learning outcomes

Students familiarize with the diagnostics and treatment of hematologic disorders from primary health care perspective. The goal is to be able to utilize and apply theory in practice. Students learn to solve problems independently and co-operate with various health care professionals.

Learning objectives in hematology:

- interpretation of blood count
- basics of solving and treatment of anemia, recognition the need and urgency for treatment and care chain of anemia
- basics of solving, recognition the need and urgency for treatment and care chain of white blood cell and platelet abnormalities
- recognition along with basics of diagnostics and treatment of essential hematologic malignancies (acute leukemia, CLL, CML, myeloma, ET, PV, MDS)
- basic principles of blood transfusions
- recognition, diagnostics and treatment of deep vein thrombosis and pulmonary embolism
- detection and basic investigations in bleeding tendencies
- recognition and initial treatment of hematological emergencies

Official course record: [MM00AX49](#)

477416S | High temperature processes

5 ECTS | Subject not supplied | | Finnish

Person in charge: Eetu-Pekka Heikkinen

Content

The most important pyrometallurgical unit operations and other high temperature processes as well as things that need to be taken into account when considering high temperature processes (e.g. energy and reductants, refractory materials, slags and ashes, waste and emissions as well as automation, measurements and modelling).

Learning outcomes

Students passing the course are familiar with the metal production processes and metallurgical unit operations. Additionally, students know how to evaluate high temperature processes from different perspectives (energy and reductants, refractory materials, slags and ashes, waste and emissions as well as automation, measurements and modelling).

Official course record: [477416S](#)

AY00AL93 | History of Creative Medias I (OPEN UNI)

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the general film history and/or the general history of media or the history of animation.

Learning outcomes

Upon completion of this course, the students will be able to describe the main developments in the history of film, and/or the developments in the general media history or the developments in the history of animation.

Official course record: [AY00AL93](#)

DP00BE62 | Human-AI Interaction

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Heidi Hartikainen

Content

The course introduces doctoral researchers to Human-AI Interaction from a socio-technical and human-centred perspective. Topics include:

- foundations and history of Human-AI Interaction;
- human-centred and value-sensitive AI design;
- explainable and interactive AI systems;
- fairness, transparency, accountability, and ethical AI;
- conversational agents and AI-related risks and harms;
- conceptual and critical approaches to AI-enabled systems;
- prototyping and evaluating Human-AI Interaction concepts;
- research methods and project-based analysis of existing AI systems.

The course combines lectures, discussions, readings, and hands-on research and design activities.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain key concepts, theories, and socio-technical perspectives related to Human-AI Interaction;
- critically analyse ethical, societal, and usability challenges of AI-enabled systems, including fairness, transparency, explainability, human values, and AI-related harms;
- apply human-centred and value-sensitive design approaches to the analysis and development of AI systems;
- identify and frame research problems related to Human-AI Interaction;
- design and communicate research-informed conceptual interventions, low-fidelity prototypes, or analytical frameworks for existing AI systems;
- evaluate AI interaction concepts using appropriate research and design methods;
- discuss the implications of Human-AI Interaction research for responsible AI development and practice.

Official course record: [DP00BE62](#)

MM00AY26 | Infectious diseases

2 ECTS | Subject not supplied | |

Person in charge: Pia Holma

Content

- From the perspective of a primary care physician, major infectious diseases, their epidemiology, diagnosis, treatment, progressive patient care and prevention
- Rare serious infections (identification, principles of diagnosis and treatment from the primary care physician's point of view)
- Emergencies related to infectious diseases

Learning outcomes

Upon completion the course, the student knows the epidemiology and will be able to diagnose and treat the most common infectious diseases at the primary health care level. The student also knows the indications for referral to specialist care in common infectious diseases and knows the main principles of the treatments that are given only in specialist care. The student also masters the main principles of infection control and epidemic control, as well as recognizes the emergencies of infectious diseases and knows their main treatment lines. The student is also able to suspect and identify rare infectious diseases and refer those suffering from them for specialist.

Official course record: [MM00AY26](#)

HY00AQ23 | Information retrieval advanced course (Faculty of Humanities)

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Kirjaston informaatikot: informationsservice@oulu.fi

Content

Scientific information retrieval and the search terms, the most important databases and publication channels of the discipline, tools for evaluating the quality of scientific information and reference management.

The course develops students' ethical, responsible, and critical use of information, as well as their digital and AI skills.

Learning outcomes

Upon completion of the course, the student:

- can search scientific information for the thesis,
- knows how to evaluate search results and information sources,
- understands the principles of scientific publishing,
- understands the importance of reference management.

Official course record: [HY00AQ23](#)

410051Y | Information retrieval advanced course (FEP)

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Kirjaston informaatikot: informationsservice@oulu.fi

Content

Scientific information retrieval and the search terms, the most important databases and publication channels of the discipline, tools for evaluating the quality of scientific information and reference management.

The course develops students' ethical, responsible, and critical use of information, as well as their digital and AI skills.

Learning outcomes

Upon completion of the course, the student:

- can search scientific information for the thesis,
- knows how to evaluate search results and information sources,
- understands the principles of scientific publishing,
- understands the importance of reference management.

Official course record: [410051Y](#)

HY00AQ22 | Information retrieval course (Faculty of Humanities)

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Kirjaston informaatikot: informationservice@oulu.fi

Content

Scientific information retrieval process, the most important databases and publication channels of the discipline, evaluation of the reliability of information sources, reference management.

The course develops students' ethical, responsible, and critical use of information, as well as their digital and AI skills.

Learning outcomes

Upon completion of the course, the student:

- can search scientific information
- can use the most important databases of their discipline
- knows how to evaluate search results and information sources
- understands the importance of reference management.

Official course record: [HY00AQ22](#)

KE00AQ47 | Inquisitive and playful child at the preschool and primary education: Mathematics and natural sciences

5 ECTS | Subject not supplied | | Finnish

Person in charge: Emilia Manninen

Content

Key content areas:

- The Finnish national preschool education and basic education (grades 1-2) curriculum
- Development of mathematical skills and thinking and how to support it
- The development of the concept of number
- The development of spatial thinking
- Multimodal languaging in mathematics
- Experimental skills especially observing

Learning outcomes

Having completed the study module, the student knows how to:

- describe and recognise the stages of mathematical skills' development of a pupil
- explain the importance of observing environment as a part of pupil's comprehensive development
- design and apply environmental studies and mathematics teaching based on curriculums
- Teach, instruct and support the development of mathematical and natural scientific thinking skills

Official course record: [KE00AQ47](#)

KE00BC97 | Instrument Studies

5 ECTS | Subject not supplied | | Finnish

Person in charge: Pietu Halonen

Content

The student practices their skills in singing, and in playing the guitar and the piano.

Learning outcomes

After completing the course, the student will be able to:

- identify and use the most common accompaniment styles and basic techniques on the piano and guitar
- identify and apply the basic skills of vocal technique in singing
- apply piano and guitar playing as well as singing in their teaching practice

Official course record: [KE00BC97](#)

KE00AQ61 | Instrument studies 3

5 ECTS | Subject not supplied | | Finnish

Person in charge: Nina Jokela

Content

The student deepens his/her knowledge of piano and singing as part of the project and practices the interpretation and arrangement of written music.

Learning outcomes

After completing the course, the student

- * apply his piano playing skills and repertoire as a soloist and / or accompanist in a diverse way.
- * uses his or her voice skills and repertoire both as a soloist and / or as a vocalist on a wide range and independent basis.
- * and produce a performance as part of a group

Official course record: [KE00AQ61](#)

DP00AT95 | Intellectual Property Rights in Teaching and Research

0.5 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Maarit Jokela

Content

Participants can freely choose at least 10 different InnoWebinar events (each 1 hour long) to attend. The topics of these events vary each semester. Up-to-date information about the topics and schedules for each semester's events can be found on Patio. Participation can be spread over multiple semesters if desired.

In addition to attending the events, students will write a learning diary in which they describe what they learned during each session and how they can apply the knowledge in their own work.

Learning outcomes

The objective of the course is to provide participants with additional information on intellectual property rights (copyright, patent, trademark, and design rights) as well as inventions and their commercialization.

Participants will gain a good overview of how to consider intellectual property rights in their own work before, for example, publishing research results, how to address copyright issues when creating educational materials, how to generate new business from their own research results or know-how, , and what support is available from their university on these topics.

Official course record: [DP00AT95](#)

BO00BE60 | Interdisciplinary Approaches to Resilience MOOC

2 ECTS | Subject not supplied | Basic Studies | English

Person in charge: Satu Nätti

No description supplied in the collected record.

[Official course record: BO00BE60](#)

AY00BE61 | Interdisciplinary Approaches to Resilience MOOC (OPEN UNI)

2 ECTS | Subject not supplied | Basic Studies | English

Person in charge: Satu Nätti

No description supplied in the collected record.

[Official course record: AY00BE61](#)

DP00AR41 | Interdisciplinary Systems Thinking

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Susanna Pirttikangas, Mirjami Jutila, Aarne Mämmelä

Content

- Introduction
- Classification of systems
- Fundamental properties of systems
- Sciences and theories
- History and vision
- Summary and conclusions
- Bibliography and references

Learning outcomes

Upon completion of the course, the student will be able to:

- appreciate the importance of systems thinking
- know the history of systems thinking
- understand generic system models called system archetypes
- understand the limits of human knowledge

[Official course record: DP00AR41](#)

AY00BD66 | Intermediate Course in Portuguese I (OPEN UNI)

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

This course strengthens the basic skills learned in the elementary courses and you learn new skills through discussions in pairs, written exercises and listening at a faster pace.

Key concepts in grammatical structures are simple past tense, present perfect tense, future tense and conditional and the verb forms and their associated word order. The use of the past and present perfect tenses will become familiar. Additionally, the concepts include relative pronouns and indirect questions. Vocabulary includes themes about free time and information technology.

There is only one Portuguese language, but the course familiarises students with differences in the levels of the language in both Portugal and Brazil.

Learning outcomes

After completing the course, you are able to communicate in Portuguese both orally and in writing with simple sentences in everyday routine language situations. The students are familiar with the basics of Portuguese-speaking countries, their lives and customs.

Official course record: [AY00BD66](#)

YK00AJ51 | Intermediate Course in Ukrainian 1

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Ari Hepo-aho

Content

Booking tickets and a hotel room, meetings and agreeing on them, times, situations in the store, feelings and telling about them, dealing in everyday, post and bank situations, prices. Discussion exercises, grammar exercises and listening and reading comprehension exercises.

Learning outcomes

The goal is to develop language skills in different areas. After taking the course, the student will be able to cope with situations related to familiar and everyday things. The student knows how to express and justify his opinion and copes in short conversations.

Official course record: [YK00AJ51](#)

YK00AJ52 | Intermediate Course in Ukrainian 2

5 ECTS | Subject not supplied | Language and Communication Studies | Finnish

Person in charge: Ari Hepo-aho

Content

The course covers e.g. the following themes: correspondence, various situations (illness, diseases, hospital, theft, law), weather, geography, travel, holidays. Discussion exercises, grammar exercises and listening and reading comprehension exercises.

Learning outcomes

The course aims to develop different areas of the language: oral and written communication, listening and text comprehension. An important part of the course is the development of students' vocabulary.

Official course record: [YK00AJ52](#)

HH00AM38 | International Politics

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Matti Enbuske

Content [Finnish source]

Opintojaksossa tutustutaan politiikan ilmiöihin ja viimeaikaisiin kehityslinjoihin kansainvälisellä tasolla. Jaksossa myös syvennetään tietämystä politiikkatieteiden keskeisestä käsitteistöstä ja teoreettisista lähestymistavoista.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa jäsentää ajankohtaisia politiikan ja kansainvälisten suhteiden ilmiöitä osana historiallista jatkumoa. Hän osaa myös sijoittaa politiikkatieteiden keskeisimmät käsitteet ja teorat laajempaan kontekstiin sekä tarkastella niitä osana tieteenalan kokonaisuutta. Opiskelija pystyy selittämään, millaisia tunnusmerkkejä eri poliittisilla ideologioilla on ja minkälainen vaikutus niillä on yhteiskuntajärjestelmiin.

Official course record: [HH00AM38](#)

412153S | Internship

5 ECTS | Subject not supplied | Advanced Studies | Finnish

Person in charge: Teemu Suorsa

Content

- Mapping one's own professional interests and areas of strength, as well as applying for an internship and practical arrangements
- Familiarisation with the theoretical starting points and practical implementation of the expertise required by the traineeship
- Analysing one's own skills and working methods

Learning outcomes

- The student expands and deepens his/her professional identity, competence and expertise.
- The student achieves knowledge of the theoretical foundations of the chosen field of work and is able to apply and evaluate them professionally
- The student recognizes and strengthens his/her own networks and understands their significance in expert work

Official course record: [412153S](#)

KE00AS10 | Intersectionality and decolonial approaches

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Melinda Russial

Content

This course explores and evaluates traditional, experimental, and decolonial methods of learning as we engage themes of intersectional, transnational, and decolonial praxis. The various views will be presented by the instructor and several guest lecturers, and will offer students opportunities to connect everyday experience to academic contexts. Students will also learn to critically analyse Western feminism and coloniality and reflect on normative whiteness, as well as engage with antiracist pedagogies.

Learning outcomes

Upon completion of the course, students will understand decolonial and intersectional scholarship, including various global approaches to feminism(s), Indigenous issues in feminist, postcolonial, anti-colonial, and decolonial research, questions of sovereignty and self-determination, and the role and implications of these frameworks within and beyond colonial and neoliberal institutions. Students will be encouraged to engage in self-reflective practices that explore positionality and capacity for agency in global contexts of decolonial practice.

Official course record: [KE00AS10](#)

BO00AJ48 | Introduction to Applied Optimization

5 ECTS | Subject not supplied | Intermediate Studies |

Person in charge: Jukka Isohätälä

Content

The course recapitulates basics of mathematical optimization, applied to the context of business and economics. The student will be introduced to linear programming and its applications, sensitivity analysis, mixed-integer linear programming and basic nonlinear and multiobjective programming. The course also introduces the use of optimization in predictive analytics, machine learning, and their applications. Basics of spreadsheet programs and numerical tools will be introduced.

Learning outcomes

Upon the completion of the course, the student can: (1) Express real-world problems in business and economics using mathematical models, and apply optimization methods for the purpose of aiding decision making. (2) Apply spreadsheet programs together with readily available software tools to solve practical optimization problems. (3) Use decision analysis to appropriately interpret, qualify and apply results to actual decision making.

Official course record: [BO00AJ48](#)

MM00AX40 | Introduction to Clinical Practice

5 ECTS | Subject not supplied | | Finnish

Person in charge: Jokke Hannuksela, Kati Alakärppä

Content

Familiarization with the work of a physician in a health centre, including both emergency and scheduled appointments, as well as teamwork within the care team. Practice in interview techniques and clinical examination. Students write a reflection on their experiences during the health centre placement.

Patient interviewing and examination:

- online exam
- lectures
- group instruction
- independent study

Learning outcomes

After completing the course, the student:

Understands the principles of patient and doctor centered interviewing and recognizes the importance of interaction in the doctor-patient relationship.

Has an overall understanding of diagnostic strategies.

Is able to describe the concept of reflection and is familiar with its various definitions. The student begins to recognize their own emotional reactions and attitudes toward different patients and practices managing these emotions.

Is able to describe the interprofessional teamwork in health centres and hospitals from the physician's perspective.

Masters the methods of patient interviewing and routine clinical examination (somatic status).

Is able to distinguish normal and abnormal clinical findings. The student gains basic skills in integrating somatic findings with the patient's history to support clinical symptom or disease diagnosis.

Develops communication, interaction, and digital skills needed in working life. The student can utilize patient information systems in hospital and health center. The student follows data protection instructions.

MM00AX41 | Introduction to Clinical Practice

1 ECTS | Subject not supplied | | Finnish

Person in charge: Jokke Hannuksela, Kati Alakärppä

Content

The course includes introduction to basic concepts of dentist-centered and patient-centered communication. Students will write reflection about their feelings concerning practical training in health care centers and small group training.

Learning outcomes

Upon completion of the course, the student is able to:

- Distinguish the basic concepts of dentist-centered and patient-centered communication.
- Describe the term "reflection" and know the different definitions of "reflection".
- Describe the interprofessional team-work in the physician's and dentist's work

Official course record: [MM00AX41](#)

920026J | Introduction to data visualization

1 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Juuso Koponen

Content

This two-day workshop will give the participants a practical overview on how data visualization can be used both as a research tool and for communicating research objectives and results to audiences such as peers, grant committees and other decision makers, and the public.

The participants will also work on their own data visualization project using either their own data or data provided by the instructor, according to their own preference.

Learning outcomes

Upon completion of the course, the student:

- * has basic understanding of how human visual perception works and how this should be taken into account when creating visual displays of data
- * is familiar with the most common chart and map types, and is able to pick the most suitable type for a variety of use cases
- * is able to create clear and compelling data visualizations using Microsoft Excel or other software tools

Official course record: [920026J](#)

700332P | Introduction to Digital Humanities

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

Digitalisation has transformed research in the human sciences. Digital methods allow for the analysis of large amounts of data, while human scientists are needed to study a digitalising society.

In this course, students will hear examples of digital humanities research from researchers in different fields. Topics include visitor images of Chernobyl and gamification as a research tool. The course will also offer perspectives on digital work-life skills.

Learning outcomes

On completion of the course, the student will:

- be familiar with research issues, methods, and perspectives in digital humanities
- become familiar with the key concepts and key data sets in digital humanities
- become familiar with the digital tools used in humanities research and the theoretical and ethical underpinnings of research (e.g. in relation to open science and data)
- gain an understanding of the types of human sciences research that can be produced using computer-assisted methods

Official course record: 700332P

AY700332P | Introduction to Digital Humanities (OPEN UNI)

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

Digitalisation has transformed research in the human sciences. Digital methods allow for the analysis of large amounts of data, while human scientists are needed to study a digitalising society.

In this course, students will hear examples of digital humanities research from researchers in different fields. Topics include visitor images of Chernobyl and gamification as a research tool. The course will also offer perspectives on digital work-life skills.

Learning outcomes

On completion of the course, the student will:

- be familiar with research issues, methods, and perspectives in digital humanities
- become familiar with the key concepts and key data sets in digital humanities
- become familiar with the digital tools used in humanities research and the theoretical and ethical underpinnings of research (e.g. in relation to open science and data)
- gain an understanding of the types of human sciences research that can be produced using computer-assisted methods

Official course record: AY700332P

KE00AW86 | Introduction to Doctoral Programme of Education and Psychology

0.5-2 ECTS | Subject not supplied | Post-graduate Studies |

Person in charge: Sonja Lutovac

Content

Content includes:

- Welcome Pack for doctoral researchers
- Doctoral program and research activities at the Faculty of Education and Psychology
- Doctoral researchers' get-together

Learning outcomes

The course is designed to support doctoral researchers in becoming acquainted with the study and work processes at the Faculty of Education and Psychology and in gaining familiarity with the ongoing research activities within the faculty. Upon completing the course, participants will be able to:

- Understand the structure and research activities within the Doctoral program at the Faculty of Education and Psychology.
- Apply the knowledge acquired to develop their Doctoral Training Plan, including the Personal Study Plan (PSP) and career plan.
- Navigate practical matters to initiate their work as doctoral researchers.
- Critically reflect on personal motivation, available resources, and well-being in relation to undertaking doctoral studies.

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; well-being and self-development; and communication, interaction and digital skills.

Official course record: [KE00AW86](#)

920001J | Introduction to Doctoral Training

1 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Marjukka Kärhö

Content

This course is obligatory for all doctoral researchers, and it should be completed during the first year of doctoral studies. The course addresses the following topics:

- * Welcome to UniOGS
- * Guiding Principles of Doctoral Training • Bylaws/regulations guiding doctoral training
- * Doctoral Training and Courses • Study requirements • Timeline of doctoral training
- * Research Ethics
- * Supervision
- * Follow-up Group and Doctoral Training Plan
- * The Key Persons in UniOGS
- * Funding and Mobility
- * Final Stages of Doctoral Training • Thesis requirements • Matters related to writing and finalizing thesis • Doctoral thesis defence and graduation
- * Library Services
- * Data systems and IT services
- * Career Planning
- * Doctoral Student Section

Learning outcomes

After the course the doctoral researchers knows

- * the structure and practices of UniOGS
- * roles and responsibilities of key players of doctoral training
- * requirements for doctoral degree and studies
- * services and data systems concerning doctoral researchers

Official course record: [920001J](#)

407089A | Introduction to Environmental Education

5 ECTS | Subject not supplied | Intermediate Studies | English

Person in charge: Maria Saari

Content

- * Foundations and development of environmental education
- * Ethical and socio-political issues related to climate change and sustainability
- * Policies related to sustainability and environmental education
- * Exploring sustainability issues from the perspectives of various stakeholders and frameworks, including multispecies perspectives, posthumanism and critical animal studies
- * Different approaches related to environmentally-oriented education, including education for sustainability, outdoor education, humane education
- * Pedagogical models including project-based learning, service learning and place-based learning
- * Case studies of environmental education activities/projects
- * Designing and evaluating environmental education lessons/projects

Learning outcomes

- * Increase their understanding of the foundations and diverse approaches to formal/informal environmental education
- * Understand and be able to apply key concepts to teaching practices, educational planning and/or research
- * Be able to critically examine different educational approaches to environmental education and compare their efficacy to different teaching contexts and age groups
- * Increase their understanding of the socio-political context and ethical issues related to sustainability and education
- * Explore sustainability issues from points of view of various stakeholders and frameworks
- * Explore arts-based and creative pedagogies as a means of navigating eco-anxiety

Official course record: [407089A](#)

DP00BD62 | Introduction to function spaces

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Teemu Tyni

Content

Lebesgue spaces, Schwartz spaces, Fourier transform, tempered distributions, Sobolev spaces

Learning outcomes

Upon completion of the course, the student will be able to:

- Define Lebesgue spaces and describe their basic properties.
- Compute the Fourier transform of functions in the Schwartz space.
- Perform basic operations on tempered distributions, including differentiation and Fourier transform.
- Define and calculate weak derivatives, and construct Sobolev spaces of integer and fractional order.
- Apply Sobolev embedding theorems to analyze smoothness and regularity of functions.

Official course record: [DP00BD62](#)

AY00AW77 | Introduction to geographic information, maps and spatial methods (OPEN UNI)

2 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

Spatial information can include historical events, movement of people, place names, archaeological sites, and even settings in books. Spatial methods to study this information can be used in various fields. In this online course, the student gets to explore some basic spatial methods using GIS tools, and to increase her/his understanding of the interpretation of maps.

Main contents:

- using digital geospatial data
- producing maps considering basic elements
- indicating change, regional differences, and proximity by spatial analyses

Learning outcomes

After completing the course the student will:

- understand the basics of geospatial data
- know how to export geospatial data into a GIS program
- know how to manage basic geospatial data analyses

Official course record: [AY00AW77](#)

DP00AG92 | Introduction to interdisciplinarity

2 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Heidi Peuraniemi,

Content

The course introduces the characteristics of multi-, inter-, and transdisciplinary research with a focus on integration of knowledge. Through groupwork, the students will practice working as a part of an interdisciplinary research group gaining skills for collaboration and communication, leading, and ideating. Other course topics include:

- possibilities and impact of interdisciplinary research, especially in addressing global challenges and other complex problems
- challenges of interdisciplinary research
- ethical questions in inter- and transdisciplinary research
- interdisciplinary career and applying for funding for interdisciplinary research.

Learning outcomes

The objective of the course is to understand the characteristics of interdisciplinary research and to be able to apply these insights into one's own scientific work. Upon completion of the course, the participants will have

- learned about interdisciplinary integration and gained tools to apply interdisciplinary approaches into their own research

- learned to analyse and critically examine interdisciplinary approaches and tools and to creatively use these in their own work and research projects
- developed skills in interdisciplinary teamwork as well as leading interdisciplinary project work and research idea creation to address global challenges
- developed skills in inter- and transdisciplinary communications both in dialogic exchange and in presenting research ideas clearly and impactfully
- gained the ability to evaluate the applicability of interdisciplinary approaches for their own research and effect of interdisciplinarity on their career and skill development.

Official course record: [DP00AG92](#)

KE00BC99 | Introduction to Music

5 ECTS | Subject not supplied | | Finnish

Person in charge: Marja Ervasti

Content

Contents:

- development of one's own relationship with music and music as a cultural phenomenon
- musical development of children and adolescents
- practical music exercises suitable for group teaching for different age groups in basic education
- cultural education and thematic content
- composing as a pedagogical tool

Learning outcomes

After completing this course, the student will be able to

- discuss music as a phenomenon tied to culture, changing over time and place
- recognize the impact of music on community and personal levels
- discuss forms, significance, and the role of music education for both the community and the individual
- understand a child's musical development
- comprehend the importance of group management as part of music education
- plan and implement a project based on a current phenomenon as a responsible team member as part of the independent component of the course

Official course record: [KE00BC99](#)

5200AF08 | Introduction to Optimization [Finnish source]

5 ECTS | Subject not supplied | |

No description supplied in the collected record.

Official course record: [5200AF08](#)

700742P | Introduction to Political Studies

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Matti Mäntylä

Content [Finnish source]

Opintojakso sisältää luentosarjan ja kirjallisuuskulustelun. Luentosarja keskittyy keskeisiin poliittisiin käsitteisiin ja instituutioihin, poliittisen ajattelun perinteisiin sekä kansainvälisten suhteiden perusteisiin. Kirjatentti täydentää luentosarjaa erityisesti nykyisten tutkimusorientaatioiden esittelyn osalta.

Learning outcomes [Finnish source]

Politiikkatieteet käsittävät valtio-opin, kansainväliset suhteet ja poliittisen historian. Tämä opintojakso tarjoaa lyhyen johdatuksen näihin oppiaineisiin.

Opintojakson suoritettuaan opiskelija osaa

- määritellä politiikkatieteiden perusteet sekä soveltaa niitä
- tunnistaa politiikkatieteet muista tieteenaloista erillisenä tieteenalana
- tunnistaa kansainvälisten suhteiden, valtio-opin ja poliittisen historian erityispiirteet
- tunnistaa molempien oppiaineiden keskeisiä käsitteitä ja lähestymistapoja.

Official course record: [700742P](#)

KE00AN59 | Introduction to university pedagogy

5 ECTS | Subject not supplied | Basic Studies | English

Person in charge: Mervi Heikkinen

Content

- Becoming a teacher
- Planning one's teaching and course; constructive alignment and student-centered teaching
- Key teaching and learning concepts and theories, including digital pedagogy
- Assessment of learning
- Reflection and interaction

Learning outcomes

Upon the completion of the course, the participants will be able to:

- plan their teaching according to the principles of aligned and student-centered teaching when setting the learning outcomes, defining the content, choosing teaching methods and assessing learning
- identify and reflect on the meaning of basic learning theories and learning concepts, including interaction and digital pedagogy in teaching
- employ reflection as a starting point in one's work as a teacher

Official course record: [KE00AN59](#)

920016J | IP Rights and Research

0.5 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Maarit Jokela

Content

Basic information from intellectual property rights (Copyrights, Trademarks, Patents and Utility model), Patent databases, Inventions at the University, Importance of IP rights in a company, Commercialization of research results at the University of Oulu.

Learning outcomes

The participant gets a good overview from different forms of IPR (e.g. copyrights, patents, trademarks) and how he/she should take IPR into account when giving lectures, publishing results or planning a new business based on his/her know-how or an invention.

Official course record: [920016J](#)

YK00AI04 | Japanese (Business) Writing Course, 1-2 cr, self-study course

1-2 ECTS | Subject not supplied | Language and Communication Studies | Japanese, Finnish

Person in charge: Takako Karppinen

Content

The student learns basic expressions used in business emails and writes short emails. The student writes a CV or a formal text in his/her own field of study.

Learning outcomes

Upon completion of the course, the student will be able to write short business emails, and a CV or formal texts in his/her own field of study.

Official course record: [YK00AI04](#)

DP00AT86 | Journal analysis

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: vastuuopettaja

Content

During the course, a doctoral student will familiarise himself/herself with different types and levels of journals and analyse some journals by different publishers within his/her research field. The student will identify factors that may indicate the levels of preferred journals and the probability of getting his/her work published in those journals. The student will also assess the turnaround times by different journals, i.e. the time from submission to acceptance. The student aims to identify his/her field and the journals where the research in his/her field is typically published. The student will identify, and justify, suitable journals for his/her research in different level publication outlets. The student will define 4-6 target journals for his/her forthcoming articles. In addition, the student can identify alternative target journals at different levels. The student must recognise the differences between journals and justify the selections.

The course output is a structured report (Indicative length 15-20 pages by following Acta or any other suitable guidelines for formatting) that analyses factors such as:

- Journal content and scope
 - o Research themes during the past 2-3 years (for example, based on keywords, titles, and abstracts)
 - o Is the journal scope in line with the recently published articles?
- Research methodological differences.
- Acceptance rates (if possible)
- Citation indexes
- Article's typical:
 - o Length
 - o Number of authors
 - o Author status/ role in academia or elsewhere
 - o Submission processes
 - o The length of review processes
- Open access options and fees; does our university pay the article publishing charge (FinElib/ other)?
- Possible special issues
- For how long the Journal has been published?
- Publisher
 - o How to assess the quality of the Publisher?
 - o Is the Journal, or the publisher listed somewhere in a negative sense?
 - o What does the choice of publisher influence?
- Journal metrics and impact – what are the most important for assessing a journal's impact?
- Rating in the Finnish publication forum (Jufo), indexing, Scopus, WoS, etc.
- Evaluation of the Editor-in-chief & editorial board – some background, what level researchers (e.g. publications in high-level journals, h-index, University background, etc.)
- Should researchers from your unit or science field have published in your target Journal during the past 5 years, experiences of the process?
- An evaluation of whether the top researchers of your research theme have published in the Journal (from the perspective of your research).
- How to increase visibility for your research. Analyse possibilities to promote in social media, local media, etc. formats in your selected journals.
- Current trends in the field of technical journals (such as Open Access, Preprint servers, AI, Digital preservation, Supplementary files, Women in Science, DEI, etc.)
- Peer review process, Publon services
- Kind of papers: technical papers, large dataset papers, communications, etc.
- Similarity indices (plagiarism, types, self-plagiarism).
- Special issues covering specific topics or conference proceedings.
- Media popularization (such as LinkedIn, ResearchGate, etc.) of published articles for public dissemination and improved citations.
- Impact of academic publishing on university rankings.
- Any other relevant considerations.

Learning outcomes

After taking the course, the doctoral student:

- Knows how to look for suitable publishers/ Journals for one's research.
- Can select suitable target journals.
- Can set criteria for own publication activities.
- Can assess the level of publishers/ Journals.
- Can assess factors influencing the probabilities of getting an article accepted.
- Can assess publishers/ Journals from different perspectives, level of the journal, level of the publisher, time before acceptance, quality, what aspects the choice can influence, etc.
- Understand what type of aspects to pay attention to when seeking to get work published.
- Understands the prevailing practices relevant to publication activities.
- Can evaluate the level and impact of publishing platforms.
- Understands possibilities of improving the impact of their research.
- Has a level of understanding of current trends and developments that relate to publishing in Journals.

Official course record: [DP00AT86](#)

MM00AY01 | Knowledge progress test 1

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

Official course record: [MM00AY01](#)

MM00AY10 | Knowledge progress test 10

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

Official course record: [MM00AY10](#)

MM00AY11 | Knowledge progress test 11

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY11](#)

MM00AY12 | Knowledge progress test 12

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY12](#)

MM00AY02 | Knowledge progress test 2

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY02](#)

MM00AY03 | Knowledge progress test 3

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY03](#)

MM00AY04 | Knowledge progress test 4

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY04](#)

MM00AY05 | Knowledge progress test 5

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY05](#)

MM00AY06 | Knowledge progress test 6

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY06](#)

MM00AY07 | Knowledge progress test 7

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY07](#)

MM00AY08 | Knowledge progress test 8

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

[Official course record: MM00AY08](#)

MM00AY09 | Knowledge progress test 9

0 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Nissinen

Content

The content and the time for the test is decided in the national test committee. The structure of the test is based on medical curriculum and learning objectives.

Learning outcomes

The purpose of the Medical progress test is to give the student an understanding of how their medical knowledge develops over the course of their studies. The test questions are formulated in accordance with the national learning objectives for graduating physicians. The student applies the knowledge they have learned to solve clinical patient cases in the test. The test helps the student identify potential knowledge gaps at different stages of their studies and compare their own competence to the national level.

Official course record: [MM00AY09](#)

DP00BE72 | Learning Visual Intelligence: Foundations and Applications of Computer Vision

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Guoying Zhao

Content

This short course introduces the foundations of computer vision and learning-based approaches for visual understanding. It covers fundamental visual representation, deep learning methods for vision, and recent advances in self-supervised learning that enable models to learn from large-scale unlabeled data. The course also highlights real-world applications including action recognition and medical image analysis.

Learning outcomes

- Understand the fundamental concepts and development of computer vision, including image representation, visual features, and core vision tasks such as image classification, object detection, and segmentation.
- Gain knowledge of learning-based approaches for visual understanding, including visual feature learning, and self-supervised learning methods for images and videos.
- Understand spatiotemporal representations in video understanding and action recognition.
- Understand the principles and applications of medical image analysis, including image segmentation, detection, AI-assisted diagnosis, cancer detection, and virtual image enhancement.
- Acquire insight into how computer vision systems are designed, evaluated, and applied in real-world scenarios through lectures, case studies, and a mini report.

Official course record: [DP00BE72](#)

MM00BB65 | Literature Search in Health Sciences

2 ECTS | Subject not supplied | Finnish

Person in charge: Sirpa Grekula

Content

Publication types in medical science. Literature retrieval methods and principles of systematic literature retrieval. Library portal and key bibliographic databases in medical science. AI tools in information searching. Evaluation based on scientific publishing and reference management tools.

Learning outcomes

The student will be able to search research articles using systematic literature retrieval methods and to use key bibliographic databases of the discipline. The student will be able evaluate search results and sources. The student can use reference management tools. The course develops the students' ethical, responsible, and critical information use as well as their digital and AI skills.

Official course record: [MM00BB65](#)

MM00AX29 | Management 1

1 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Koskela

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Yleisten geneeristen taitojen osalta tavoitteena on, että opiskelija ymmärtää itsensä johtamisen käsitteen pystyen keskustelemaan siitä ja refleктоimaan oppimaansa omaan maailmaan, sekä ymmärtää ajanhallinnan merkityksen hyvään johtamiseen.

[Official course record: MM00AX29](#)

MM00AX44 | Management 2

1 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Koskela

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Yleisten geneeristen taitojen osalta tavoitteena on, että opiskelija kehittää analyyttistä, kriittistä ja luovaa ajattelua terveydenhuollon toimintaympäristössä johtamisen näkökulmasta.

[Official course record: MM00AX44](#)

MM00AX59 | Management 3

1 ECTS | Subject not supplied | |

Person in charge: Juha Auvinen

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Official course record: [MM00AX59](#)

MM00AY29 | Management 4

1 ECTS | Subject not supplied | |

Person in charge: Juha Auvinen

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Official course record: [MM00AY29](#)

MM00AY46 | Management 5

1 ECTS | Subject not supplied | |

Person in charge: Juha Auvinen

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Official course record: [MM00AY46](#)

MM00AY63 | Management 6

1 ECTS | Subject not supplied | |

Person in charge: Juha Auvinen

Content [Finnish source]

Oulun yliopiston kuuden vuoden lääketieteen opintoihin sisältyy 1op johtamisen opintoja jokaisena kuutena lukuvuotena. Hammaslääketieteen tutkinto-ohjelman johtamiseen ja terveydenhuollon organisaatioihin liittyvät opinnot ovat yhteisiä ensimmäisen kahden vuoden osalta. Johtamisopinnot tavoitteena on saada perustiedot ja taidot terveydenhuollon organisaatioista ja johtamisesta. Johtamisopinnot etenevät seuraavasti:

- 1. lukuvuosi: Oman työn johtaminen ja ajanhallinta
- 2. lukuvuosi: Terveydenhuollon toimintaympäristö ja organisaatiot
- 3. lukuvuosi: Viestintä- ja yhteistyötaidot lääkärin työssä
- 4. lukuvuosi: Johtamisen perusteet terveydenhuollossa
- 5. lukuvuosi: Projektinhallinta ja kehittämistyö
- 6. lukuvuosi: Johtajuus lääkärin työssä ja oman johtajuustyylin tunnistaminen

Learning outcomes [Finnish source]

Johtamisjuonteen tavoitteena on luoda peruskäsitys terveydenhuollon johtamistaidoista, kuten viestintä ja vuorovaikutustaidoista, strategisesta ajattelusta, arvostiritojen hallinnasta, muutosjohtamisesta, henkilöstön johtamisesta, organisaatio- ja talousosaamisesta ja itsensä johtamisesta.

Official course record: [MM00AY63](#)

354205A | Marketing in Health Sciences

2-5 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Jonna Juntunen

Content

Marketing in Health Sciences, media marketing, execution of marketing communication in practice and communication methods.

Learning outcomes

Student is able to plan, implement and evaluate goal-orientated marketing in health sciences, and lead the marketing team.

The student is able to apply marketing communications opportunities in marketing health sciences, future-oriented and in innovative way.

Upon completion of the course the student is able to discuss basics of marketing communication.

Official course record: [354205A](#)

KE00AS14 | Master Thesis

30 ECTS | Subject not supplied | Advanced Studies | English

No description supplied in the collected record.

Official course record: [KE00AS14](#)

DP00AF92 | Mastering Academic Writing

0.5 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Eelko Huizingh

Learning outcomes

What does it take to write papers for major academic journals? This masterclass has three main aims. First, what determines article quality as assessed by journal editors and reviewers? In other words: what makes a paper valuable and interesting for a peer reviewed academic journal? Second, what is the best strategy to write a paper? How to start? How to ensure progress, even when facing other pressing obligations? Third, how to make an article fit a journal? How to build on previous research? How to design a compelling introduction? The participants bring papers from top journals in their own field to the Masterclass. Both individual and group exercises enable them to analyze various aspects of these papers. Case material: published articles from your own field.

Official course record: [DP00AF92](#)

AY00AN03 | Mastering the Study Skills (OPEN UNI)

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Anniina Rantakari

Content

The course familiarizes the student with the themes related to:

- library use and data acquisition,
- the information systems used in studies,
- time management and study planning,
- study techniques and
- study well-being.

Learning outcomes

After completing the course, student:

- understands how study planning and different study techniques contribute to the completion of studies
- knows how to use the services of the University library and data acquisition as part of studies,
- recognizes the key information systems for studies,
- identifies the factors involved in the study well-being and
- knows where to find support during the Open University studies.

BO00BE89 | Mastering the Study Skills MOOC

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Anniina Rantakari

Content

The course familiarizes the student with the themes related to:

- library use and data acquisition,
- the information systems used in studies,
- time management and study planning,
- study techniques and
- study well-being.

Learning outcomes

After completing the course, student:

- understands how study planning and different study techniques contribute to the completion of studies
- knows how to use the services of the University library and data acquisition as part of studies,
- recognizes the key information systems for studies,
- identifies the factors involved in the study well-being and
- knows where to find support during the Open University studies.

Official course record: BO00BE89

BO00BE90 | Mastering the Study Skills MOOC

1 ECTS | Subject not supplied | General Studies | English

Person in charge: Lauri Haapanen

Content

The course familiarizes the student with the themes related to:

- library use and data acquisition,
- the information systems used in studies,
- time management and study planning,
- study techniques and
- study well-being.

Learning outcomes

After completing the course, student:

- understands how study planning and different study techniques contribute to the completion of studies
- knows how to use the services of the University library and data acquisition as part of studies,
- recognizes the key information systems for studies,
- identifies the factors involved in the study well-being and
- knows where to find support during the Open University studies.

Official course record: BO00BE90

NP00AR04 | Material Design and Synthesis

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Rossella Greco

Content

Introduction to chemical reactions
Solid state synthesis
Wet chemistry
Chemical vapor deposition
Material selection
Material application

Learning outcomes

- To understand the basics of chemical reactions.
- To be able to find valuable information in dedicated resources (e.g. research article).
- To be able to differentiate the types of material synthesis and identify their advantages and shortcomings.

Official course record: NP00AR04

MD00AZ30 | Maturity exam (native language)

0 ECTS | Subject not supplied | | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

The Bachelor of Dentistry maturity test is a study attainment through which the student demonstrates familiarity with the field of their thesis as well as proficiency in Finnish or Swedish. The maturity test is primarily written as an electronic exam in the Exam system, in Finnish or Swedish. The language is determined by the student's school-language.

Learning outcomes

The maturity test is a study attainment required by regulation. Through the maturity test, the student demonstrates familiarity with the field of their thesis as well as proficiency in Finnish or Swedish. A thesis associated with a degree (Bachelor's thesis, Thesis in Licentiate degree level) can be approved only after the student has completed the maturity test.

The maturity test addresses the topic of the thesis.

Students complete a maturity test both in the Bachelor's and the Licentiate degree. If the student has already demonstrated proficiency in their school-language (Finnish or Swedish) at the Bachelor's level, then in the Licentiate-level maturity test it is sufficient that the student demonstrates familiarity with the field of the thesis. In such cases, a language assessment is not required for the maturity test, and the abstract of the Licentiate of Dentistry thesis may serve as the maturity test and is included as part of the thesis.

As a rule, the maturity test is written in Finnish or Swedish. It is primarily completed as an electronic exam in the Exam system. The evaluator of the maturity test is usually the thesis supervisor. The duration of the maturity test is three hours. The evaluator may assess both the content and the language of the maturity test. If necessary, an external expert may be consulted for the language assessment.

For more information, see the University of Oulu website under "Maturity test."

Official course record: MD00AZ30

KE00AS15 | Maturity Test (SEOS)

0 ECTS | Subject not supplied | Advanced Studies | English

No description supplied in the collected record.

Official course record: KE00AS15

MM00AY49 | MD Maturity exam (native language)

0 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY49](#)

YK00AJ17 | Media and digital skills in specialist work

5 ECTS | Subject not supplied | |

Person in charge: Kaija-Mari Kananen

Content [Finnish source]

Miten voit toimia mediassa ja digitaalisissa ympäristöissä vastuullisesti ja kestävästi? Tämä opintjakso tarjoaa konkreettisia taitoja ja näkökulmia median ja digiympäristöjen eettiseen ja turvalliseen hyödyntämiseen asiantuntijatyössä. Opit tunnistamaan tärkeän ja hyödyllisen tiedon, luomaan innostavia mediasisältöjä ja vahvistamaan omaa digitaalista identiteettiäsi asiantuntijana.

Keskeiset sisällöt:

- * asiantuntijan media- ja digitaidot
- * oman mediasuhteen, digitaalisen identiteetin ja asiantuntijaroolin tarkastelu
- * tiedon luotettavuus, lähdekritiikki ja disinformaation ilmiöt
- * asiantuntijan sisältöjen suunnittelu ja tuottaminen eri medioihin
- * kiinnostavuus, kohderyhmän huomioiminen ja viestinnän vaikuttavuus
- * tekoälyn mahdollisuudet ja rajoitukset asiantuntijaviestinnässä
- * tekijänoikeudet ja lisenssit
- * mediaosallistumisen ja -vaikuttamisen keinot
- * oman työn organisointi, ajanhallinta ja reflektio.

Learning outcomes

This is a Finnish communication course for Finnish speakers and not offered in English. Therefore, the course description is only available in Finnish.

[Official course record: YK00AJ17](#)

KE00BE51 | Media culture and gender

5 ECTS | Subject not supplied | Basic Studies |

Person in charge: Ilmari Leppihalme

No description supplied in the collected record.

[Official course record: KE00BE51](#)

MM00BE54 | Medical applied physiology

2 ECTS | Subject not supplied | |

No description supplied in the collected record.

[Official course record: MM00BE54](#)

MM00AX18 | Medical cell biology

9 ECTS | Subject not supplied | | Finnish

Person in charge: Petri Lehenkari

Content

Cell and Human Evolution, Cell Types and Research Methods, Cell Structures, Genes and Gene Expression, Regulation of Cell Function and Differentiation. Fundamentals of Histology and Cellular Function at the Tissue Level, including epithelial tissue, connective tissue, specialized cellular structures, nervous tissue, cancer cells, and cellular dysfunctions. Microscopy techniques, histological methods, normal histology of fundamental tissues, and preparation of histological sample.

Learning outcomes

Upon completing the cell biology component, the student will be able to: Explain the general structure of human cells, the structure and function of cell organelles, as well as the fundamentals of cell growth, division, and functional regulation; Understand the connection between cellular dysfunctions and diseases. Describe the organization, inheritance, gene function, and regulatory mechanisms of genetic information within cells and tissues; Understand the basic principles of key research methods in cell biology and genetics. Identify basic tissue types and explain their structure and function. Additionally, the student will develop skills in information retrieval and evaluation, gain familiarity with scientific knowledge utilization, and learn to critically assess original research publications. The course is designed to meet the specific requirements of clinical work for both medical and dental practitioners, providing the fundamental knowledge necessary to acquire the content of other medical studies.

[Official course record: MM00AX18](#)

MM00AX25 | Medical cell physiology and metabolism

8 ECTS | Subject not supplied | |

Person in charge: Karl-Heinz Herzig

Content

1. Introduction to cell physiology and metabolism
2. Cell physiology
3. Biophysics
4. Cell energy metabolism
5. Metabolic networks and regulation
6. Group teaching related to cell physiology and metabolism

Learning outcomes

Upon completing of the course, the student will be able to:

- identify and classify different components of the cell
- explain the functions of cells and its components
- explain core physiological concepts
- describe and explain cell-cell communication
- explain cellular and organ metabolism and the reactions related to metabolism
- understand, how cellular components are used to generate and utilize energy
- interpret, apply and evaluate the knowledge what they have learned in practice/examples
- act as a member of a group and support the learning process of other students

After achieving the learning outcomes, the student will have sufficient knowledge to progress in their studies.

[Official course record: MM00AX25](#)

MM00AX19 | Medical developmental biology

3 ECTS | Subject not supplied | | Finnish

Person in charge: Petri Lehenkari

Content

Fundamentals of Developmental Biology: Gametes and their function, fertilization, human development during weeks 2–4, placenta, developmental disorders. In connection with organ anatomy, the course covers the developmental biology of different organs from week 4 to adulthood, including organ development, major structural anomalies, and developmental disorders.

Learning outcomes

The student will be able to explain the key stages of gamete development and fertilization, the main phases of embryonic and fetal development (0–40 days), as well as the principles of developmental regulation and the causes of developmental disorders. They will also understand the general characteristics of human growth and development, along with the fundamental mechanisms behind developmental anomalies and structural abnormalities. Additionally, the student will be able to describe the major developmental processes of different organs and the most significant organ-specific developmental disorders.

[Official course record: MM00AX19](#)

MM00BD11 | Medical Immunology

5 ECTS | Subject not supplied | | Finnish

Person in charge: Timo Hautala

Content

- The basics of innate and adaptive immunity.
- The function of the immune system and its significance in the pathogenesis of diseases (e.g., infectious diseases, autoimmune diseases, allergic diseases, cancers).
- The use of immunological reactions in disease diagnostics.
- Principles of modifying immune function in the treatment of diseases.
- The significance of abnormal immunity in medicine.

Learning outcomes

After completing the course, the student will be able to explain the basics of the body's immune defense and the principles of its function and regulation from a medical perspective.

The student should understand the immunological mechanisms underlying symptoms and physiological manifestations related to health and disease.

The student should be able to integrate immunological knowledge—during future studies—into the mechanisms of disease development, diagnostics, and treatment.

[Official course record: MM00BD11](#)

MM00BB64 | Medical Knowledge Evaluation and Research Writing

6 ECTS | Subject not supplied | | Finnish

Person in charge: Hannu Vähänikkilä

Content

Information and communication technology. Workstations, networks, and office software. Guidelines for written assignments and word processing. Structure of assignments and thesis, reporting of findings, tables and figures, citing and references. Systematic reviews and meta-analysis. Evidence based medicine.

Scientific information: Principles of scientific research, research methods in the main disciplines (clinical medicine, epidemiology, biomedicine and health sciences). Scientific communication: Scientific journals, research articles, critical evaluation of research findings.

Learning outcomes

By the end of the course the student has practiced the following skills: using information and communication technology resources in the University of Oulu, using workstations available in the Medical Faculty, applying basic software necessary in the studies. The student knows basics in scientific writing. The student knows the role of scientific publications, can use and evaluate information sources critically. The student will be able to search research articles using basic literature retrieval methods and to use bibliographic databases available at the Medical Faculty. The student knows basic principles in research ethics and good scientific practice. The student is familiar with the research process and with the characteristics of scientific information including an ability to obtain and process scientific information, and to report and apply the results especially in the fields of medicine, dentistry and health sciences.

Generic Skills:

After completing the course, the student:

- is able to critically assess and use information sources
- recognizes and can describe characteristics typical of scientific thinking
- is able to search for and use academic information critically
- is able to follow the development of scientific and professional knowledge in their field

Official course record: [MM00BB64](#)

MM00BD12 | Medical Microbiology

5 ECTS | Subject not supplied | | Finnish

Person in charge: Timo Hautala

Content

Introduction to bacteriology, virology, mycology, and parasitology.

Microbiological samples and sampling.

Basic methods of microbial diagnostics.

The most important viruses and bacteria causing respiratory infections.

Gastrointestinal infections.

Urinary tract infections and sexually transmitted infections.

Infections causing skin symptoms.

Zoonotic infections.

Sepsis and challenging infections.

Oral microbiology.

Antimicrobial resistance.

Anaerobic bacteria.

Factors influencing the pathogenesis of infectious diseases.

Societal impacts of infectious diseases and epidemiological phenomena.

Learning outcomes

During the course, the student becomes familiar with the most important microbes relevant to human health and disease, as well as their key characteristics.

The student will learn to associate the most common microbes with their related clinical manifestations and understand the basic mechanisms of action of the essential medications used against each microbe.

In addition, the student will be able to explain the principles and limitations of the methods used to identify microbes.

In the in-person teaching sessions, the aim is to engage in interactive collaboration and to develop scientific communication skills.

Official course record: [MM00BD12](#)

MM00BE53 | Medical neurophysiology

4 ECTS | Subject not supplied | |

No description supplied in the collected record.

Official course record: [MM00BE53](#)

MM00BE52 | Medical organ physiology

8 ECTS | Subject not supplied | |

Person in charge: Karl-Heinz Herzig

Content

1. Introduction to physiology
2. Blood
3. Innate Immunity
4. Respiratory physiology
5. Cardiovascular physiology
6. Gastrointestinal physiology
7. Renal physiology
8. Endocrinology
9. Reproduction physiology
10. Special/Guest lectures
11. Practicals in clinically applied physiology

Learning outcomes

After completion of the course the student:

- knows the principles of the function, regulation, and interrelations of the cells, tissues and organ systems of the healthy human being, as required for independent work as a physician or dentist
- is able to evaluate the knowledge and apply it to clinical problems as basis of diseases (pathophysiology)
- is able to follow and evaluate the development of medical physiology as a science, and maintain and improve knowledge in it both in Finnish and English
- can function as member of a team when performing medical procedures
- can apply medical knowledge to medical skills and procedures
- can better make knowledge-based decisions based on firsthand empirical evidence
- can better apply differential diagnostics thinking in medical work

Upon completion of the course, the student has sufficient knowledge and skills in physiology for continuation of the medical studies leading to the degrees of Licentiate of Medicine and Licentiate of Dentistry.

Official course record: [MM00BE52](#)

MM00AY67 | Medicine: five years of medical studies completed

0 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY67](#)

MM00AY66 | Medicine: four years of medical studies completed

0 ECTS | Subject not supplied | |

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY66](#)

MM00AY65 | Medicine: two years of medical studies completed

0 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY65](#)

M000AW83 | Meetings and other occasions of the PhD study track

0 ECTS | Subject not supplied | |

Person in charge: Mikko Tulppo

Content [Finnish source]

Tutkijalääkärinlinjan vetäjien ja opiskelijoiden yhteisiä tapaamisia.

Learning outcomes [Finnish source]

Tavoitteena on, että opiskelija jakson suoritettuaan tunnistaa millainen on lääketieteellisen väitöstutkimuksen prosessi ja mitä väitöstutkimustyö sisältää. Tavoitteena on myös tutustuttaa opiskelijat tutkijalääkärien mahdollisiin urapolkuihin.

[Official course record: M000AW83](#)

419121J | Methodology peer workshop

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Pauliina Rautio

Content

The methodology workshop is a hands-on, peer-group based workshop in which the participants discuss a variety of methodological issues relevant to their ongoing PhD projects. Each participant gets a chance to introduce the methodology/methods of their research, to learn from others' presentations, and to open any issue or concern up for discussion.

The course consists of learning about qualitative and quantitative approaches from ongoing research of other PhD researchers, in peer group workshops.

Learning outcomes

After the completion of the course, the participants are able to:

- discuss and present a variety of methodological issues relevant to their ongoing PhD projects
- select and open up for discussion any issues or concerns related to their methodology/methods
- suggest how to develop their methodology/methods

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

[Official course record: 419121J](#)

DP00BE40 | Microbiome data science and multi-omics with R/Bioconductor

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Anna Kaisanlahti

Content

The course will provide a gentle introduction to microbiome and multi-omic data analysis with R/Bioconductor, a popular open source environment for scientific data analysis. Participants get an overview of the reproducible microbiome data analysis workflow and learn to use standardized data containers that support the integration and analysis of biomedical data. After the course you will know how to approach new tasks in biomedical data analysis by utilizing available documentation and R/Bioconductor tools.

[Official course record: DP00BE40](#)

920014J | Midterm Report of Doctoral Training

0 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Heli Ruotsalainen

Content

The second follow-up meeting is arranged halfway through the doctoral training. The meeting has a role in analysing and solving possible problems.

Before the meeting, the doctoral researcher submits all the needed material, a possible updated version of their Doctoral Training Plan and a progress report (accepted by the supervisors) to the follow-up group members. During the meeting, the doctoral researcher presents their progress and the key results of the research during the past year, the current status of the articles and/or the thesis manuscript, the goals for the following year, and any possible changes made to the Doctoral Training Plan. The doctoral researcher should also report how they have taken into account the recommendations that the follow-up group gave in the previous meeting.

If the doctoral training has not reached the midpoint relative to the plans, some corrective actions are recommended, and a new meeting is scheduled later to check on the progress.

Learning outcomes

A follow-up group is formed by 2-3 external experts to support the doctoral researcher and follow the progress of the doctoral research and studies. The follow-up group gives constructive feedback on research, study and career plans of the doctoral researcher.

The follow-up group gives feedback on the plans and gives possible suggestions for corrections. This meeting is important for training in how to write a research plan, which is an important skill for research-oriented careers. To aid the development of this skill, the follow-up group plays the role of an expert panel responsible for the evaluation of research funding applications. The aim is to train the doctoral researcher to become skilled in applying for funding

Doctoral researcher is able to

- * to report effectively on the plans and accomplishments of his/her training.
- * to reflect own progress and plans of the doctoral training.

Official course record: 920014J

MM00AY59 | Military and crisis medicine

1 ECTS | Subject not supplied | |

Person in charge: Timo Hugg,

Content

The basic contents of the course are listed in this field

Lectures:

- Classification of fitness for military service and preparation of medical certificates
- The Defence Forces and public health
- Exceptional circumstances and their impact on people's psychological (and physical) well-being
- Morbidity (infectious diseases) in exceptional circumstances
- Medical care in international crisis management
- The Defence Forces' peacetime and wartime healthcare system
- Special features of war injuries
- First aid in the field
- Biological threats, effects and preparedness
- Threats related to chemical and radiation exposure, effects and preparedness

Learning outcomes

- The student understands that the Defence Forces have a significant role in public health work
- The student is aware of the significance of threats related to exceptional circumstances from a welfare perspective
- The student knows the military medical entities that a Licentiate of Medicine must master
- The student knows the Defence Forces health care system in normal and exceptional circumstances
- The student understands the principles of patient triage in exceptional circumstances, as well as field surgery and emergency first aid for the wounded
- The student understands the significance of infectious diseases and biological, chemical and radiation-related threats in exceptional circumstances
- The student knows the principles and requirements of fitness for service classification and is able to prepare a medical certificate for the Defence Forces on the fitness for service of a conscript
- The student is getting the skills as a Licentiate of Medicine to work in public health care as a pre-examination physician and in the welfare area as a call-up examination physician
- The student identifies and is able to discuss the key challenges and solutions in the field of military and crisis medicine.

Official course record: MM00AY59

DP00BE46 | Mind and World in Early Modern Philosophy

3-5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Peter Myrdal

Content

Early modern philosophy is a crucial turning point in the history of philosophical thought concerning the nature of cognition. The course will take up some of the central concepts, problems, and positions within early modern debates about the mind's relation to the world. A key question is the nature and extent of our cognitive access to the world. We will consider the extent to which different answers to this question gives rise to skeptical worries. The selection of philosophers to be discussed depends on the interests of teachers and students, but may, for example, include thinkers such as Descartes, Spinoza, Conway, Leibniz, Cavendish and Locke.

Learning outcomes

Upon completion of the course, the student will be able to:

- Master central concepts, problems, and positions within early modern theories of the mind-world relation.
- Produce original work critically engaging through detailed analysis with some specific topic/authors within early modern theories of the mind-world relation.

Official course record: [DP00BE46](#)

DP00BE57 | Monitieteinen ilmastonmuutostutkimus ja saamelainen perinteinen tieto nyt ja tulevaisuudessa arktisella alueella -seminaari

2 ECTS | Subject not supplied | Post-graduate Studies | Finnish

Person in charge: Timo Hugg

Content

- Saamelaisten kotiseutualueen ilmasto nyt ja tulevaisuudessa
- Ilmastonmuutos, geopoliittiset muutospaineet ja saamelaisten asema Venäjällä
- Poronhoito ja porolaitumet muuttuvassa ilmastossa
- Kansainvälinen ilmastopolitiikka ja perinteinen tieto
- Ilmastonmuutoksen vaikutukset kalakantoihin
- Ilmasto-oikeudenmukaisuus
- Saamelaisten terveys ja hyvinvointi nyt ja tulevaisuudessa
- Kulttuuriset keikahduspisteet Saamenmaalla
- Ilmastonmuutoksen taloudelliset vaikutukset
- Ilmastonmuutoksen seuranta

Learning outcomes

Opiskelija

- Saa kuvan erityisesti arktisella alueelle kohdistuvasta ja ilmastonmuutokseen kytkeytyvästä tutkimuksesta
- Tunnistaa keskeiset ilmastonmuutoksen vaikutukset pohjoisilla alueilla elävän alkuperäiskansa saamelaisten asuinympäristöön, elinkeinotoimintaan, hyvinvointiin ja kulttuuriperintöön

Official course record: [DP00BE57](#)

KE00BD05 | Moomins as a Cultural Phenomenon, UNIC-course

4-6 ECTS | Subject not supplied | | English

Person in charge: Pirjo Suvilehto

Content

The course may be of interest to students of many fields: creative writing, film, media, as well as education, not only in the field of children's literature. The issues discussed during the course concern the phenomenon of popular culture, popular Moomins, an essentially literary creation, but from the beginning multimedia, because "Moomins" are literature "for children", comics for children and adults, animated films, stage performances, gadgets, etc. At the same time, many people find a kind of consolation in these creations, hence the bibliotherapeutic thread present in the course. The course also discusses the art of storytelling and analyzes the material in a Scandinavian cultural context.

Learning outcomes

Learning outcomes:

After completing the course, the student:

1. knows and understands
 - a. the consequences of generic, genre and stylistic narrative techniques in different storytelling media;
2. can
 - a. apply the learned writing rules to create fictional and non-fictional stories in various m
 - b. apply adequate narrative strategies to achieve the selected goal, especially in terms of double addressing the story
 - c. analyze, interpret and evaluate their own and others' writing achievements in the field of storytelling in various media
3. is ready to
 - a. verification of knowledge and correction of writing achievements in the field of multimedia storytelling

Official course record: KE00BD05

KE00AL08 | Multiprofessional teacherhood

4 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Minna Uitto

Content

- subject teacher identity and professional development
- subject teacher in a working community and well-being at work
- current and societal phenomena of teaching and working life
- interaction, networks and team teaching as part of teacher's work
- the curricula as a foundation in teachers' work

Learning outcomes

Having completed the course, the student knows how to:

- view subject teacher's work and role as a professional in the field of education as part of the working community and society
- explain and evaluate the meaning of interaction and multiprofessional work community to one's own teacherhood
- develop their teacher identity now and in the future
- identify factors that support one's own and others' well-being at work and develop a culture that supports well-being

Official course record: KE00AL08

407090A | Multispecies Childhood Studies - Challenging anthropocentrism in education

5 ECTS | Subject not supplied | Intermediate Studies | Finnish, English

Person in charge: Pauliina Rautio, Tuure Tammi, Maria Saari

Content

Core topics

- * The animal turn; challenging anthropocentrism in childhood studies
- * Relational ontology, new understanding of child-centeredness from non-individualistic viewpoint
- * Diversity of child-animal relations: animals in school, at home, on the plate, and in nature.
- * The shared societal and cultural spaces and roles of children and animals, the possibilities of contesting these

Learning outcomes

On completion of the course the student knows how to:

- * Recognise the part animals play in societies in connection with children and childhood in particular. How to recognise anthropocentric discourses, concepts and practices related to childhood.
- * Approach the field of childhood studies with recent non-anthropocentric concepts and theoretical constructs.
- * Create connections between societal phenomena, childhood contexts, educational practices and multispecies studies.
- * Discuss issues of childhood with affirmative critique.
- * Apply the contents and learning to one's own professional development.

Official course record: 407090A

MM00AX20 | Musculoskeletal system

5 ECTS | Subject not supplied | Finnish

Person in charge: Petri Lehenkari

Content

The bony structures of the skull, limbs, spine, and pelvis; the muscular system; ligaments and tendons; lymphatic tissue; neural and vascular structures; as well as the function of the musculoskeletal system and the basics of clinical examinations and imaging.

Learning outcomes

After completing the course, the student will have knowledge of the structure and function of the human skeletal system, muscles, nervous tissue, blood vessels, and lymphatic tissue, enabling them to apply this knowledge in the interpretation of clinical patient cases and to assimilate other preclinical and clinical education content that requires familiarity with human anatomy. The student will understand the functions and interrelationships of the musculoskeletal system, including the head, spine, pelvis, and limbs, as well as the fundamentals of biomechanics. They will be able to perceive and identify the three-dimensional structures and movements of the musculoskeletal system in a living person, anatomical models, medical imaging (X-ray, tomography), and schematic drawings. The course provides the foundational knowledge required to later acquire the operative and diagnostic skills needed in medical studies and professional practice.

Official course record: MM00AX20

MM00AX21 | Musculoskeletal system

3 ECTS | Subject not supplied | Finnish

Person in charge: Petri Lehenkari

Content

The bony structures of the skull, limbs, spine, and pelvis; the muscular system; ligaments and tendons; lymphatic tissue; neural and vascular structures; as well as the function of the musculoskeletal system and the basics of clinical examinations and imaging.

Learning outcomes

After completing the course, the student will have knowledge of the structure and function of the human skeletal system, muscles, nervous tissue, blood vessels, and lymphatic tissue, enabling them to apply this knowledge in the interpretation of clinical patient cases and to assimilate other preclinical and clinical education content that requires familiarity with human anatomy. The student will understand the functions and interrelationships of the musculoskeletal system, including the head, spine, pelvis, and limbs, as well as the fundamentals of biomechanics. They will be able to perceive and identify the three-dimensional structures and movements of the musculoskeletal system in a living person, anatomical models, medical imaging (X-ray, tomography), and schematic drawings. The course provides the foundational knowledge required to later acquire the operative and diagnostic skills necessary for dental studies and professional practice.

Official course record: [MM00AX21](#)

KE00BC96 | Music Educator`s tools

5 ECTS | Subject not supplied | | Finnish

Person in charge: Katja Sutela

Content

music and movement 10 h (incl. rhythmicity, aural skills and movement-based improvisation)
music educator's music theory 12 h (incl. sight-reading, scales, chord symbols, intervals, rhythms)

Learning outcomes

After completing the course, the student will be able to:

define the key areas of pedagogy in music and movement
develop bodily readiness and skills in music and movement activities
apply in practice the names of notes and their octave ranges, intervals, triads and seventh chords, scales, keys and the circle of fifths, as well as the concepts of tonic, subdominant and dominant
analyse musical notation using chord symbols

Official course record: [KE00BC96](#)

MM00AX46 | Nephrology

2 ECTS | Subject not supplied | |

Person in charge: Olli Laitala

Content

The course covers kidney structure and function and their disruption in renal diseases. It focuses on chronic kidney disease related to common conditions such as diabetes and hypertension; symptoms, complications, and core treatment principles.

Students learn the main features of primary renal diseases, including glomerulonephritis, and the diagnosis and management of acute kidney injury.

The course also introduces the principles of treating end-stage renal disease, including dialysis modalities and kidney transplantation.

Students will also become familiar with the principles of treating end-stage kidney disease, including both dialysis therapies and kidney transplantation.

Learning outcomes

After completing the course, the student will:

Understand the structure and function of the kidneys, how medications affect renal physiology, and how renal impairment alters drug therapy.

Recognize chronic kidney disease, its main causes, key management principles, and pathways of care in both primary and specialist settings.

Identify acute kidney injury and its major etiologies.

Understand the role of proteinuria, recognize nephrotic syndrome, and plan essential follow-up investigations.

Recognize diabetic kidney disease, understand treatment principles, and organize appropriate monitoring.

Be familiar with the most common glomerulonephritides, tubulointerstitial nephritis, polycystic kidney disease, and renal vasculitis.

Understand the basics of dialysis and kidney transplantation.

Apply nephrology knowledge in primary care and multidisciplinary teams.

Official course record: [MM00AX46](#)

DP00BE79 | Neural Differential Equations

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Keijo Ruotsalainen, Marko Huhtanen

Content

- What is NDE?
- Deep learning via NDEs
- Universal Approximation Theorem
- Optimal control view of deep learning
- Operator learning techniques

Learning outcomes

Upon completion of the course, the student will be able to:

- utilize the methods used in discrete dynamical systems in analyzing the deep neural networks
- see the equivalence between deep neural networks and neural differential equations
- use the modern computational methods to solve neural differential equations
- utilize the operator learning techniques to reduce the curse of dimensionality in several real life problems

Official course record: [DP00BE79](#)

044302A | Neuroanatomy

3 ECTS | Subject not supplied | Finnish

Person in charge: Antti Koskela

Content

Cerebral structure and the functional cortical areas, Spinal cord, Brainstem, Cerebellum, Diencephalon, Telencephalon, Cerebral vessels, Meninges, Ventricular system and adjacent structures. Cranial nerves, Peripheral and autonomic nervous systems, Somatic motor and somatosensory systems, Limbic system, Sensory organs eye and ear and auditory, vestibular and visual systems.

Learning outcomes

• Upon completion of the neuroanatomy course the student • is able to describe the structure and location of the central nervous system and the somatic and autonomous divisions of the peripheral nervous system and the principles of their embryologic development • knows the structures that surround the central nervous system, the meninges and the formation and circulation of the cerebrospinal fluid • understands the blood supply of the central nervous system and the symptoms related to circulatory diseases. • can describe cranial nerves, main motor and sensory pathways and the structure and function of visual, hearing and balance systems • can describe the structure of limbic system and the main principles of its functions • can localize the structures in a living body, anatomical models, x-ray (CT/MRI) images and drawings • is able to acquire other preclinical and clinical studies and use the knowledge of neuroanatomy in clinical work in the profession of psychology and logopedics

Official course record: 044302A

MM00AX24 | Neuroanatomy

3 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Koskela

Content

Cerebral structure and the functional cortical areas, Spinal cord, Brainstem, Cerebellum, Diencephalon, Telencephalon, Cerebral vessels, Meninges, Ventricular system and adjacent structures. Cranial nerves, Peripheral and autonomic nervous systems, Somatic motor and somatosensory systems, Limbic system, Sensory organs eye and ear and auditory, vestibular and visual systems.

Learning outcomes

- is able to describe the structure and location of the central nervous system and the somatic and autonomous divisions of the peripheral nervous system
- knows the structures that surround the central nervous system, the meninges and the formation and circulation of the cerebrospinal fluid
- understands the blood supply of the central nervous system and the symptoms related to circulatory diseases.
- can describe cranial nerves, main motor and sensory pathways and the structure and function of visual, hearing and balance systems
- can describe the structure of limbic system and the main principles of its functions
- can localize the structures in a living body, cadaver, anatomical models, x-ray (CT/MRI) images and drawings
- is able to acquire other preclinical and clinical studies and use the knowledge of neuroanatomy in clinical work in the medical and dental profession

Regarding general generic skills, the objective is that the student develops their analytical thinking by examining the interrelationships of complex structures and the organization of the nervous system. In addition, the student learns to seek supplementary information.

Official course record: MM00AX24

MM00AY23 | Neurology

5 ECTS | Subject not supplied | |

Person in charge: Mika Martikainen

Content

Course opening and initial information

- Lectures, can be followed online (recorded)
- Seminars, can be followed online (partly recorded)
- The initial exams (neurology and neurosurgery)
- Group teaching of clinical neurological examination
- Contact teaching period (group teaching)
 - at the outpatient clinic
 - at the hospital ward of neurosurgery and in the operating room
 - the neurology ward section [spinal tap training with the simulator, attending ward round, teaching session on stroke, examining the patients, teaching session on summary of the section]
 - attending emergency clinic work of neurology
 - at the histology classroom (neuropathology)
- Exam after the contact teaching period (neurology)
- Final exam

Exchange students can also earn 3.0 ETCS credits (Neurosurgery) through the Erasmus program clinical elective. This requires full time (8.00 am – 3.45 pm) participation in all clinical activities for minimum of one week and participation in group sessions. For ETCS credits the final examination in neurosurgery section must be passed.

Learning outcomes

The course supports the professional growth of students and increases their ability to meet the patients. After the course the students will be able to diagnose and treat neurological and neurosurgical patients as primary health care physician and will be able to work in a multiprofessional work community.

After completion of the course, the student

- masters the basics of neurology and neurosurgery, neuropathology, neuroradiology and clinical neurophysiology at the level required from general practitioner
- is able to perform the neurological examination on a patient and interpret the findings
- understands the most important clinical features and neuropathological changes of neurological and neurosurgical disease progression and major changes in the anatomic structures explaining the manifestations of various symptoms and findings
- is able to evaluate the urgency of neurological and neurosurgical conditions and understands the life-threatening nature of these diseases. The course educates the student to diagnose and give emergency treatment to neurological and neurosurgical acute patients at the hospital ER clinic
- knows the indications of the most common neurophysiological and neuroradiological examinations and is able to interpret their results

Official course record: [MM00AY23](#)

MM00AY24 | Neurosurgery

2 ECTS | Subject not supplied | |

Person in charge: Mikael Von Und Zu Fraunberg

No description supplied in the collected record.

Official course record: [MM00AY24](#)

920022J | Nomination of follow-up group

0 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Heli Ruotsalainen

Learning outcomes

Each doctoral researcher in the University of Oulu has a follow-up group, which offers support in regular meetings.

A follow-up group is formed by 2-3 external experts to support the doctoral researcher and follow the progress of the doctoral research and studies. The follow-up group gives constructive feedback on research, study and career plans of the doctoral researcher. The supervisor(s) and the doctoral researcher agree on issues related to the contents and execution of the research.

The doctoral researcher discusses with the principal supervisor about suitable follow-up group members and asks for their consent in advance. The doctoral researcher proposes the follow-up group with the form available in the [eForms service](<https://eforms.oulu.fi/en>).

Official course record: 920022]

KE00BD93 | Nondiscriminatory and antiracist practices

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Iida Kauhanen

Content

Lectures and discussions will explore topics of the colonality of race, gender, and other areas of global inequality; global perspectives on structural injustice; sociocultural trends of racialization and minoritization; and forms of Nordic/European exceptionalism. Areas of focus may include manifestations of discrimination in education, labor markets, migration, health care, climate stress, political polarization, language policies and practices, social structures of privilege and bias, and other areas of interest for specific student groups. Emphasis will be on methods of disruption, systemic refusals, and developing antidiscriminatory practices.

Learning outcomes

After the completion of the course, students recognize discriminatory and racist social phenomena and understand how intentional nondiscriminatory and antiracist practices can support the well-being of communities and individuals in diverse everyday spheres. Students will become familiar with practical methods employed to tackle discriminatory practices and colonial-legacy social structures, enhance global equity, and encourage community thriving.

Official course record: KE00BD93

DP00BA77 | Nordic course on macromolecular X-ray, neutron and electron diffraction

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Lari Lehtiö

Content

Biochemistry, Structural Biology

Learning outcomes

The aim of the course is to provide an introduction on the experimental and computational methods of X-ray, electron, and neutron diffraction as well as data management in protein crystallography for PhD students and postdocs whose research project focuses on solving protein structures using crystallography.

The course starts with an online pre-session to introduce the data management and crystal shipment to synchrotron using Icebear (Research Data Management for Structural Biology software) and is followed by onsite lectures addressing principles, differences and the application of crystallography using X-rays, neutrons, and electrons.

Tutorials include data processing, structure determination using molecular replacement and crystallographic data management. Participants of the course have the possibility to collect X-ray diffraction data remotely at MAX IV during the course using their own crystals.

[Official course record: DP00BA77](#)

MM00AY53 | Occupational Health Care

3 ECTS | Subject not supplied | |

Person in charge: Leena Ala-Mursula

Content

The OHC Service system: objectives, activities, funding.

Principles and practices of cooperation with working life and other sectors of social and health care.

Brief introduction to occupational medicine.

Relationships between work and health, current legislation concerning occupational diseases and the corresponding diagnostic practices.

Assessment of potential work-related etiological factors related to the patient's work when seeing working-aged patients in medical practice in all fields. Consideration of work and return to work when planning treatment and rehabilitation.

Assessment of work ability and disability and practical measures to support work ability, including how to write medical certificates in accordance.

Promotion of health and work ability through workplace practical solutions.

Learning outcomes

Upon completion of the course, the student is able

- to recognize potential work-related origins of ill health, when seeing working-aged patients
- to consider the needs of evaluating and promoting the patient's work ability
- to collaborate with the Finnish Occupational Health Care (OHC) system by means of understanding its structure and guiding principles of collaboration with other sectors of Social and Health Care and with workplaces

[Official course record: MM00AY53](#)

MM00AY54 | Oncology

4 ECTS | Subject not supplied | |

Person in charge: Jussi Koivunen

Content

The epidemiology, diagnostics, oncologic treatment and follow up of adult solid cancers and lymphomas from the point of general practitioners as well as an overlook to palliative care and psychosocial aspects of oncological care.

Learning outcomes

Generic skills of the course include:

- analytical, critical, and creative thinking skills
- multidisciplinary and interdisciplinary skills
- communication, interaction, and digital skills

Upon completing this curriculum unit, the student should be able to

- understand principles of cancer etiology and diagnosis as well as know the different subgroups of the adult solid cancers and lymphomas.
- be familiar with the responsibilities of the different levels of healthcare system in diagnosing and treating cancer.
- know the commonly used oncological therapeutic modalities and will be able to give basic chemotherapies following instructions from specialists.
- recognize, make a diagnose and treat possible adverse events of therapeutic modalities
- know how to organize outpatient controls in common malignancies and be able to guide cancer patients to receive rehabilitation and psychosocial care.
- master principles of palliative care
- know the methods of palliative oncology including understanding when and how to consult a specialist

Official course record: [MM00AY54](#)

HD00AW64 | Online citizen science

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

The growing use of openly available digital data has raised a need to tackle the ethical principles in the use of data concerning Indigenous peoples and other minorities. Especially when the public is creating the data through crowdsourcing and citizen science, there is a need for training and guidelines on how to collect and present data. According to the Cambridge Online Dictionary, citizen science is something done by 'ordinary people, often for or with the help of scientists'. Hence citizen scientists are amateurs or non-professionals. This course "Online Citizen Science" tackles relevant and timely questions on what kinds of ethical questions should be taken into consideration when participants in digital citizen science collect and use data involving minority groups and children.

Learning outcomes

Learning outcomes:

- Students are able to define what constitutes citizen science.
- They know the central concepts of online citizen science.
- Students will understand the ethical aspects and practicalities of involving minorities in online citizen science.

Official course record: [HD00AW64](#)

MM00AY39 | Ophthalmology

4 ECTS | Subject not supplied | |

Person in charge: Nina Hautala

Content

Examination of vision and the eyes, and the practical management of ocular diseases, with an emphasis on problems commonly encountered in general medical practice.

Learning outcomes

Upon completion of the course, the student will be able to recognize the symptoms of the most common ophthalmic diseases and demonstrate mastery of the fundamental principles of their diagnosis and management. The student will be capable of assessing the relationship between ocular symptoms and systemic conditions, as well as addressing issues related to visual impairment.

After completing the course, the student will be able to perform vision assessments as part of routine health examinations, conduct vision screening tests for children, manage common eye disorders, provide first aid in cases of ocular trauma, and evaluate both the necessity and urgency of further treatment.

After completing the course, the student is also able to independently make analytical inferences and critically examine data; work effectively in multidisciplinary teams by leveraging expertise from different fields and promoting shared goals; apply knowledge and methods from various disciplines to develop new and innovative solutions to complex problems; critically evaluate solutions and perspectives offered by different disciplines and creatively integrate them into the context of their own field; work effectively in a group, negotiate and allocate tasks; and work goal-oriented in a team while resolving conflicts constructively.

Official course record: [MM00AY39](#)

KE00AV11 | Optional internship for FM degree

1-5 ECTS | Subject not supplied | Advanced Studies | Finnish

Person in charge: Heli Kiema-Junes

Content

- Perceiving professional interests and strengths and applying for the traineeship
- Familiarizing oneself with the know how and expertise needed in the traineeship
- Analyzing own know how and expertise and also course of action

Learning outcomes

- Elaborate professional skills, professional identity and expertise
- Recognize and perceive expertise needed in chosen field of expertise and is able to evaluate and apply own expertise
- Reflect on his or her experiences utilizing scientific research to support his or her professional growth
- Recognize and strengthen own professional interests

Official course record: [KE00AV11](#)

KE00AF39 | Optional Practising, Master's Degree

1-10 ECTS | Other studies | Practical Training | Finnish, English

Person in charge: Tutkinto-ohjelman toteutuksen opettajat | Teachers of degree programmes' implementations

Content

In this practice period, the student has an opportunity to get to know the duties of an educator widely by choosing a content for the practice that is important for his or her own professional growth. The practice consists of either educational, guidance or teaching activities. The practice can be carried out in either general or vocational education, in educational and training organizations or projects also in an environment other than grades 0-6 of basic education. The practice can also be about experimental, developmental or research activities with cooperating parties in the field of education. In this practice the student plans, implements and evaluates his/her own working duties.

Learning outcomes

Having completed the course, the student knows how to:

- * Choose a content and practice site that is meaningful for professional growth
- * Evaluate and apply the significance of skills achieved in the practice period for his or her professional growth in the field of teaching, education or guidance.
- * Reflect on his or her experiences utilizing scientific research to support his or her professional growth.
- * Analyze his or her own development needs

Official course record: [KE00AF39](#)

352999P | Optional studies

1-10 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Jonna Juntunen

Content

-

Learning outcomes

Students will have deepened their understanding of a special field of the health science.

Official course record: [352999P](#)

MM00AX22 | Organ systems

5 ECTS | Subject not supplied | | Finnish

Person in charge: Petri Lehenkari

Content

The course systematically covers the organ systems, including the heart and circulatory system, immune system, respiratory tract and thorax, abdominal cavity and digestive system, skin and its appendages, pelvic organs, kidneys and urinary system, reproductive organs, and endocrine system. Regional and topographic anatomy, as well as the interconnections between different organs, are integrated with histology throughout the course. Students will learn illustrative examples of clinical applications of anatomical knowledge, including inspection and manual examination (palpation) of key organs and structures. In microscopic anatomy practical exercises, students will study the fundamental histological structures of organs, their specialized features, and the relationship between structure and function.

Learning outcomes

After completing the course in organ anatomy, the student will be able to describe the size, normal appearance, structure, and anatomical relationships of human organs using verbal explanations and schematic drawings, including projections onto the skeleton and skin where applicable. The student will be capable of identifying normal anatomical structures in manual examination, anatomical models, and schematic illustrations, understand the principles of anatomical variation, and know how organs and structures function in a healthy body. The student will have mastered the principles of topographic anatomy, organ projections, and imaging techniques (X-ray, CT, MRI, and ultrasound). The student will also be able to recognize healthy basic tissues and the histological structures of organs formed from them in microscopic images. The course provides sufficient competence to assimilate further preclinical and clinical education, understand tissue alterations in pathology and clinical courses, and ultimately apply anatomical knowledge to solving clinical cases in medical practice.

Official course record: [MM00AX22](#)

MM00AX23 | Organ systems

4 ECTS | Subject not supplied | |

Person in charge: Petri Lehenkari

Content

The course systematically covers the organ systems, including the heart and circulatory system, immune system, respiratory tract and thorax, abdominal cavity and digestive system, skin and its appendages, pelvic organs, kidneys and urinary system, reproductive organs, and endocrine system. Regional and topographic anatomy, as well as the interconnections between different organs, are integrated with histology throughout the course. Students will learn illustrative examples of clinical applications of anatomical knowledge, including manual examination (palpation) of key organs and structures. In microscopic anatomy practical exercises, students will study the fundamental histological structures of organs, their specialized features, and the relationship between structure and function.

Learning outcomes

After completing the course in human anatomy, the student will be able to describe the size, normal appearance, structure, and anatomical relationships of human organs using both verbal explanations and schematic drawings. The student will also be able to identify anatomical structures in manual examinations, anatomical models, and schematic illustrations, understand the principles of anatomical variation, and comprehend how organs and structures function in a healthy body. Additionally, the student will master the principles of topographic anatomy, organ projections, and imaging techniques (X-ray, CT, MRI, and ultrasound). The student will be capable of recognizing healthy basic tissues and the histological structures of organs formed from them in microscopic images. The course provides the student with sufficient skills to assimilate further preclinical and clinical education, understand tissue alterations in pathology and clinical courses, and ultimately apply anatomical knowledge in solving clinical cases in the medical profession. Furthermore, the student will have sufficient skills to assimilate other preclinical and clinical training content, understand pathological tissue changes in histopathology and clinical courses, and ultimately apply anatomical knowledge in solving clinical cases as a dentistry professional.

[Official course record: MM00AX23](#)

BO00BC28 | Orientation Course for New Students

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Anniina Rantakari

Content

1. STARTTI - Orientation materials (to be studied independently) for new students in Moodle workspace.
 - A) Ethical principles at the University of Oulu (30-60 mins)
 - B) Security orientation of the University of Oulu (20-30 mins)
 - C) How to keep up.
 - D) Learning new necessary study skills
 - E) To be familiarized -package
2. Orientation week information sessions for all students.
3. Get to know your own small group and the related get-together meetings organized by the student tutors and your teacher tutors are mandatory part of the course.
4. Compiling of your personal study plan (PSP) and acceptably presenting it to your tutor teacher.

Learning outcomes

At the beginning of the course of study, the objective is to learn issues related to starting one's studies, study planning, and study techniques. In addition, during different periods, this study section trains students to identify their learning own skills and offers group and individual guidance for advancing and completion of the studies. During the course, the student also becomes aware of the services offered to students by the university, the student union, student organizations, and society (e.g. study services, and sports and health care services) as well as the operational principles of the university and the faculty. In the first autumn of studies, a personal study plan (PSP) is compiled. The student also receives guidance on using the university's library services. This course also sheds light on future career prospects, e.g. the career paths of graduates from different majors are presented at the beginning of the first course of each major.

After familiarizing oneself to the course materials, the student knows which issues are important to our University community and into which principals we all commit. Student learns how with one's own action we are able to promote security at the University of Oulu and what is the code of conduct in various situations.

After familiarizing oneself to other materials in the STARTTI-guide, student knows the most important communication mediums for out students. One learns the study skills required in University, how to use AI responsibly, and what are the generic skills learned during one's education. In addition, the student gets to know the student services of the University of Oulu.

Official course record: [BO00BC28](#)

HY00BA98 | Orientation for Exchange Students, FHum

0 ECTS | Subject not supplied | | Finnish, English

Person in charge: Johanna Isoviita

Content

Orientation for incoming and outgoing exchange students in the Faculty of Humanities.

Official course record: [HY00BA98](#)

HY00AQ07 | Orientation for Studies

0 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Katja Västi

Content [Finnish source]

- opintojen aloittamiseen liittyvät asiat
- opintojen tavoitteet ja sisällöt
- tutkintorakenne ja opintojen ajoitus
- oman opiskelun ja opintojen suunnittelu sekä oman opintosuunnitelman laatiminen (HOPS)
- opiskelun eettiset periaatteet, vastuut ja opiskelukulttuuri
- ryhmäytyminen
- integroituminen yliopistoyhteisöön ja omaan tiedekuntaan
- opiskelun käytänteet ja järjestelmät
- opiskelijalle tarjottaviin palveluihin tutustuminen
- kirjaston käytön perusteet

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija hahmottaa yliopiston toimintaympäristönä ja osaa suunnitella omia opintojaan sekä itsenäisesti että yhteistyössä omaopettajan kanssa. Hän tuntee oman koulutusalan tutkimus- ja tutkimus- ja sivuainevaihtoehdot. Hän ymmärtää opiskelun käytänteet ja oman toimintansa merkityksen osana akateemista yhteisöä. Hän on ryhtynyt oman alansa opiskelijoiden kanssa ja osaksi laajempaa yliopistoyhteisöä sekä ymmärtää opiskelun eettiset vastuut ja velvollisuudet. Hän hallitsee tiedonhaun ja kirjaston käyttämisen perusteet sekä opiskeluun liittyvät keskeiset tietojärjestelmät.

Perehdyttyään Startti-oppaan materiaaleihin opiskelija tietää, mitkä asiat ovat yliopistoyhteisöllemme tärkeitä ja mihin periaatteisiin yhdessä sitoudumme. Opiskelija oppii, miten omalla toiminnalla voi edistää turvallisuutta Oulun yliopistossa ja mitkä ovat yliopiston toimintamallit erilaisissa tilanteissa. Perehdyttyään Startti-oppaan muihin sisältöihin opiskelija tuntee opiskelijan tärkeimmät viestintäkanavat. Hän oppii yliopistossa tarvittavia opiskelutaitoja, tekoälyn käyttöä opinnoissa sekä koulutuksessa opittavia geneerisiä taitoja. Lisäksi opiskelija tuntee Oulun yliopiston opiskelijoille suunnatut palvelut.

Official course record: HY00AQ07

HY00AQ08 | Orientation for Studies

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Historia-, kulttuuri- ja viestintätieteet, Kielten ja kirjallisuuden tutkinto-ohjelma, Logopedia

Content

Matters related to starting studies. Objectives and contents of studies. Degree structure and timing of studies. Planning one's own learning and studies, as well as creating a personal study plan (HOPS). Ethical principles of studying, responsibilities, and study culture. Team-building. Integration into the university community and one's own faculty. Practices and systems of studying. Familiarization with services offered to students. Basics of library use.

Learning outcomes

After completing the course, the student will perceive the university as their operating environment and will be able to plan and implement their own studies independently and in collaboration with their academic advisor. They will be familiar with the degree structures and minor options within their field of study. The student will comprehend the practices of studying and understand the significance of their actions as part of the academic community. They will have integrated into a community of students in their field and become a part of the broader university community, while also understanding the ethical responsibilities and obligations associated with their studies. Furthermore, the student will have mastered the basics of information retrieval and library use, as well as key information systems related to their studies.

Official course record: HY00AQ08

KE00AV17 | Orientation to interventions

1 ECTS | Subject not supplied | Advanced Studies | Finnish

Person in charge: Heli Siltala

Content

In this study module, students will become familiar with the goals and methods of psychological rehabilitation, as well as the practical implementation of rehabilitation with adults and children. The student will also explore professional practices in psychological work and data protection in client work. The course includes practical training of clinical skills.

Learning outcomes

The student is able to:

- Understand the role of a psychologist as a licensed healthcare professional within the Finnish healthcare and social services sector, as well as in other areas of psychology.
- Describe the professional competencies related to psychological work.
- Identify and name the key laws and regulations that guide psychological work.
- Apply data protection requirements and ethical obligations that govern psychological client work.
- Describe the theoretical background, goals, and methods of various intervention techniques used with children, adolescents, and adults.
- Describe the intervention skills required in psychological work.
- Critically evaluate the evidence base of rehabilitation methods used in mental health work.
- Describe the placement of psychological interventions within healthcare service systems.
- Describe the steps of the rehabilitation process (planning/assessment, implementation, evaluation).

The course supports the development of the following generic skills:

- The student is able to apply analytical and critical thinking to questions within their own discipline and at the interfaces between disciplines, and to evaluate and produce well-reasoned arguments.
- The student is able to promote their own well-being, manage their own work, and develop their professional identity.
- The student is able to act constructively in situations of uncertainty and discomfort, practice self-compassion, and promote collaborative interaction.
- The student recognizes the key interdependencies of social sustainability within their field and is able to assess the impacts of their field's activities on them.
- The student is able to apply the principles of sustainable development and the UN Sustainable Development Goals in their professional practice.
- The student is able to address ethical issues in their field and justify their actions ethically, taking into account different perspectives and power relations.
- The student is able to apply the methods of their own field and recognize the possibilities and limitations of methods from other fields.
- The student is able to integrate expertise from different fields to produce innovative solutions to global challenges, and to work in and lead multidisciplinary and interdisciplinary teams.
- The student is able to communicate appropriately as an expert to different target audiences, including in a foreign language, and to build professional networks.
- The student is able to utilize and critically evaluate digital solutions and artificial intelligence technologies within their area of expertise, and to recognize their impacts on research, working life, and society.

Official course record: [KE00AV17](#)

BO00BC41 | Orientation to M365 Copilot software and AI in Academia MOOC

1 ECTS | Subject not supplied | General Studies | English, Finnish

Person in charge: Anniina Rantakari

Content

Excel: basics including interface, spreadsheet creation, and data analysis with formulas. Word: fundamentals such as document creation, formatting, and collaboration features. PowerPoint: essentials, from creating slides to incorporating multimedia elements.

Academic writing: Producing academic text, citing, source searching, creating a bibliography.

AI-technologies: The ethical usage of LLM- and other AI-technologies in studying, in producing academic text, and in research process.

Learning outcomes

This MS Office course provides students with the skills and knowledge required for proficient use of Microsoft Office applications such as Excel, Word, and PowerPoint. The course also covers the fundamentals of academic writing, including referencing and creating academic texts. The course addresses the basic use of artificial intelligence in studying, academic writing, and research. The course is delivered as a MOOC.

Official course record: [BO00BC41](#)

MM00AX12 | Orientation to medical and dental studies

1 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Learning outcomes [Finnish source]

Opintojakson tavoitteena on orientoitua lääketieteen ja hammaslääketieteen opintoihin. Opintojaksolla tutustutaan opiskelijan digitaalisiin työkaluihin ja opintojen tukipalveluihin.

Official course record: [MM00AX12](#)

405023Y | Orientation to studies

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Tutkinto-ohjelman vastuhenkilö

Content

- * Issues related to starting the studies.
- * Goals and contents of the studies.
- * Degree structure and timing of studies.
- * Planning of your studies and construction of your personal study plan (PSP).
- * Ethical principles (START guide) and responsibilities in the studies, study culture.
- * Grouping.
- * Integration into the university community and your own faculty.
- * Study practices and systems.
- * Introduction to academic writing practices (including APA7 reference management)
- * Getting acquainted with the services available to students.
- * Library training for the new students.
- * University of Oulu Safety Orientation (START guide)

Learning outcomes

Upon completion of the course, the student

- * knows how to plan his or her studies alone and in cooperation with the rest of the student community
- * identifies and understands the degree structures, contents and study practices of his or her own programme
- * has established him/herself as part of his/her small group and student community
- * knows about the duties and responsibilities related to the studies and studying
- * understands the meaning of his or her own activities as part of the academic community

Official course record: [405023Y](#)

MM00AX57 | Ortopedia ja traumatologia [Finnish source]

4 ECTS | Subject not supplied | |

Person in charge: Maarit Valkealahti

Content

Traumatology covers the principles of assessment, diagnostics, and management of individual injuries as well as the multiply injured patient. These topics are addressed through lectures, small-group teaching, and a trauma theme day.

Small-group teaching focuses in particular on:

principles of clinical examination of the trauma patient

cast treatment of a typical distal radius fracture and a stable ankle fracture

The trauma theme day is implemented as a station-based format aimed at developing practical skills and clinical problem-solving abilities.

In orthopaedics, the course covers the clinical examination of the musculoskeletal system, including examination of the hip, knee, shoulder, and foot. Special emphasis is placed on understanding foot biomechanics and functional assessment. In addition, the course addresses common orthopaedic conditions such as hip and knee osteoarthritis, degenerative spinal disorders, and bone tumours. Teaching is delivered through lectures and contact teaching, as well as a seminar day in collaboration with the discipline of rheumatology

Learning outcomes

Traumatology

Upon completion of the course, the student:

- Is able to initiate the immediate management of a multiply injured patient, including: life-saving interventions
- clinical assessment of the multiply injured patient and interpretation of findings in order to establish a diagnosis
- selection and use of appropriate diagnostic investigations
- communication with specialised healthcare services regarding suspected injuries
- stabilisation of the patient prior to transfer for further care
- understanding of the principles of triage and staged trauma care

Is able to diagnose injuries and fractures and to plan and implement the management and follow-up of conservatively treated injuries

Has general knowledge of the treatment principles of surgically managed fractures

Orthopaedics

Upon completion of the course, the student:

- Is able to apply the principles of clinical examination of the musculoskeletal system, with particular focus on the hip, knee, shoulder, and foot
- Understands the significance of clinical findings and is able to relate them to the patient's symptoms and functional capacity
- Is able to recognise common orthopaedic conditions, such as hip and knee osteoarthritis, degenerative spinal disorders, and bone tumours
- Is able to assess the need and urgency of treatment for musculoskeletal conditions and to refer the patient appropriately for further care
- Has general knowledge of conservative and operative treatment principles in common orthopaedic conditions
- Understands the basic principles of lower limb biomechanics, particularly the role of foot function and loading in clinical assessment and treatment planning

Official course record: MM00AX57

MM00AY32 | OSCE, The 4th Academic Year of Medicine

0 ECTS | Subject not supplied | |

Person in charge: Mikko Karjalainen

Content [Finnish source]

Lääketieteen kolmannen ja neljännen lukuvuosien oppiaineiden yhteisesti järjestämä lähiopetustilanne.

Learning outcomes [Finnish source]

Opiskelija osoittaa käytännössä saavuttaneensa 3.-4. lukuvuoden kliinisten opintojaksojen tiedot ja taidot, sekä kriittisen ja soveltavan ajattelun kuten myös vuorovaikutuksen valmiuksiaan.

Official course record: MM00AY32

MM00AY47 | OSCE, The 5th Academic Year of Medicine

0 ECTS | Subject not supplied | |

Person in charge: Terhi Ruuska-Loewald

No description supplied in the collected record.

Official course record: MM00AY47

MM00AY28 | Otorhinolaryngology

6 ECTS | Subject not supplied | |

Person in charge: Petri Koivunen

Content

Teaching involves the ear, nose, mouth, pharynx, larynx, salivary glands and head and neck region. The development, epidemiology, diagnostics, treatments and rehabilitation of the region's illnesses are dealt with. The student gets shortly acquainted with the phoniatics. The groups teachings, theme day and independent tasks involve the practical diagnostics, treatments and the most common procedures of the diseases in the region.

Learning outcomes

The course aims at familiarizing the student to examining, treating and referring the otorhinolaryngologic patient. After the course, the student can utilize these knowledge and skills when working as a general practitioner.

Official course record: MM00AY28

MM00AY55 | Palliative medicine

1 ECTS | Subject not supplied | |

Person in charge: Eeva Rahko

Content [Finnish source]

Kurssi koostuu sekä kontaktiopetuksesta että verkko-opiskelusta.

Learning outcomes [Finnish source]

Opintojaksolla syvennetään aiempaa opetusta palliatiivisesta lääketieteestä. Tavoitteet mukailevat valmistuvan lääkärin osaamistavoitteita elämän loppuvaiheen hoidossa. Opiskelija osaa laatia yksilöllisiä hoitosuunnitelmia, toimia tavoitteellisesti ja rakentavasti hoitotiimin osana ja kohdata potilaita ja omaisia elämän loppuvaiheessa. Opiskelija tunnistaa elämän loppuvaiheeseen liittyviä eettisiä kysymyksiä ja toimiensa seuratuksia sekä toimia soveltaen lääkärin etiikkaa.

Official course record: [MM00AY55](#)

IP00BC36 | Participation in University Community Governance and Organization Roles

1-10 ECTS | Subject not supplied | Intermediate Studies |

Person in charge: Heli Alatalo

Content

The course may consist of participation in several positions of trust as follows:

- * Board of the Student Union: 1 year 4-5 ECTS credits
- * Student Council of the Student Union: 2 years 2 ECTS credits
- * Board of Directors of the University: 2 years 5 ECTS credits
- * University Collegium: 2 years 2 ECTS credits
- * Education Council: 2 years 2 ECTS credits
- * Education Management Group: 2 years 4 ECTS credits
- * Faculty Management Group: 2 years 2 ECTS credits
- * The Faculty Board: 2 years 2 ECTS credits
- * Faculty Education Committee: 2 years 2 ECTS credits
- * Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- * National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- * Tutoring/KV-kummi: 1 year 1 ECTS credits
- * UNIC Student Board: 1 year 3 ECTS credits
- * Equality and Diversity Committee: 2 years 4 ECTS credits
- * Other official working groups at the University: 2 years 2 ECTS credits
- * Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.
- * Other club activities, e.g., Formula Student Oulu, 1 year 1 ECTS; minimum 2 years, maximum 3 years

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:..

- * Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- * Carry out the responsibilities associated with a position of trust in a responsible manner.
- * Act as a member of a multidisciplinary team and apply meeting procedures.
- * Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- * Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [IP00BC36](#)

TR00BC53 | Participation in University Community Governance and Organization Roles

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Anne Tuomela

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (TEK etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: TR00BC53

TY00BC72 | Participation in University Community Governance and Organization Roles

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Saara Luhtaanmäki

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (TEK etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

[Official course record: TY00BC72](#)

NO00BC57 | Participation in University Community Governance and Organizational Roles

1-10 ECTS | Other studies | Intermediate Studies | Finnish

Person in charge: Tiina Eskola, Kari Moisio

Content

The course may consist of participation in several positions of trust, as follows:

- * Board of the Student Union: 1 year 4-5 cr
- * Student Council of the Student Union: 2 years 2 cr
- * Board of Directors of the University: 2 years 5 credits
- * University Collegium: 2 years 2 cr
- * Education Council: 2 years 2 cr
- * Education Management Group: 2 years 4 cr
- * Faculty Management Group: 2 years 2 cr
- * The Faculty Board: 2 years 2 cr
- * Faculty Education Committee: 2 years 2 cr
- * Board of a Subject Society or a Guild: 1 year 1-3 cr
- * National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 cr
- * UNIC Student Board: 1 year 3 cr
- * Equality and Diversity Committee: 2 years 4 cr
- * Other official working groups at the University: 2 years 2 cr
- * Other activities in the university community, e.g. degree programme committees, assisting at conferences or member of the interest in a Society of the Student Union: credits awarded based on the workload involved.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, Oulu Mining School student will be able to:

- * Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- * Carry out the responsibilities associated with a position of trust in a responsible manner.
- * Act as a member of a multidisciplinary team and apply meeting procedures.
- * Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- * Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: NO00BC57

TA00BC58 | Participation in University Community Governance and Organizational Roles

1-10 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Petri Aarnio

Content

The course may consist of participation in several positions of trust as follows:

- * Board of the Student Union: 1 year 4-5 ECTS credits
- * Student Council of the Student Union: 2 years 2 ECTS credits
- * Board of Directors of the University: 2 years 5 ECTS credits
- * University Collegium: 2 years 2 ECTS credits
- * Education Council: 2 years 2 ECTS credits
- * Education Management Group: 2 years 4 ECTS credits
- * Faculty Management Group: 2 years 2 ECTS credits
- * The Faculty Board: 2 years 2 ECTS credits
- * Faculty Education Committee: 2 years 2 ECTS credits
- * Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- * National Student Organization, e.g. SYL or a trade union (SOOL, LOIMU, TEK, Medisiinarit, Ekonomit etc.): 1 year 1-5 ECTS credits
- * Tutoring/kummi: 1 year 1 ECTS credits
- * UNIC Student Board: 1 year 3 ECTS credits
- * Equality and Diversity Committee: 2 years 4 ECTS credits
- * Other official working groups at the University: 2 years 2 ECTS credits

Other activities in the university community, e.g., Degree Programme Committees, assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- * Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- * Carry out the responsibilities associated with a position of trust in a responsible manner.
- * Act as a member of a multidisciplinary team and apply meeting procedures.
- * Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- * Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [TA00BC58](#)

TM00BC69 | Participation in University Community Governance and Organizational Roles

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Reijo Saari

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (TEK etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Suoritustavat

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [TM00BC69](#)

TP00BC71 | Participation in University Community Governance and Organizational Roles

1-5 ECTS | Other studies | Intermediate Studies | Finnish, English

Person in charge: Eetu-Pekka Heikkinen

Content

The course may consist of participation in several positions of trust as follows:

- Board of the Student Union: 1 year 4-5 ECTS credits
- Student Council of the Student Union: 2 years 2 ECTS credits
- Board of Directors of the University: 2 years 5 ECTS credits
- University Collegium: 2 years 2 ECTS credits
- Education Council: 2 years 2 ECTS credits
- Education Management Group: 2 years 4 ECTS credits
- Faculty Management Group: 2 years 2 ECTS credits
- The Faculty Board: 2 years 2 ECTS credits
- Faculty Education Committee: 2 years 2 ECTS credits
- Board of a Subject Society or a Guild: 1 year 1-3 ECTS credits
- National Student Organization, e.g. SYL or a trade union (TEK etc.): 1 year 1-5 ECTS credits
- Tutoring/KV-kummi: 1 year 1 ECTS credits
- UNIC Student Board: 1 year 3 ECTS credits
- Equality and Diversity Committee: 2 years 4 ECTS credits
- Other official working groups at the University: 2 years 2 ECTS credits
- Other activities in the university community, e.g. Degree programme committees, Assisting at conferences or member of the interest Society of the Student Union: credits awarded based on the workload involved.

Tutoring is accepted as part of this module, if the student has not received credits for tutoring in any other way.

The person in charge of the course will assess the scope of the completed credits based on the student's learning diary, in accordance with the principles outlined above.

Learning outcomes

Upon completion of the course, the student will be able to:

- Critically evaluate matters to be resolved, take a stand on issues to be decided, and justify his/her views.
- Carry out the responsibilities associated with a position of trust in a responsible manner.
- Act as a member of a multidisciplinary team and apply meeting procedures.
- Communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts constructively.
- Articulate their own competencies, develop their professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [TP00BC71](#)

MM00AX36 | Pathology 1

5 ECTS | Subject not supplied | | Finnish

Person in charge: Markus Mäkinen

Content

The main topics of the course:

1. Causes of diseases (heredity, environment, development, aging)
2. Adaptation
3. Cell and tissue injury and healing, accumulations
4. Inflammation, infections and immunological disturbances
5. Neoplasia
6. Disorders of fluid balance and circulation
7. Diagnostic pathology and cytology
8. Molecular pathology

Learning outcomes

After the course, the student knows the basic terminology of pathology and the principles of disease classification and understands the key mechanisms of the processes of disease origin and development (etiology and pathogenesis). The student is able to identify visible and microscopic changes in the most common diseases and use them to classify the alteration into the correct disease category. The student understands the relationship between structural and pathophysiological changes in diseases and clinical symptoms and findings.

Official course record: [MM00AX36](#)

MM00AX54 | Pathology 2

6 ECTS | Subject not supplied | |

Person in charge: Markus Mäkinen

Content

The aetiology, pathogenesis, morphological changes and histopathological diagnosis of the diseases in following organ systems: Cardiovascular system, gastrointestinal tract, liver, biliary tract and pancreas, lymphoid and hematopoietic tissues, kidneys and urinary tract, male genital organs, and endocrine organs. The course includes a 3 hour final exam, approximately 100 hours of self-study and 58 hours of contact teaching which is divided as follows:

- Lectures 32h
- Group and microscope exercises 14h
- Autopsy teachings 11 h
- Laboratory visit 2h
- Multidisciplinary team meetings 2h

In total, the course comprises of 165 hours of study (6 ECTS credits).

Learning outcomes

The student will understand the pathogenesis, pathologic tissue changes and their clinical significance in relation to the symptoms ja prognosis of the disease in different organ systems.

The student will learn the indications, limitations and the main sources of diagnostical errors in diagnostic pathology and learn to interpret the pathologist's report correctly. The student will also learn the role of pathology in the treatment of patients and as a part of a multidisciplinary team and know how to work in a group.

Official course record: [MM00AX54](#)

MM00AY25 | Pathology 3

4 ECTS | Subject not supplied | |

Person in charge: Markus Mäkinen

Content

Pathology of Head and Neck
Oral Pathology
Breast Pathology
Pathology of respiratory tract and pleura 1-2
Neuropathology 1-2
Pathology of Bone
Pathology of Joints
Connective tissue disorders
Soft Tissue tumors

Lectures 20 hours
Histology group teaching 12 hours
Breast cancer MDT meeting or soft tissue tumor meeting 1 hour
Examination 2 hours

Learning outcomes

Upon completion of the course, the student is able to describe etiology, pathogenesis and basic patterns of progression of diseases and conditions included in the course, is able recognize their most important macroscopical and microscopical features and their association with symptoms and clinical findings, and to use all of this knowledge in clinical diagnostics and selection of treatment. The student is able to use diagnostic pathology services in the clinical work of general practioner, and knows their main limitations and sources of error.

Official course record: [MM00AY25](#)

MM00AY44 | Pathology 4

2 ECTS | Subject not supplied | |

Person in charge: Markus Mäkinen

Content

Gynaecologic pathology, paediatric pathology, dermatopathology, pathology in general practice.

Learning outcomes

Upon completion the student should know, for each organ system included, the basic mechanisms of diseases (etiology and pathogenesis), their basic morphological, functional and clinical characteristics, and terminology related with diseases. The student should be able to recognize and classify the most common diseases of the organ systems, understand the relationship between these features of the diseases and their symptoms and other clinical manifestations. The student should know the most important sources of error in histopathological diagnostics, and be familiar with the collaboration between clinician and pathologists needed in every day clinical work.

[Official course record: MM00AY44](#)

MD00AR57 | Patient Practice Permit Granted

0 ECTS | Subject not supplied | |

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

When the defined studies in the degree programme of Bachelor in Dentistry have been completed, the student is granted permission for clinical training, after which they may begin clinical patient practice at the Teaching Clinic.

Learning outcomes

When the required studies in the degree programme of Bachelor in Dentistry have been completed, the student is granted permission for clinical training, after which they may begin clinical patient practice at the Teaching Clinic.

[Official course record: MD00AR57](#)

MM00AY14 | Patient safety

1 ECTS | Subject not supplied | |

Person in charge: Kati Alakärppä

Content

Patient safety, health care legislation, and the application of social security legislation in a physician's work.

Laws and regulations related to prescribing. The structure of a prescription, dispensing regulations, and writing prescriptions. Medical reimbursement statements.

Learning outcomes

After completing the course, the student:

- is able to describe the principles and systems of social and insurance medicine and apply this knowledge in practice.
- is familiar with the appropriate methods for writing prescriptions and understands the key regulations and restrictions issued by authorities regarding the prescribing and dispensing of medicines. The student also understands the role of the pharmacy in the dispensing process.
- is able to prepare the statements required for medication reimbursement.
- knows what patient safety means and how promoting it can reduce the number and impact of adverse events.
- understands the concept of the human factor in health care and its significance for patient safety.
- develop analytical and critical thinking
- develop communication, interaction, and digital skills

Official course record: [MM00AY14](#)

KE00AQ60 | Pedagogical production

5 ECTS | Subject not supplied | | Finnish

Person in charge: Marja Ervasti

Content

In separate study years taking part in Fisme music education conference and bringing musical and pedagogical workshops to other music education students.

Learning outcomes

Student applies a pedagogical group oriented product that has a strong connection in working with field organisations.

Official course record: [KE00AQ60](#)

MM00AY37 | Pediatric surgery

2 ECTS | Subject not supplied | |

Person in charge: Juha-Jaakko Sinikumpu

Content [Finnish source]

Kurssilla käsitellään lastenkirurgisten sairauksien ja vammojen ennaltaehkäisyä, akuutisti sairaan kirurgisen lapsipotilaan hoitamista sekä lastenkirurgisia pitkäaikaissairauksia. Luettelo lastenkirurgian ydinosaamiseen sisältyvistä sairauksista ja vammoista esitetään kurssin alussa.

Learning outcomes [Finnish source]

Kurssilla opiskellaan lastenkirurgian ydinasioita, eli lasten pehmytkudoskirurgiaa sekä lasten ortopediaa ja traumatologiaa. Kurssin käytyään opiskelija tunnistaa kirurgisten lapsipotilaiden erityispiirteet, tuntee yleisimmät perusterveydenhuollossa esiintyvät lastenkirurgiset ongelmat ja tietää niiden hoidonporrastuksen, tietää tärkeimmät synnynnäiset epämuodostumat, sekä tunnistaa ja pystyy hoitamaan muut kuin sairaalahoitoa vaativat tavallisimmat lasten murtumat ja muut vammat.

Official course record: [MM00AY37](#)

MM00AY35 | Pediatrics

8 ECTS | Subject not supplied | |

Person in charge: Terhi Ruuska-Loewald

No description supplied in the collected record.

Official course record: MM00AY35

920019J | Permission to defend the thesis

0 ECTS | Other studies | Post-graduate Studies | Finnish

Person in charge: Heli Ruotsalainen

Learning outcomes

After the pre-examination, the principal supervisor fills the form UniOGS_Nomination of the opponent and custos in [eForms](<https://eforms.oulu.fi/en>).

The Doctoral Programme Committee decides on the permission to defend the doctoral thesis . The chair of the Doctoral Programme Committee appoints one or two opponents and the custos.

After the public defence, the opponent submits their statement on the doctoral thesis and the thesis defence to the Graduate School ([uniogs\(at\)oulu.fi](mailto:uniogs(at)oulu.fi)). The Doctoral Programme Committee approves and grades the thesis (pass/excellent) based on statements by the pre-examiners and opponent(s).

For more information see [<https://www.oulu.fi/en/research/graduate-school/final-stages-doctoral-degree>]([http](https://www.oulu.fi/en/research/graduate-school/final-stages-doctoral-degree)

Official course record: 920019J

MM00AX39 | Pharmacology and toxicology

10 ECTS | Pharmacology and Toxicology | Basic Studies | Finnish

Person in charge: Johanna Magga

Content

Systematic review of major classes of drugs and basics of toxicology. Including

- The basic terminology of pharmacology: pharmacodynamics and pharmacokinetics
- Systematic review of major classes of drugs: drugs affecting cardiovascular system, anti-diabetic medications, drugs affecting the respiratory tract, antimicrobial agents, drugs affecting gastrointestinal drugs, drug treatment of pain, psychiatric medications, neurological drugs
- Toxicology: the basics of toxicology, the most common poisonings and fundamentals of toxicological risk assessment

Learning outcomes

The purpose of the pharmacology and toxicology course is to develop the competencies needed for rational and safe drug therapy. After completing the course, the student is able to:

- explain pharmacokinetics of a drug after administration
- explain physiological effects of drugs and their mechanisms of action
- use the main drug groups in the treatment of diseases after becoming familiar with the key properties of their principal representatives
- describe the basis of individualized drug therapy
- describe the basics of toxicology

In addition, the student develops skills needed for professional growth, including the ability to:

- search for reliable and up-to-date pharmacological and toxicological information from scientific sources
- follow developments in scientific knowledge related to pharmacotherapy
- integrate new information with previously learned material and identify connections between pharmacology, toxicology, and other areas of medicine
- discuss the principles of pharmacotherapy and practice professional communication skills
- work constructively as part of a group
- give constructive feedback and use the feedback received to support their learning process

Official course record: [MM00AX39](#)

KE00AP97 | PhD-seminars in the Doctoral degree programme in Educational sciences and Psychology

3 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Sonja Lutovac

Content

PhD seminars are an integral part of doctoral studies organised by various research groups at the faculty. These seminars are designed to provide doctoral researchers with meaningful opportunities for participation in an academic community to foster and advance the development of their dissertations. Within the seminars, doctoral researchers present their own work and engage as peer reviewers and opponents to fellow researchers' projects.

Learning outcomes

This course aims to create an environment conducive to the development of doctoral researchers' work, active participation in academic discourse, the exchange of constructive feedback, and the advancement of their own research.

Upon the completion of the course, the doctoral researcher can:

- effectively present and discuss their own research
- skilfully evaluate others' research and actively engage in academic debate
- confidently defend their own research findings

These learning outcomes include the development of all six key generic skills: analytical, critical and creative thinking; well-being and self-development; international and multicultural competence; sustainability, responsibility and ethics; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

Official course record: [KE00AP97](#)

DP00BE70 | Photocatalysis summer school

5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Satu Ojala

Content

Fundamentals of heterogeneous and homogeneous photocatalysis
Bandgap determination
Synthesis of different photocatalysts
Characterization of photocatalysts
Applications of photocatalysts
Reactor technologies

Learning outcomes

Upon completion of the course, the student will know fundamentals of heterogeneous and homogeneous photocatalysis, photocatalytic materials and main characterization methods, applications and reactor technologies.

Official course record: [DP00BE70](#)

MM00AY19 | Physical and rehabilitation medicine 1

2 ECTS | Subject not supplied | |

Person in charge: Juhani Määttä

Content

The course focuses on understanding musculoskeletal disorders and pain, applying this knowledge in practical patient care, and covers the fundamentals of rehabilitation and disability.

Key contents

Practical physiatry
Physiatric patient examination
Disability

Learning outcomes

After completing the course, the student understands the theory, diagnostics and treatment of the most relevant musculoskeletal conditions and can apply the knowledge in practice and in clinical examination, and understands the fundamentals of functioning and disability.

The student is able to critically evaluate information and data sources, understands the importance of multidisciplinary collaboration, and can apply and further develop professional communication skills with patient care in mind.

Official course record: [MM00AY19](#)

MM00AY52 | Physical and rehabilitation medicine 2

3 ECTS | Subject not supplied | |

Person in charge: Juhani Määttä

Content

The course focuses on deepening theoretical knowledge and practical skills related to musculoskeletal disorders and pain, as well as rehabilitation and disability.

Key contents:

Disability

Rehabilitation including multi-professionality

Prostheses and rehabilitation

Physical and Rehabilitation Medicine in practice, clinical examination

Review of the most relevant musculoskeletal conditions

Learning outcomes

Upon completion the student understands extensively the theory of rehabilitation and disability and can apply this in practice. The student can also apply and deepen the previously acquired knowledge of musculoskeletal diseases and pain in practice.

The student is able to critically evaluate information and data sources, work naturally and effectively in a multidisciplinary team, and apply and further develop professional communication skills in patient communication.

Official course record: [MM00AY52](#)

MM00AY60 | Planetary health [Finnish source]

1 ECTS | Subject not supplied | |

Person in charge: Timo Hugg

Content

Lectures:

- Sustainable development and health
- Global public health
- Climate change and health
- Global change trends and health
- Habitats, biodiversity and health
- Pandemics, infectious diseases and health
- Planetary diet and health
- Sustainable mobility and health

Learning outcomes

- The student gains an understanding of sustainable development and its key goals
- The student is aware that the morbidity of the population is linked to global change events
- The student understands that well-being is connected to the environment, diet and chosen mode of transport
- The student can tell which UN Sustainable Development Goals the course content is related to and can justify how the course content is related to the UN Sustainable Development Goals
- The student can explain what sustainable development is and what its key challenges are from a planetary health perspective.

Official course record: [MM00AY60](#)

353307S | Planning and Conducting Scientific Research

5 ECTS | Subject not supplied | Advanced Studies | Finnish

Person in charge: Miia Jansson, Mira Hammarén

Content

Planning the research process, preparing an exercise research plan, reviewing the reliability, ethics and data protection of the research.

Learning outcomes

After completing the course, the student is able to:

- apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- critically justify the choice of research topic and identify the key concepts related to the studied phenomenon
- evaluate his/her research topic in relation to nursing or health administration science and societal debate
- seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- evaluate and apply methodological solutions in nursing or health management scientific research
- assess the reliability of quantitative and qualitative research and systematic literature review and apply them in the planning and implementation of one's own research
- assess the significance and application of multi-methods in research
- prepare and present the final exercise research plan clearly and creatively, and can answer questions about it
- critically discuss your own and other students' research topics and plans
- understands the importance of responsible science and research data management
- assess ethical and data protection issues related to conducting research
- solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments
- working life cooperation: The student is able to plan working life-oriented scientific research

Official course record: 3533075

MM00AY17 | Plastic surgery

2 ECTS | Subject not supplied | |

Person in charge: Outi Kaarela

Content

Examination, diagnostics and treatment

During the course, the aim is to provide students with the skills to treat plastic surgery patients in outpatient care and the knowledge to be able to assess patients requiring specialized medical care and to be able to examine them.

The preliminary plan has been to give lectures on general plastic surgery issues and to organize theme days on key issues: Breast Surgery Theme Day and Wound Theme Day. Teaching methods can be changed according to need.

Learning outcomes

.After completing the course, the student will

- know what plastic surgery is in its main features and what kind of patients plastic surgeons treat
- know how to examine a plastic surgery patient -be able to assess when a plastic surgery patient should be sent to specialized medical care for examinations or treatment
- be able to treat plastic surgery patients treated at the primary health care level (small superficial burns, skin tumors, tumors of the subcutaneous tissue, etc.)
- be able to prepare an appropriate referral for specialized medical care for a plastic surgery patient.

Generic skills:

Analytical, critical and creative thinking skills: Familiarity with scientific material and its evaluation for presentations

Multidisciplinarity and interdisciplinary skills: Multiprofessional nature of the doctor's work in connection with theme days, when patients' problems are discussed among different experts

Communication, interaction and digital skills: Giving presentations and making patient document notes in medical records and consulting patients

Official course record: [MM00AY17](#)

HH00BE35 | Political history

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Matti Mäntylä

Content [Finnish source]

Opintojaksolla keskitytään uusimman ajan, erityisesti 1900-luvun poliittisen historian keskeisiin kehityslinjoihin ja ilmiöihin. Pääpaino on Suomen yhteiskuntahistorian, kansainvälisen vuorovaikutuksen ja ulkosuhteiden tarkastelussa. Lisäksi kurssilla tutustutaan poliittiseen historiaan tieteenalana.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- osaa kuvata ja tunnistaa uusimman ajan poliittisen historian keskeiset kehityslinjat
- tuntee poliittisen historian tärkeimmät käsitteet, menetelmät, lähestymistavat ja tutkimustraditiot
- hahmottaa erilaisten historiatulkintojen olemassaolon ja merkityksen
- osaa analysoida nykypäivän poliittisia ilmiöitä suhteessa niiden historialliseen taustaan.

Official course record: [HH00BE35](#)

HH00AM37 | Political Power in Finland

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Matti Mäntylä

Content [Finnish source]

Opintojaksossa tutustutaan Suomen politiikan ja poliittisen järjestelmän tutkimukseen. Samalla lisätään ymmärrystä tieteellisistä tutkimustavoista ja näkökulmista.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on tutustunut suomalaista poliittista järjestelmää koskevaan tutkimukseen.

Official course record: [HH00AM37](#)

700745P | Political Theory

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Matti Mäntylä

Content [Finnish source]

Jakso johdattaa politiikan tutkimuksen teoreettisiin perinteisiin, mitä tarkoitetaan teorialla yhteiskuntatieteissä yleensä ja politiikkatieteissä erityisesti. Jakso tutustuttaa yhteiskuntafilosofian ja politiikan teorian keskeisiin traditioihin sekä näiden käyttöön empiirisessä tutkimuksessa.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa

- määritellä politiikkatieteiden keskeisiä teoreettisia lähestymistapoja
- keskustella teorioiden normatiivisista, selittävästä ja tulkitsevista elementeistä
- arvioida teorioiden ja empiirisen tutkimuksen suhdetta.

Official course record: 700745P

MM00AX37 | Population health 1

7 ECTS | Subject not supplied | | Finnish

Person in charge: Aino-Kaisa Rantala

Content

1. Public health

- Prevalence and incidence of population health in different phase of life
- Lifestyle, behavior and health
- Socioeconomic factors and health
- Finnish health care system
- Assessment and surveillance of health status among population
- Health promotion
- Global public health

2. Epidemiology

- Causal thinking in epidemiology
- Measures of disease occurrence and effect
- Types of epidemiologic studies: cohort studies and case-control studies
- Data analysis and reasoning

3. Environmental health

- Environment and health
- Outdoor and indoor environments and health
- Climate change and health
- Environmental radiation and health
- Environmental noise and health
- Microbiological and chemical risks of drinking water and food
- Nature and health
- Special situations in environmental health
- Municipal environmental health control
- Role of the physician and dentist in environmental health

Learning outcomes

Upon completion of the course, the student will:

- understand the essential challenges of public health
- identify the common chronic diseases and their risk factors
- understand the structure and function of Finnish health care system
- be aware of the importance of assessment and surveillance of health status and promotion among population, and as an expert in health care sector he/she is able to put it into practice
- understand the system and the function of environmental health
- identify the most harmful environmental factors and the health risks associated with those
- understand the role of doctor in the field of environmental health
- understand the basic epidemiologic thinking, is able to define the basic concepts of epidemiology, is able to identify the central types of epidemiologic studies
- know how to apply epidemiological methods in public health

Official course record: [MM00AX37](#)

MM00AY61 | Population health 2

3 ECTS | Subject not supplied | |

Person in charge: Timo Hugg

Content

Lectures:

- Time Trends in Diseases I-II
- An Introduction to Life-course Epidemiology
- Health Promotion and the Work of the Physician
- Effective Interventions in Disease Prevention
- Health Sociology
- Cultures, patient encounter and care

Theme Days:

- Health Exercise Theme Day

Learning outcomes

After completing the course, the student will:

- know the key characteristics of population health/morbidity
- understand that health promotion is part of a physician's job and is aware that well-being is linked to the structures of society and social development.
- understand the role of culture as part of effective care
- be aware of the importance of exercise as a determinant of well-being
- The student is able to analyze, utilize and apply well-being information as part of management, decision-making, service development and effectiveness assessment
- The student is able to discuss the state of health and well-being of Finns, their lifestyles and the associated risk factors.

Official course record: [MM00AY61](#)

AY00BE66 | Power or Responsibility - Introduction to Business Studies MOOC (OPEN UNI)

1 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Anniina Rantakari

Content [Finnish source]

Kurssi tutustuttaa opiskelijan seuraaviin teemoihin

- Kauppatieteet Oulun yliopistossa: opiskelu ja oppiaineet
- Oppiaineiden erityispiirteet
- Kauppatieteilijän uramahdollisuudet

Learning outcomes [Finnish source]

Suoritettuaan opintojakson opiskelija

- ymmärtää, mitä kauppatieteet ovat ja millaista kauppatieteiden opiskelu Oulun yliopistossa on
- osaa nimetä Oulun yliopiston kauppakorkeakoulun pääaineet ja niiden ominaispiirteet
- tunnistaa erilaisia kauppatieteiden opiskelijan opiskelu- ja urapolkumahdollisuuksia
- tunnistaa kauppatieteisiin liitettyjä myyntejä, ja osaa erottaa kauppatieteisiin liittyviä myyntejä faktoista

[Official course record: AY00BE66](#)

DP00AS50 | Practical Commercialization of Research Results

0.5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Janne Haverinen

Content

The course contains semiannual meetings with the staff of Innovation Centre. The aim is to identify research results that could have commercial potential and should be protected e.g. by a patent or utility model.

Learning outcomes

Building on the foundation of identifying and evaluating research-based business ideas, this course provides PhD students with hands-on experience in refining an idea from their own field. Participants will apply the NABC (Need, Approach, Benefits, Competition) model to conduct a concise business analysis, explore market potential, and practice pitching.

By the end of this course, participants will be able to:

- Identify a concrete idea from their research field and define its unique value proposition
- Apply the NABC model to validate market need, outline a feasible approach, articulate core benefits, and assess the competitive landscape
- Develop a compelling pitch that resonates with potential collaborators, funders, or stakeholders
- Refine their idea through structured feedback and iterative improvement

[Official course record: DP00AS50](#)

060711S | Practical Training

1-24 ECTS | Subject not supplied | Advanced Studies | Finnish

Content

Hospital units that accept trainees are:
Anesthesiology

Internal medicine, max. 2 weeks per ward:

Cardiology

Internal medicine ward

Gastroenterology

Hematology

Emergency medicine internal

Obstetrics and gynecology

Pediatrics

Pediatric surgery

Surgery, 2 weeks per ward:

Cardio thoracic

Vascular

Plastic

Urology

Hand

Trauma

Gastroenterological surgery

Orthopedics

Neurosurgery

Radiology

Dermatology

Oncology

Otorhinolaryngology

Neurology (2 weeks)

In all specialties, previous knowledge (studies) of the specialty area is a prerequisite. All internship placement inquiries are handled individually, and changes in availability may occur.

Official course record: 0607115

MM00AY71 | Practical Training 1

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: MM00AY71

MM00AY72 | Practical Training 2

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY72](#)

MM00AY73 | Practical Training 3

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY73](#)

MM00AY74 | Practical Training 4

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY74](#)

MM00AY75 | Practical Training 5

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY75](#)

MM00AY76 | Practical Training 6

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY76](#)

MM00AY77 | Practical Training 7

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY77](#)

MM00AY78 | Practical Training 8

3 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Harjoittelu

Learning outcomes [Finnish source]

Harjoittelun tavoitteena on lääketieteen opiskelijoiden tietojen ja taitojen syventäminen käytännön työssä. Harjoittelun aikana opiskelija soveltaa opinnoissa saatuja valmiuksia käytäntöön, kohtaa, haastattelee ja tutkii ohjatusti potilaita, suorittaa valvotusti toimenpiteitä ja perehtyy toimintayksikön toimintaan.

Harjoittelun suorittaminen on määritelty tarkemmin lääketieteen tutkinto-ohjelman harjoitteluohjesäännössä.

Official course record: [MM00AY78](#)

HD00AW63 | Practice for digitality in working life

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Ritva Kylli

Content [Finnish source]

Kurssin voi suorittaa vaihtoehtoisesti joko: 1) työelämäyhteistyönä toteutettavassa yhteistyöprojektissa tai työelämävalmiuksia parantavalla opintojaksolla; 2) opintojen ohessa tehtävänä työharjoitteluna tai 3) opintoihin liittyvän aikaisemman työkokemuksen kautta. Työharjoitteluksi ja työelämäkokemukseksi hyväksyttävien tehtävien tulee liittyä digitaalisten ihmistieteiden alan osaamisen soveltamiseen työelämässä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa soveltaa digitaalisten ihmistieteiden osaamistaan käytäntöön. Opiskelijan oman osaamisen ja vahvuuksien tiedostaminen, moniammatillisten yhteistyötaitojen vahvistaminen sekä opintojen ja työelämän välisen yhteyden vahvistaminen. Ohjatussa työelämäharjoittelussa opiskelija kykenee hankkimaan itselleen harjoittelupaikan, pystyy toimimaan työyhteisössä, soveltamaan taitojaan työelämässä ja refleктоimaan omaa työelämäosaamistaan.

Official course record: [HD00AW63](#)

KE00AS13 | Practice module

15 ECTS | Subject not supplied | Advanced Studies | English

No description supplied in the collected record.

Official course record: [KE00AS13](#)

HH00AJ08 | Practices of Cultural Heritage Work

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Janne Ikkäheimo

Content

The practical tasks of memory institutions. Collection, documentation, archiving, collection formation, and exhibition practices related to tangible and intangible heritage. Professions within the cultural heritage field and their job descriptions.

Learning outcomes

After completing the course, the student will be able to:

- define the key practical tasks of memory institutions
- explain the main areas and work phases involved in the collecting, documentation, conservation, and exhibition of tangible and intangible cultural heritage
- justify issues related to the formation of cultural heritage collections
- identify different professions within the cultural heritage field and describe their associated duties

Generic skills: critical evaluation and application of information, ethics and responsibility, and the promotion of cultural sustainability.

Official course record: [HH00AJ08](#)

920018J | Pre-examination

0 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Karita Saravesi

Learning outcomes

In the pre-examination of the doctoral thesis, two external reviewers evaluate the scientific and formal requirements of the thesis manuscript before the public defence.

Doctoral researcher starts the pre-examination process of doctoral thesis by filling in the form Nomination of pre-examiners form in the [eForms system](<https://eforms oulu.fi/en>). Doctoral researcher fills in the first part of the form and forwards it to the principal supervisor in the system. The principal supervisor fills in the rest of the form and submits it to the Graduate School in eForms.

The chair of Doctoral Programme Committee appoints the pre-examiners, and the matter is not handled in the meeting of Doctoral Programme Committee.

For more information: [www oulu.fi/en/research/graduate-school/final-stages-doctoral-degree](www oulu.fi/en/research/graduate-school/final-stages-doctoral-degree)

Official course record: [920018J](#)

DP00BE29 | Project Management and Leadership

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Dr. Sergey Nesterov

Content

The course covers the fundamentals of project management, including project initiation, scoping, scheduling, budgeting, risk management, communication, motivation, leadership, and project closure. Emphasis is placed on research and expert projects, multidisciplinary teamwork, decision-making under uncertainty, and reflective learning through lessons learned.

As experience shows, the course benefits everyone from a doctoral researcher to a practicing Project Manager.

Learning outcomes

On completion of the course, the participants will:

- * Know what Project Management is, its current state, and the existing standards.
- * Apply analytical, critical, and creative thinking to complex, uncertain project environments.
- * Learn what does and does not work in a research environment and why.
- * Learn how to organize work toward a goal.
- * Understand the importance of product and project scopes.
- * Be able to develop a professional project's schedule and budget.
- * Learn good practices for work communication.
- * Understand the leadership and followership processes.

The course develops doctoral-level generic skills in analytical, critical, and creative thinking; communication and interaction; leadership and self-management; and multidisciplinary collaboration, supporting doctoral researchers' readiness for complex research and professional project environments.

Official course record: DP00BE29

010142P | Project Management Skills

5 ECTS | Working Life Studies | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

A project here refers to a scheduled, budgeted venture that has a certain goal and that has been carefully planned. An event or a project planned, implemented and managed by the student from the beginning to the end either as a project manager or a responsible project party, participation in defining the project goals, assessing the risks and resources, building and managing the project organisation, supervising and managing working time, the division of responsibilities, follow-up and evaluation of project's progress, planning and management of project communication, completion and evaluation of the project, as well as communication with stakeholders. If the project is approved as a study unit of the student's major subject, the project must be related to the substance competence of the major.

Learning outcomes

After completing this study unit, the student will be familiar with the different stages of project management, know how to plan a complete project with specific goals, divide it into stages, allocate resources and assess the success of the completed project. The student will be able communicate the project goals and implementation to their project team and other stakeholders.

Official course record: 010142P

010144P | Project Management Skills 2

1-5 ECTS | Working Life Studies | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

A project here refers to a scheduled, budgeted venture that has a certain goal and that has been carefully planned. An event or a project planned, implemented and managed by the student from the beginning to the end either as a project manager or a responsible project party, participation in defining the project goals, assessing the risks and resources, building and managing the project organisation, supervising and managing working time, the division of responsibilities, follow-up and evaluation of project's progress, planning and management of project communication, completion and evaluation of the project, as well as communication with stakeholders. If the project is approved as a study unit of the student's major subject, the project must be related to the substance competence of the major.

Learning outcomes

After completing this study unit, the student will be familiar with the different stages of project management, know how to plan a complete project with specific goals, divide it into stages, allocate resources and assess the success of the completed project. The student will be able communicate the project goals and implementation to their project team and other stakeholders.

[Official course record: 010144P](#)

MM00AY21 | Psychiatry

10 ECTS | Subject not supplied | |

Person in charge: Tiina Riekkö

Content

Basic knowledge of psychiatry as a general practitioner, identification of the most common mental disorders and substance abuse problems, and treatment at different stages of life: perinatal period, youths, adults, and the elderly, as well as referring the patient for psychiatric specialist care

Learning outcomes

A student who has passed the course in psychiatry is expected to have mastered the following modules:
Basic knowledge of psychiatry from a general practitioner's perspective:

- Basic skills, required for independent medical practice, in the diagnosis and treatment of common mental disorders to the extent needed in general medical practice (psychotherapeutic therapies, drug therapy, family and network activities).
- Basic knowledge of the identification of common and severe mental disorders and substance abuse at different stages of life: at the perinatal period and among youths, adults and the elderly.
- Treatment classification: the timely referral of patients for psychiatric consultation and specialist hospital care.
- Evaluation of need for sick leave on psychiatric grounds.
- Basic knowledge of treatment during psychological crises.
- Evaluation of the risk for suicidality.
- Knowledge of the legal and insurance psychiatric regulations necessary for a general practitioner and their application to one's own work (especially Mental Health Act, Child Welfare Act and the Finnish Transport Safety Agency's (Trafi's) instructions on the capacity to drive).

Basic knowledge of interaction in a patient/physician relationship and multi-professional work:

- Understanding the importance of one's own personality and emotions, the physician-patient relationship, and instructions for professionals on the success of treatment and taking such instructions into account in the care relationship.
- Understanding the importance of cooperation with the patient's relatives and with other employees involved in psychiatric care: health centre and school psychologist, nurse, psychiatric nurse, public health nurse.
- Basic knowledge on the basics of network and family therapy.
- Taking account of the situation of children of psychiatric patients.
- Ability to act as a resident physician in a psychiatric organisation.

Generic skills:

- The student is able to analyse multidimensional patient information, distinguish essential information from the non essential, and critically evaluate diagnostic alternatives and treatment practices. The student is able to justify clinical conclusions and apply analytical and creative problem solving when formulating a treatment plan.
- The student is able to work collaboratively with the patients and their families, and within a multidisciplinary psychiatric team and utilize perspectives from different fields when assessing, treating and rehabilitating patients. The student understands the interplay of social, biological, psychological and societal factors in mental health disorders and is able to apply this knowledge in clinical practice.
- The student is able to act empathically and purposefully in the doctor-patient relationship, use interactive methods (e.g. motivational interviewing, basic principles of family and network oriented approaches) and take into account the situation of the patient's relatives. The student masters the digital tools, documentation practices and information security principles required in psychiatric work and is able to function effectively in a psychiatric care organization in collaboration with other professionals.

Official course record: [MM00AY21](#)

MM00AX27 | Psychology for Medical Students

4 ECTS | Subject not supplied | | Finnish

Person in charge: Tuula Hurtig

Content

lectures, exam, small group studies

Learning outcomes

to gain understanding in psychological issues, to gain skills for analytic and critical reasoning, to gain communication skills, to gain skills for personal wellbeing and self-development

Official course record: [MM00AX27](#)

419124J | Qualitative research methodologies for doctoral researchers

1-5 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Sonja Lutovac

Content

The course will cover the fundamentals of qualitative research methodologies, providing an exploration of various data collection methods and qualitative data analysis techniques. Specific details about the course content will be provided at the beginning of the course.

Learning outcomes

This course aims to acquaint participants with a variety of qualitative research methodologies commonly used in education and psychology. Upon completing the course, participants will be able to:

- understand the ontological, epistemological, and ethical foundations of research paradigms and methods
- distinguish and discuss various data collection and analysis methods employed in research within education and psychology
- reflect on the appropriateness of different methodological approaches for their own research topics
- engage in discussions around various methodologies and justify their methodological choices

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

Official course record: [419124J](#)

MM00AX55 | Radiology 1

3 ECTS | Subject not supplied | |

Person in charge: Mika Nevalainen

Content

This course is not available in English.

Learning outcomes

This course is not available in English.

Official course record: [MM00AX55](#)

MM00AY34 | Radiology 2

4 ECTS | Subject not supplied | |

Person in charge: Mika Nevalainen

Content

This course is not available in English.

Learning outcomes

This course is not available in English.

Official course record: [MM00AY34](#)

903000Y | Reading Comprehension in German

2-3 ECTS | Subject not supplied | Language and Communication Studies | German

Person in charge: Veronika Ranzenhofer

Content

This self-study course develops students' ability to read and understand authentic German texts related to their own field of study. Students select relevant articles, analyze their content, and complete structured tasks that strengthen reading strategies, vocabulary acquisition, and written production. The course also develops students' ability to use AI tools transparently and responsibly as part of the reading-writing process.

Learning outcomes

Upon successful completion of the course, students are able to:

- * read and understand field-specific texts in German
- * summarize texts clearly in German and Finnish (English)
- * extract field-specific vocabulary and record it systematically
- * reflect on their learning strategies, vocabulary development, and AI use
- * use AI tools appropriately for feedback, clarification, and self-correction.

The working methods in this course help the students improve self-regulation and time management skills.

Official course record: [903000Y](#)

KE00BD61 | Reflection on expertise and professional development in early childhood education -training

7 ECTS | Subject not supplied | Other Studies | Finnish

No description supplied in the collected record.

Official course record: [KE00BD61](#)

412187A | Research methods in Learning Sciences

5 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Tiina Törmänen

Content

After completing the course, the student is able to identify the key characteristics of research in the learning sciences and the basic principles of scientific research.

Content:

- *Philosophical foundations of the learning sciences research
- *Concepts and foundations of qualitative, quantitative, and mixed-methods research
- *Research ethics and trustworthiness
- *Information retrieval
- *Writing a scientific literature review and using references

Learning outcomes

- *The student is able to identify the philosophical foundations characteristic of research in the learning sciences.
- *The student understands the aims, practices, and quality criteria of scientific research.
- *The student is able to examine scientific studies and the methods used in them.
- *The student recognizes the relationships between different research methods.
- *The student is able to conduct a scientific literature review.
- *The student masters the principles of academic writing and the use of citations.

[Official course record: 412187A](#)

046034J | Research plan seminar

1 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Emmi Alakärppä

Content

At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- *is able present his/her research plan to a wider audience
- *is able to answer questions and critical comments concerning the research plan
- *is able to prepare a scientific presentation

[Official course record: 046034J](#)

DP00AV53 | Research plan seminar

1 ECTS | Subject not supplied | Post-graduate Studies | Finnish, English

Person in charge: Aulikki Herneoja

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- * is able present his/her research plan to a wider audience
- * is able to answer questions and critical comments concerning the research plan
- * is able to prepare a scientific presentation

[Official course record: DP00AV53](#)

060723A | Research project

1-30 ECTS | Subject not supplied | Intermediate Studies | English, Finnish

No description supplied in the collected record.

[Official course record: 060723A](#)

DP00BF21 | Researching mis- and disinformation in the age of GenAI

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Yucong Lao, Noora Hirvonen

Content

Session 1 Introduction: Warm-up session, Introduction to the Course & Lecture, and Discussion.

Session 2 Qualitative approaches to researching mis- and disinformation: lecture 1 Experimental methods for researching deepfakes, Lecture 2 Algorithm folklore for researching AI-generated information, and Lecture 3 Speculative methods in researching children-AI interactions.

Session 3 Quantitative approaches to researching mis- and disinformation: Lecture Computational methods to research mis- and disinformation, Workshop Hands-on computational methods for researching online disinformation, and Wrap-up session.

Learning outcomes

Upon completion of the course, the student will be able to:

- Understand the media and information ecosystem rapidly impacted by GenAI.
- Understand the concept of mis- and disinformation and pay more attention to the false information circulating in their everyday lives.
- Learn both innovative qualitative and quantitative methods to study mis- and disinformation and combine them with their own expertise.
- Formulate the basic structure to start researching the perspective related to mis- and disinformation they are interested in.

Official course record: DP00BF21

MM00AY27 | Respiratory diseases

4 ECTS | Subject not supplied | |

Person in charge: Riitta Kaarteenaho

Content

- From the perspective of a primary care physician, major lung diseases, their pathogenesis, epidemiology, diagnosis, treatment, progressive patient care and prevention
- Tobacco cessation
- Rare lung diseases (identification, principles of diagnosis and treatment from the primary care physician's point of view)
- Palliative care of lung diseases
- Emergencies related to lung diseases
- Drug reimbursements of Social Insurance Institution of Finland in lung diseases
- Occupational lung diseases

Learning outcomes

Upon completion the course, the student knows the epidemiology, pathogenesis, and will be able to diagnose and treat the most common lung diseases and knows the principles of palliative care at the primary health care level. The student also knows the indications for referral to specialist care in common lung diseases and knows the main principles of the treatments that are given only in specialist care. The student also masters the main principles of tobacco cessation, as well as recognizes the emergencies of lung diseases and knows their main treatment principles. In addition, the student is able to apply for drug reimbursement from the Social Insurance Institution of Finland in ordinary lung diseases and is able to suspect, diagnose and treat work-related lung diseases at the primary health care level. The student is also able to suspect and identify rare lung diseases and refer those suffering from them for specialist. After completing the course, the student is able to apply analytical and critical thinking independently and when working as part of a team, and to consider sustainability and ethical principles in clinical decision-making when working with pulmonary diseases.

Official course record: MM00AY27

DP00BB04 | Responsible researcher's toolkit

2 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Miki Kallio, Alina Niskanen

Content

Responsibility, ethics, equality, and interdisciplinarity in different phases of the research process. Scientific information retrieval, key databases, and reference management. Participatory science and science communication for general audiences. Choosing the publication channel, peer review process, and open access publishing. Research data management and FAIR principles. Visibility of research and researchers, as well as responsible researcher evaluation.

Learning outcomes

After completing the course, the doctoral researcher:

- is able to use key databases for information retrieval and identify the most relevant literature for their research topic
- is able to critically evaluate and strengthen the ethical, responsible, diversity- and equality-aware, and interdisciplinary aspects of their research project
- is able to apply the principles of open science at different stages of their research, from data management to the publication of data and articles
- understands the foundations of responsible researcher evaluation.

[Official course record: DP00BB04](#)

DP00AN05 | Reviewing existing research and literature

5 ECTS | Subject not supplied | | English

Person in charge: Pia Hurmelinna-Laukkanen, Jaakko Simonen

Learning outcomes

Learning outcomes

The aim of the course is to provide doctoral students with a basic understanding and skills in reviewing and researching existing research and literature. The goal is to provide information on the use of such tools that help the students to navigate in their own field and produce coherent knowledge of the level of academic (and practical) knowledge in it.

During the course, the principles of traditional approaches to literature reviews and emerging tools are addressed. Introduction to traditional, such as systematic literature review is accompanied by a practical topic modeling approach to exploratory smart literature review. These different approaches have different applicability and uses, and they present an opportunity for researchers to add different tools to their toolboxes. The aim is that students learn about the basics of the varied approaches so that they can, for example, find appropriate approaches depending on the maturity of the topic and research area. Practical skills are developed, for example, in the use of topic modeling through a step-by-step framework on a case.

Course Goals:

- Develop a basic understanding of different types of literature reviews
- Learn the literature review process from search and acquisition to interpretation and analysis
- Gain insights into methods for literature synthesis and data presentation (especially systematic literature review, topic modeling, and bibliometric analysis)
- Understand the criteria for conducting a good literature review

[Official course record: DP00AN05](#)

MM00AY20 | Rheumatology

2 ECTS | Subject not supplied | |

Person in charge: Tero Pääkkö

Content

Lectures 6 x 1,5h, a seminar day and small group teaching

Learning outcomes

The student masters the general practitioner-level diagnostics, treatment and treatment grading of the most common arthritis and other rheumatic diseases. For rarer systemic diseases, the student knows how to suspect and identify patients who should be referred to specialist care and how to implement follow-up treatment according to the treatment grading. Knows the indications, contraindications, techniques and equipment for joint injections. Masters the use of rheumatic drugs to the extent required by a general practitioner. Can understand the etiology of joint pain and can distinguish inflammatory symptoms from other joint symptoms. After completing the course, the student will have a sufficient understanding of inflammatory rheumatic diseases and be able to apply what they have learned in practical work.

Official course record: [MM00AY20](#)

491688S | Rock Dynamics and Applications

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Adeyemi Aladejare, Kari Moisio

Content

(1) dynamic properties of rock; (2) experimental techniques under dynamic loading to rock; (3) ground motions due to earthquakes; (4) rock fracture and fragmentation under dynamic loading conditions; (5) dynamic Responses and stability of rock foundations (6) dynamic responses and stability of rock excavation in rock; (7) dynamics of rock burst and possible countermeasure; (8) application in open cut and tunnelling; (9) application in production blasting; (10) application in safety and environment protection; (11) Cases of rockbolting in practice

Learning outcomes

Upon completion of the course students should: (1) understand and remember basic rock behaviour under different loading conditions; (2) understand the characters of rock fragmentation under different loading conditions; (3) be able to apply the concept of rock dynamics to rock support; (4) make better design of open cut and tunnelling; (5) be able to apply rock dynamics to solve problems related to working safety and the environment.

Official course record: [491688S](#)

KE00AT66 | Scientific communication and academic skills

3-5 ECTS | Subject not supplied | General Studies | English, Finnish

Person in charge: Audrey Paradis, Marika Oikarinen

Content

- Literature review connected to a bachelor's thesis
- Ethical communication & critical literacy
- Academic communication in Finnish
- Overview of different scientific texts in the field of Education
- Evaluation of scientific information
- Planning of the reading, reading techniques and writing process
- Academic argumentation, style, tone and plagiarism in different types of academic texts
- Writing academic texts in an appropriate and internationally recognized academic style (with APA referencing)
- Recognising and exercising good scientific practices in research
- Practising mind mapping and oral presentation skills

Learning outcomes

- Utilize research that is robust and relevant to national and international debates in Education
 - Position their own research interests in the field of studies and scientific traditions
 - Reflect on academic research and discuss how to get started with one's own research
 - Search for scientific and academic information
 - Produce academic writing according to standards (literature review), recognize the possibilities and threats of AI in academic communication and conduct presentations in good academic style
 - Use the conventions of academic writing, such as referencing and academic tone
 - Use grammatical patterns appropriate for scientific texts in English and Finnish
- > Identify and describe the importance of A/C/C thinking in scientific, professional, and ethical activities.
- > Work equally & ethically with others, respecting diverse stakeholders; understand professional ethics & good scientific practice.
- > Communicate clearly orally and in writing to experts and non experts, including in a foreign language.

Official course record: [KE00AT66](#)

920002J | Scientific Research and Ethics

2 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Jarmo Pulkkinen

Content

Ethical theory and ethical problem solving. Professional ethics. Ethical problems characteristic to different sciences. Good scientific practice and procedures for handling misconduct and fraud in science. Ethical problems regarding the relation between science community and wider society.

Also the content of data management plan (DMP) is introduced and data management in general. Content includes also the introduction to possible data storages, opening of data and metadata.

Link for the course: <https://www oulu.fi/uniogs/node/42690>

Learning outcomes

After the course the doctoral researcher is familiar with the ethical codes of research, and able to recognise and analyse ethical problems relating to different fields and stages of research. Doctoral researchers know what is data management plan and where data can be stored.

Official course record: [920002J](#)

DP00AZ82 | Scientific writing - Module 2

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Gabriela Lorite Yrjänä

Content

The students will have the opportunity to work on their own manuscript within the lecture. By the end of the course, the student will be able to establish their own and independent way to prepare a scientific manuscript.

Learning outcomes

This is a presential course to support scientific writing. The student must be writing their own manuscript. The course is based on the principle of social writing. In each lecture, we will start by sharing the feelings about writing, strategies to overcome negative writing-experiences and establishing the writing goals for the lecture and upcoming week. The lecture will include a three hours period for the writing of their manuscript. The lecture ends with a brief discussion how the writing and goals went.

Official course record: [DP00AZ82](#)

DP00AZ83 | Scientific writing - Module 3

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Gabriela Lorite Yrjänä

Content

The students will have the opportunity to work on their own thesis within the lecture. By the end of the course, the student will be able to establish their own and independent way to prepare a scientific thesis.

Learning outcomes

This is a presential course to support scientific writing. The student must be writing their own thesis. The course is based on the principle of social writing. In each lecture, we will start by sharing the feelings about writing, strategies to overcome negative writing-experiences and establishing the writing goals for the lecture and upcoming week. The lecture will include a three hours period for the writing of their thesis. The lecture ends with a brief discussion how the writing and goals went.

[Official course record: DP00AZ83](#)

DP00AU99 | Scientific writing in ITEE

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Gabriela Lorite Yrjänä

Content

1. Introduction: types of scientific writing, course expectations and outline. (1 video)
2. Getting Started: how to move on from the black page. (1 video)
3. Managing the writing process. (1 video)
4. Research plan: brief tour on UNIOGs guidelines and relation with future writing of research plans. (1 video)
5. Peer-reviewed paper planning: How to start the writing? (1 video)
6. Selecting the journal: The factors to be considered when selecting a journal for submission will be discussed including impact factor, journal creditability, JUFO ranking and predatory journals. How the different fields of research adopt different criteria on the relevance of the journal choice. (3 videos)
7. Ethics from start: We will discuss few of the ethical aspects related to the manuscript including reproducibility of data, who should be included as co-authors, order of the authors, expected contribution of the co-authors in the paper, acknowledgement. (1 video)
8. Generalised structure of a scientific manuscript: general expected structure of a scientific manuscript section by section: Title, Abstract, Introduction, Methodology, Results, Discussions, Conclusion, References. (8 videos)
9. Displaying data. (1 video)
10. Organizing references. (1 video)
11. Readability and style: This will cover the use of appropriate language and terminology, among other details to improve the readability of the paper. Ensure that the writing style fits the journal audience. (2 videos)
12. Revision and submission: Final draft is ready. What is next? What is the supervisor & co-authors role? Manuscript is ready. Who should submit it? What is needed for submission? Importance to check the author guidelines. (1 video)
13. Final remarks (includes explanations about assignment to be delivered). (1 video)

Learning outcomes

This is an online course to develop scientific writing skills. While there are several forms of scientific writing including research proposals, reports, theses, conference posters and presentations, this course will focus on the scientific writing of peer-reviewed papers. Each lecture will cover one aspect of scientific manuscript preparation. The study is designed as a self-study process through which student can progress individually at their own pace. Students will develop their skills based on critical thinking of the video-lecture.

DP00BE47 | Social impact workshop

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Mari Juntunen

Content

Social impact concepts and frameworks; theory of change; social impact measurement approaches and tools; social impact and research; communicating social impact.

Learning outcomes

Upon completion of the course, the student will be able to:

- Demonstrate a critical understanding of social impact concepts, frameworks, and measurement approaches across various contexts.
- Construct a theory of change and social impact measurement plan their own doctoral research.
- Communicate the social impact of their doctoral research.

Official course record: DP00BE47

KE00AL03 | Special education for subject teachers

3 ECTS | Subject not supplied | Intermediate Studies | Finnish

Person in charge: Virpi Naumanen

Content

- * values, principles and basis of legislation of inclusive teaching and education
- * getting familiar with different types of learning challenges (e.g., learning difficulties, neuropsychiatric disorders, behavioral support) and how to take those into consideration in subject teaching
- * support for learning and school attendance from the viewpoint of subject teacher, as well as differentiation
- * multiprofessional collaboration

Learning outcomes

After completing the course, the student is able to

- describe values, principles and basis of legislation of inclusive teaching and education
- recognize and understand different types of learning challenges
- explain the tiers of educational support, fill in pedagogical documents and understand related legislation
- structure different ways of collaboration between special and subject teachers

Official course record: KE00AL03

771660S | Special issues in geosciences

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Pertti Sarala

Content

The contents (themes) of this advanced level course change annually. Each separate theme gives the students 5 ECTS cr.

On Autumn 2025 the course theme will be "Weathering and weathered bedrock".

For example, the following themes have been earlier included to the course:

2) Project generation in exploration

Student groups will choose on area of interest based on the metal(s) they choose to target. Areas are predetermined and represent different types of mineral potential areas from Finland. Students will do a literature review of the mineral systems and current models and download the freely available datasets from the Geological Survey of Finland and Geological Survey of Sweden web services. Using different GIS software (ArcGIS or QGIS) and/or geochemical plotting software (e.g. loGAS), student will integrate different types of datasets (geophysical, geochemical, geological) in order to select targets within their selected area. At the end of the course, student groups will submit a report with high quality figures and logical interpretations of potential target areas. At the start of the course, introductory lectures are held comprising of target generation on general (integration of different data types, typical workflow, use of legacy data) and case studies from the industry.

3) Stakeholder engagement in exploration and mining

Stakeholder engagement and social license to operate is one of the most important aspects in exploration and mining projects. The geology student and newly graduated geologist working on the field are often one of the first person's encountering the local stakeholders (residents, shopkeepers etc.). Therefore, field geologists are key persons in creating positive image of the respective company for the local stakeholders. During the course, various aspects of stakeholder engagement and gaining social license to operate during exploration and mining projects will be covered through expert lectures (Docent Leena Suopajärvi) and industry specialists (e.g. Mawson Oy).

4) Intensive course on software programme Surpac

The software package Surpac is one of the world's most popular geology and mine planning software, supporting open pit and underground operations and exploration projects. It is widely used by mining companies in Fennoscandia and worldwide. Exposure and basic competence in this software package are important factors that will help geosciences and mining engineering students to find their first employment after graduation. Teaching of this Surpac course is provided by the Finnish branch of WSP in Helsinki, which operate as consultants to the mining and construction industry. Hence, experts with a wide background in the real-life application of the Surpac software package will give the course.

Official course record: [7716605](#)

694816P | Speech acoustics

2 ECTS | Phonetics | Basic Studies | Finnish

Person in charge: Seila Pihanurmi

Content

Basic acoustics, waveform, spectral and spectrographic representation of sound; fundamental concepts of speech acoustics; basics of the acoustic theory of speech production, typical acoustic features of Finnish vowels and consonants and acoustic manifestations of prosodic phenomena.

Learning outcomes

Upon completion of the course student

- * can explain the basic concepts of speech acoustics and the acoustic theory of speech production
- * can identify and describe typical acoustic features of Finnish vowels and consonants and acoustic manifestations of prosodic phenomena
- * can describe the growth of their competence and their learning process in relation to the content of the course

Official course record: 694816P

MD00AX84 | Stomatognathic Physiology II (pathofunction)

3 ECTS | Subject not supplied | | Finnish

Person in charge: Kirsi Sipilä, Taina Kankaala, Riikka Hauru

Content

Epidemiology, etiology, diagnosis and treatment of temporomandibular disorders (TMD); examination of a patient: differential diagnosis and treatment procedures

Learning outcomes

Upon completion of the course the student will

- know the symptoms and signs of temporomandibular disorders (TMD)
- know the prevalence of TMD at population-level
- know the most common background factors of TMD
- be able to perform the clinical examination of TMD patient, set the diagnoses and do the treatment plan
- be able to perform the conservative treatment of TMD patient
- be able to do the differential diagnostics
- osaa arvioida kriittisesti eri tieteenalojen tarjoamia ratkaisuja ja näkökulmia, sekä yhdistää niitä luovasti oman alan kontekstiin

Official course record: MD00AX84

800009Y | Student tutoring

2 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Pekka Salmi

No description supplied in the collected record.

Official course record: 800009Y

KE00AG64 | Student tutoring

1-3 ECTS | Subject not supplied | General Studies | Finnish, English

Person in charge: Hennariikka Valppu-Paaso

Content

Student tutor training, planning in pairs or groups, implementation, and evaluation of student tutoring.

Learning outcomes

Student tutors represent the University of Oulu and their own degree programmes. They welcome new students and work in collaboration with the tutor teachers and education designers of their degree programmes. Student tutors guide new students into the university community by familiarizing them with university practices, study support services, opportunities for students to exert influence, student instructions, and student life. Student tutors help the students to group and to get to know each other.

Official course record: [KE00AG64](#)

MD00AY70 | Student Tutoring in Dentistry

1 ECTS | Subject not supplied | | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

The tasks of tutor in supporting the student are to:

- introduce the student to the University of Oulu, the practices of university studies, and fellow students
- provide an overview of the Degree programme in Dentistry
- inform the student about services that support studying
- familiarise the student with student life and leisure activities
- introduce the student to the university community and opportunities for student influence
- guide the student in essential study skills required in the university, including planning of studies and time management
- support the new student in taking responsibility for their own studies

Learning outcomes

Students from the upper years of the Dentistry programme, who have been formally trained by the university for this role, serve as small-group instructors, ie. tutors. Under the tutor's guidance, newly admitted students, working in groups of approximately ten, are introduced to the practices of the Degree programme in Dentistry, the Faculty of Medicine, and the University of Oulu as a whole, and, importantly, to their fellow students and to the city of Oulu. Tutoring constitutes an integral part of the official academic advising system of the University of Oulu.

Official course record: [MD00AY70](#)

MM00AT03 | Student Tutoring in Medicine

1 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Tuutorin tärkeimpiä tehtäviä ovat muun muassa:

tutustuttaa yliopistoon ja yliopisto-opiskelun käytäntöihin, sekä muihin opiskelijoihin, perehdyttää omaan tutkinto-ohjelmaan yleisellä tasolla, kertoa opiskelua tukevista palveluista, perehdyttää opiskelijaelämään ja vapaa-ajan toimintaan, perehdyttää yliopistoyhteisöön ja opiskelijan vaikutusmahdollisuuksiin, ohjata tutkinto-ohjelmassa tarvittaviin keskeisiin opiskelutaitoihin, opiskelun- ja ajankäytön suunnitteluun, ohjata uutta opiskelijaa ottamaan vastuuta omasta opiskelusta

Learning outcomes [Finnish source]

Tuutoreina toimivat saman koulutusalan ylempien vuosikurssien opiskelijat, jotka yliopisto on kouluttanut tehtävänsä. Tuutorin johdolla uudet opiskelijat tutustuvat noin 10 hengen ryhmissä omaan opiskelualan, tiedekunnan ja koko yliopiston käytäntöihin mutta ennen kaikkea opiskelukavereihin ja Ouluun. Tuutorointi on osa yliopiston virallista opinto-ohjausta.

[Official course record: MM00AT03](#)

IC00AF02 | Student tutoring, computer science

1 ECTS | Subject not supplied | Intermediate Studies |

No description supplied in the collected record.

[Official course record: IC00AF02](#)

M000AW84 | Study rotation 1

0 ECTS | Subject not supplied | Practical Training |

Person in charge: Mikko Tulppo

Content [Finnish source]

Harjoittelu.

Learning outcomes [Finnish source]

Rotaation tavoitteena on tutustua lääketieteellisen tiedekunnan tutkimusryhmien toimintaan. Rotaation aikana opiskelija osallistuu valvotusti tutkimusryhmän toimintaan ja perehtyy moniammatilliseen työskentelyyn.

[Official course record: M000AW84](#)

M000AW85 | Study rotation 2

0 ECTS | Subject not supplied | Practical Training |

Person in charge: Mikko Tulppo

Content [Finnish source]

Harjoittelu.

Learning outcomes [Finnish source]

Rotaation tavoitteena on tutustua lääketieteellisen tiedekunnan tutkimusryhmien toimintaan. Rotaation aikana opiskelija osallistuu valvotusti tutkimusryhmän toimintaan ja perehtyy moniammatilliseen työskentelyyn.

[Official course record: M000AW85](#)

407093A | Supporting comprehensive well-being

2-5 ECTS | Subject not supplied | Other Studies | Finnish, English

Person in charge: Ella Wilén, Katri Koivu

Content

The course is constructed of various themes that include independently done workshops and exercises as well as video lectures. The student completes the workshops and related assignments (2 ects) and can expand the course to 3 ects – 5 ects by, for example, writing an essay. Up to date information is found on Moodle.

Learning outcomes

The student recognizes the most central sectors of their well-being and adopts tools which they can use to support and regulate their own well-being. The student understands the communal nature of well-being and can describe how they can support the well-being of others in, for example, a study- or work environment.

[Official course record: 407093A](#)

MM00AY30 | Surgery, internal medicine and anaesthesiology and intensive care clinical practice 1

6 ECTS | Subject not supplied | |

Person in charge: Pekka Peroja

Content

Applying the theoretical content of internal medicine, surgical specialties, and emergency medicine to practical patient care through guided face-to-face teaching.

Learning outcomes

The clinical patient care practices related to the module help the student apply the theoretical knowledge from their studies to practical patient care.

- After the practical training, the student will be able to independently conduct patient interviews and clinical examinations, as well as produce patient medical record notes.
- The student will be able to understand how theoretical knowledge is transferred into practical patient care solutions and will be able to perform clinical diagnostics under guidance.
- The student will be able to perform small procedures related to patient care, such as inserting an IV cannula, removing sutures, catheterizing the bladder, and taking arterial blood samples (Astrup test), at least under supervision.
- After the training, the student will understand the importance and position of assessing the need for outpatient care and carrying out the treatment within the patient's care chain.
- After the training, the student will understand the basics of perioperative and postoperative ward care for surgical patients.
- The student will understand the fundamentals of interdisciplinary teamwork and will be able to grasp the principles of care levels and care processes.
- During the operating room week, the student will learn how to monitor vital signs and ventilate a surgical patient (laryngeal mask).
- After the operating room week, the student will understand the basics of preoperative, perioperative, and postoperative patient care, as well as the different forms of anesthesia.
- During the operating room week, the student will learn how to dress sterilely for surgery and assist with surgeries.

[Official course record: MM00AY30](#)

MM00AY31 | Surgery, internal medicine and anaesthesiology and intensive care clinical practice 2

3 ECTS | Subject not supplied | |

Person in charge: Pekka Peroja

Content

Applying the theoretical content of internal medicine, surgical specialties, and emergency medicine to practical patient care through guided face-to-face teaching.

Learning outcomes

The clinical patient care practices related to the module help the student apply the theoretical knowledge from their studies to practical patient care.

- After the practical training, the student will be able to independently conduct patient interviews and clinical examinations, as well as produce patient medical record notes.
- The student will be able to understand how theoretical knowledge is transferred into practical patient care solutions and will be able to perform clinical diagnostics under guidance.
- The student will be able to perform small procedures related to patient care, such as inserting an IV cannula, removing sutures, catheterizing the bladder, and taking arterial blood samples (Astrup test), at least under supervision.
- After the training, the student will understand the importance and position of assessing the need for outpatient care and carrying out the treatment within the patient's care chain.
- After the training, the student will understand the basics of perioperative and postoperative ward care for surgical patients.
- The student will understand the fundamentals of interdisciplinary teamwork and will be able to grasp the principles of care levels and care processes.

Official course record: [MM00AY31](#)

AY00AR50 | Swedish for Education Students, Oral Skills (OPEN UNIVERSITY)

1 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Kaisu Hoikkala, Emilia Laukkanen

No description supplied in the collected record.

Official course record: [AY00AR50](#)

AY00AR49 | Swedish for Education Students, Written Skills (OPEN UNIVERSITY)

1 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Kaisu Hoikkala, Emilia Laukkanen

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Tilannepohjaisia suullisia yksilö-, pari- ja ryhmäharjoituksia sekä pienryhmäkeskusteluja, ajankohtaisia alakohtaisia tekstejä, omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä esiintymistaidon harjoittelua.

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * osaa toimia oman alan ammatillisissa viestintätilanteissa vuorovaikutteisesti
- * ymmärtää ja käyttää kasvatustieteen alan erikoissanastoa
- * ymmärtää oman alansa tekstejä ja puhuttua kieltä ja pystyy tekemään niistä johtopäätöksiä
- * pystyy keskustelemaan ajankohtaisista ja alakohtaisista aiheista
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- * saa viestinsä perille ja tulee ymmärretyksi tavatessaan ruotsinkielisiä kollegoja
- * pystyy kehittämään kielitaitoaan itsenäisesti.

Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: [AY00AR49](#)

901071Y | Swedish for Psychology Students, Oral Skills

2 ECTS | Subject not supplied | Language and Communication Studies | Swedish

Person in charge: Terhi Ruokanen-Jaakola

No description supplied in the collected record.

Official course record: [901071Y](#)

NB00AH11 | Teaching and activities promoting biochemistry

1-10 ECTS | Subject not supplied | General Studies |

Person in charge: Mirva Saaranen

Content

This course comprises practical pedagogical training aimed at teaching and communicating science, with an emphasis on practical biochemistry classes for biochemistry (or medical students) or presentation of biochemistry subject to students in upper secondary school. The theoretical component comprises sessions with responsible laboratory assistants or staff members organizing school visits. Before each practical session, students need to go through/prepare the material that will be covered and the learning outcomes of each practical. The practical component includes practical sessions connected with agreed laboratory course or presentations for visitors etc. In all of these practical sessions the student tutors will be responsible for supervising a small group of biochemistry students or equivalent. After the practical components students will be required to present learning diary* each time and self-reflect on their teaching experience. Self-reflection will be asked only after the first practical part. Student can combine many smaller tasks to one study credit.

Learning outcomes

Upon successful completion:

- Students will learn to present their study, research topics and study program to a broader audience.
- They will learn to make presentations directed at target audience, which will enhance team and individual work skills.
- Students will enhance project management skills through coordination of presentation activities with schools and other stakeholders.
- Students will learn and practice constructive feedback giving through evaluation of practical work/homework of fellow students or school students.
- Tutor a small group of students in the lab.
- Give feedback to students in the course.

KE00BB77 | Technology as support for learning and teaching

2 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Iiris Jokela

No description supplied in the collected record.

Official course record: KE00BB77

405040Y | Technology-Enhanced Learning and work

4 ECTS | Subject not supplied | General Studies | Finnish

Person in charge: Iiris Jokela

Content

- Digital competencies in the workplace, including the key concepts and methods of digital skills, media literacy, programming, and artificial intelligence:
- Introduction to the basics of STEAM in the context of early childhood education and primary education.
- Technologies, applications, and tools that support learning, teaching, and working.
- Basic technologies, applications, and other tools for in-person, remote, and hybrid teaching.
- Designing, producing, and distributing materials to be utilized in a professional context.

Learning outcomes

Upon completing the course, the student will be able to:

- Act as a professional in their field and a lifelong learner in a digitalizing society.
- Identify and understand the digital competencies required in the workplace, including the basic concepts and phenomena of digital skills, media literacy, programming, and artificial intelligence.
- Apply the basic concepts and research findings of digital skills, media literacy, programming, and artificial intelligence in planning and executing their tasks or teaching.
- Critically evaluate and analyze technologies that support work, learning, and teaching.

Official course record: 405040Y

TO | Test course

2 ECTS | Subject not supplied | |

Learning outcomes

Test course, do not enroll.

Official course record: TO

902104Y | The Culture Passport

2 ECTS | Subject not supplied | Language and Communication Studies | English, Finnish, French, German, Arabic, Italian, Sami, Japanese, Portuguese, Hungarian, Estonian, Chinese, Russian, Spanish, Castilian, Swedish

Person in charge: Katrin Korkalainen

Content

Participation in Café Lingua meetings and possibly other events offered by the Centre for Languages and Communication Lingua or the Erasmus Student Network (ESN). Café Lingua meetings are informal get-togethers to practice different languages, meet people from other cultures, discuss contemporary or otherwise fascinating topics, do various activities, such as playing board games in foreign languages, or simply socialize.

Each language has its own table.

Popular languages: English, Finnish, Spanish, Japanese, Russian, French, German, but any language table can be formed, if there are enough speakers.

You can choose a different language table each time.

The ESN events vary across each term and depend on demand, but they may include, for example, outdoor activities or social gatherings.

Learning outcomes

Students will have gained more confidence in authentic communicative situations with native and non-native speakers of the language(s) practiced. They will have widened their vocabulary and developed their cultural interaction skills.

Official course record: 902104Y

KE00BC40 | The Pedagogy of Choral and Class Instruments

5 ECTS | Subject not supplied | | Finnish

Person in charge: Pietu Halonen

Content

Choir Pedagogy:

- * Vocal technique in choral music
- * Instrument tuning and basic playing techniques
- * Rehearsing vocal/instrumental parts
- * Aural training as part of understanding musical works
- * Practising score reading, playing, and conducting with various ensembles
- * Evaluating and developing pedagogical approaches
- * Students choose one piece that they will practise teaching and conducting

Classroom Music Pedagogy:

- * Producing a classroom music arrangement
- * Rehearsing and guiding classroom music-making

Learning outcomes

After completing the course, the student will be able to:

Choir Pedagogy:

- * Create functional classroom arrangements for different ensembles
- * Establish interactive contact with a music-making group
- * Interpret simple scores and playing charts through singing and playing
- * Teach vocal and instrumental parts to different voices
- * Understand the progression of polyphonic singing, such as canons, simple 2- and 3-part works, and the use of rhythmic in teaching
- * Utilize the pedagogical possibilities of aural training
- * Use conducting patterns for the most common time signatures
- * Guide musical expression
- * Identify repertoire suitable for a school context and apply their skills in rehearsing it
- * Apply pedagogical approaches with various ensembles, such as children's and youth choirs

Classroom Music Pedagogy:

- * Create functional classroom arrangements for different ensembles
- * Rehearse and guide a music-making student group
- * Differentiate classroom music tasks to suit the target group

Official course record: [KE00BC40](#)

DP00BG19 | The theory and practice of agentic organisations

3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Kirsi Aaltonen

Content

The course consists of an introduction seminar, six thematic seminars, and a final seminar. The six themes are:

What is artificial intelligence in organisations

Implications of AI systems and agentic organizations on organizing, work practices and well-being

Agentic systems and agent-based bots

Organisation design in the age of AI

Change management and AI transformation

Future organising and agentic organisations

The course concludes with synthesis, collective reflection, and guidance for the final assignment.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain and critically evaluate key theoretical perspectives on agentic systems and agentic organisations
- analyse how generative AI and agent-based systems reshape organising, work practices, roles, wellbeing and decision-making
- critically assess organisational practices of AI use, including human-AI collaboration
- examine AI implementation as an organisational change process
- reflect on ethical, and governance implications of agentic organizations
- analyse and discuss current research on AI and its implications for organising.

Official course record: [DP00BG19](#)

MM00AY50 | Thesis (MD)

16 ECTS | Subject not supplied | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY50](#)

MM00AY48 | Thesis, Study plan

4 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

No description supplied in the collected record.

[Official course record: MM00AY48](#)

DP00AL85 | Tissue Analysis Course

0-3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Vastuuhenkilö, Vastuuhenkilö

Content

The course covers the following topics:

Mouse as a model organism

Mouse dissection and sample collection

Sample preparation for different purposes (histology, cryo, TEM, whole mount)

Sectioning of paraffin embedded and cryo samples

Principles of common histological staining methods

Immunohistochemistry and in situ hybridization

Basic histological structures

Primary pathological processes

Introduction to pathology laboratory

Possibilities in utilizing Biobank samples in research

Automated and manual staining of histological slides

Microscopy and digitalization of slides

Basic image analysis

Introduction to QuPath and Visiopharm image analysis softwares and exercises

Learning outcomes

After the course students will know:

Mouse dissection and sample collection for biomedical research

Preparation of variety of biological samples

Basics in histological methods and image analysis

Infrastructure available at the Kontinkangas campus for tissue analysis

[Official course record: DP00AL85](#)

YK00AJ41 | Trading Partner Germany

4-5 ECTS | Subject not supplied | Language and Communication Studies |

Person in charge: Veronika Ranzenhofer

Content

The course covers general cultural, economic and political topics related to German-speaking countries, as well as various working life situations, such as job application and job interview. The course emphasizes current issues related to German-speaking countries and intercultural communication.

Learning outcomes

Upon successful completion of the course, students will be able to:

- * express different opinions on complex topics effectively and appropriately
- * participate in negotiations
- * use a variety of discussion strategies
- * give presentations in German
- * write an application and a CV in German
- * manage even in more demanding communicative situations in German.

Official course record: YK00AJ41

NY00BA73 | Tutoring for international students

1-2 ECTS | Subject not supplied | General Studies | English

Person in charge: Maria Juntunen

Content

For this study a student acts as a tutor for a group of incoming exchange students. Kummi's duties include practical help for the exchange students like delivering keys (PSOAS housing) and grouping. Kummi also introduces new international students to the studying environment.

Learning outcomes

Tutoring develops students' skills to guide, make and present presentations, work in a group, and organize tasks. It also advances planning, arrangement, and guidance abilities as well as responsibility.

Official course record: NY00BA73

MD00AY69 | Two Years of Dental Studies completed

0 ECTS | Subject not supplied | | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Completed the first two years of undergraduate dental studies.

Learning outcomes

Dentistry: Completed the first two years of undergraduate dental studies.

Official course record: MD00AY69

MM00AX45 | Urology

4 ECTS | Subject not supplied | |

Person in charge: Teija Parpala

Content

Congenital anomalies of the urinary tract.
Renal tumours and parenchymal diseases – diagnosis and treatment.
Disseminated kidney cancer treatment in special care. Catheterization of urinary bladder.
Prostatic diseases diagnosis and treatment. Hemotamponation of the urinary bladder.
The diagnosis and treatment of hematuria.
Bladder cancer diagnosis, treatment and surveillance.
Urethral diseases.
Urinary tract stone diseases and complications.
Urinary tract trauma and emergency care.
Diagnosis and treatment of urethral diseases.
Diagnosis and treatment of voiding disorders.
Evaluation of kidney function and urinary analysis.
Scrotal disease, tumours and emergency cases.
Sexual problems of the male and couple, erectile dysfunction, penile diseases.

Learning outcomes

The student recognizes and is able to raise conversation with the patient about voiding disorders in the holistic patient care.
Student recognizes treatment requirements of abnormal symptoms and findings.
The student observes and recognizes common renal and urinary tract symptoms and is able to diagnose these on the primary care level.
The student is able to treat and follow up e.g. the benign prostatic hyperplasia patient and recognizes the situations, when the patient needs to be examined and treated in specialized care.
The student understands the principles of cancers of the kidneys and urinary tract.
The student is able to follow up the urinary tract cancer patients after curative treatment on primary care.
The student is able to treat emergency situations of the urinary tract and urinary tract trauma on the first aid level in the emergency department. • Student is able to treat acute urinary retention.
Student knows the main causes, diagnosis and the treatment of acute kidney injury.
Student recognizes and is able to deal with sexual problems concerning male erections and penile deformities and diseases affecting this area.
Student recognizes and is able to deal with scrotal diseases, traumas and emergency cases.

[Official course record: MM00AX45](#)

040911S | Using animals in research - carrying out procedures

3 ECTS | Subject not supplied | Advanced Studies | Finnish

No description supplied in the collected record.

[Official course record: 040911S](#)

920013J | Utilization of Patent Databases in Research

0.5 ECTS | Other studies | Post-graduate Studies | Finnish, English

Person in charge: Maarit Jokela

Content

Basics of Patents and Utility models, How to read patent databases, Patent databases and their use.

Learning outcomes

The participant gets a good overview from principles of patenting, reading patent publications and searching patent databases.

[Official course record: 920013J](#)

HY00AR60 | Veni, vidi, didici – latinaa ja Rooman kulttuuria

5 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Marika Rauhala

Content

Essential classical Latin grammar and vocabulary, main lines of ancient Roman history and culture.

Learning outcomes

On completion of the course the student will be able to:

- * translate simple classical Latin texts into Finnish
- * analyse the syntax and morphology in simple classical prose texts
- * apply Latin grammar and key vocabulary to the translation and analysis of texts
- * explain some of the main features of ancient Roman history and culture

Official course record: [HY00AR60](#)

KE00AQ59 | Vocal pedagogy and vocalisim

5 ECTS | Subject not supplied | | Finnish

Person in charge: Nina Jokela

Content

The course explores vocal pedagogy, develops pedagogical skills for teaching singing in lower and upper secondary school contexts, practices voice use, strengthens well-being, and recognizes the importance of communal and interactive activities.

Learning outcomes

After completing the course, the student

- * can meet students in singing group teaching.
- * is familiar with the main features of research-based singing pedagogical theory and practice.
- * knows the methods of singing teaching and applies them in a school context understands.
- * and manages more deeply his or her own voice use
- * is able to support one's own well-being and professional development, act constructively in situations of uncertainty, and strengthen self-compassionate, communal and interactive activities to promote well-being.

Official course record: [KE00AQ59](#)

407069A | Volunteer Field Work with Asylum Seekers

5 ECTS | Subject not supplied | Intermediate Studies | English

Person in charge: Veli-Mikko Kauppi

Content

Theoretical part

- Basic concepts of migration studies
- Basic theoretical and practical knowledge about integration
- Legal and social frameworks for asylum seeker reception

Field practice

- Field practice in groups at a reception center
- Collaboration with reception center staff and other actors
- Implementation and evaluation of integration activities developed during the course
- Participation in civil society
- Identifying opportunities for sharing good practices

Learning outcomes

Upon completing the course, students are able to:

- * Identify and critically analyze own preconceptions about migrants and integration processes
- * Compare and evaluate migrant integration practices
- * Relate theoretical discussions on diversity and integration to practical professional contexts
- * Engage and actively participate in civil society organizations
- * Support the development of positive workplace and community practices

In addition, the course objectives include the following generic skills of the University of Oulu:

Students

- are able to promote their well-being, develop their self-management skills, build their professional identity, and maintain their own expertise in a goal-oriented manner
- are able to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of working, and promote community spirit and interaction to support well-being
- are able to work in international cooperation and take the international operating environment into account in their actions
- are able to promote constructive cooperation with people from different backgrounds, develop their language skills, and challenge their own stereotypical thinking patterns
- are able to resolve ethical issues in their own field in a justified manner and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

Official course record: 407069A

DP00BE71 | Water Data Visualization

1-3 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Elsa Culler

Content

Lecture topics will be:

- Day 1: Wilkinson's Grammar of Graphics and its application to classic data visualizations in hydrologic sciences (time-series plots, maps, and statistical plots)
- Day 2: Universal design for accessible data visualizations
- Day 3: Software tools for data visualization, illustration, composite figures, and graphical abstracts
- Day 4 and 5: Interactive Data Storytelling with fabulation, temporal ontologies, and games

Learning outcomes

ILO1: Implement classic data visualizations in hydrological sciences, using modern data sources and programming tools.

ILO2: Apply principles of graphic design, grammar of graphics, and human perception to data visualizations in hydrological sciences (including graphs, maps, composite figures, graphical abstracts, dashboards, and interactive engagement tools)

ILO3: Evaluate and select among the software options for data visualization for various applications

ILO4: Apply principles of universal design to create accessible data visualizations.

ILO5: Describe some examples of interactive data storytelling and how they can be used to engage stakeholders in research, design, planning, and fabulation

Official course record: [DP00BE71](#)

010143P | Work Experience

5 ECTS | Working Life Studies | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

The study unit can be completed in two different ways: Through previous work experience related to the student's university studies, or through work or internship during the studies. Duration of work around 135 hours.

Learning outcomes

The student is aware of their competence and able to apply it in working life, reinforcing the connection between studies and working life. The student is able to find a job/internship and capable of operating in a working environment. Additionally, the student knows how to describe their own competences, apply their major/minor studies in working life, and reflect on their own competences. The student also has capabilities that facilitate employment in various roles in their scientific field.

Official course record: [010143P](#)

010145P | Work Experience 2

1-5 ECTS | Working Life Studies | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

The study unit can be completed in two different ways: Through previous work experience related to the student's university studies, or through work or internship during the studies. Duration of work around 135 hours.

Learning outcomes

The student is aware of their competence and able to apply it in working life, reinforcing the connection between studies and working life. The student is able to find a job/internship and capable of operating in a working environment. Additionally, the student knows how to describe their own competences, apply their major/minor studies in working life, and reflect on their own competences. The student also has capabilities that facilitate employment in various roles in their scientific field.

Official course record: [010145P](#)

010141P | Working Life Skills

5 ECTS | Working Life Studies | Basic Studies | Finnish

Person in charge: Satu Selkälä

Content

Reviews of the student's own competence areas, carried out independently, verbalising these competence areas, preparing a CV and a work application, becoming familiar with different channels of searching for work. Making a portfolio.

Learning outcomes

After completion of the course, students will identify their areas of expertise and transferable skills and be able to use them in their job search. Students will be able to prepare a CV and job application and to market his/her skills also on social media channels. They can identify career opportunities and different career paths in their field of study.

Official course record: 010141P

MM00AX28 | Working life skills 1

1 ECTS | Subject not supplied | Basic Studies | Finnish

Person in charge: Antti Koskela

Content [Finnish source]

Työelämätaidot-opintojaksolla 1.-6. vuosikursseilla (pl. 4. lukuvuosi) opiskellaan niitä lääkärin työn kannalta keskeisiä geneerisiä taitoja. Työelämätaidot-opintojaksojen sisältöihin kuuluvat seuraavat aihealueet:

- ammatillinen etiikka
- kliinis-epidemiologinen päätöksenteko
- terveydenhuollon laatu ja menetelmien arviointi
- priorisointi
- monikulttuurisuuden huomioiminen potilastyössä ja yhteiskunnassa
- digitaalisten työkalujen käyttö
- tekoälyn hyödyntäminen
- työ- ja opiskeluhyvinvoinnin tukeminen
- oppimis-, opetus- ja opiskelutaidot
- valmistautuminen työelämään ja urasuunnittelu.

Ensimmäisenä lukuvuotena keskitytään etiikkaan, opiskeluhyvinvointiin ja tekoälyn hyödyntämiseen.

Learning outcomes [Finnish source]

Työelämätaidot-opintojaksojen (1.-3. ja 5.-6. lukuvuosilla) tavoitteena on oppia opiskelun ja lääkärin työn kannalta keskeisiä geneerisiä taitoja, joiden opettaminen ei sisälly muille opintojaksoille. Geneeristen taitojen osalta tavoitteena on, että opiskelija osaa tarkastella etiikan käsitettä lääkärin työn näkökulmasta, tunnistaa fyysisen, psyykkisen ja sosiaalisen hyvinvointinsa merkityksen opiskeluun liittyen, huolehtii itsestään myötätuntoisesti ja ymmärtää tekoälyn käsitteen ja sen käyttömahdollisuudet ja -rajoitteet nykyhetkessä.

Official course record: MM00AX28

MM00AX43 | Working life skills 2

1 ECTS | Subject not supplied | | Finnish

Person in charge: Antti Koskela

Content [Finnish source]

Työelämätaidot-opintojaksolla 1.-6. vuosikursseilla (pl. 4. lukuvuosi) opiskellaan niitä lääkärin työn kannalta keskeisiä geneerisiä taitoja. Työelämätaidot-opintojaksojen sisältöihin kuuluvat seuraavat aihealueet:

- ammatillinen etiikka
- kliinis-epidemiologinen päätöksenteko
- terveydenhuollon laatu ja menetelmien arviointi
- priorisointi
- monikulttuurisuuden huomioiminen potilastyössä ja yhteiskunnassa
- digitaalisten työkalujen käyttö
- tekoälyn hyödyntäminen
- työ- ja opiskeluhyvinvoinnin tukeminen
- oppimis-, opetus- ja opiskelutaidot
- valmistautuminen työelämään ja urasuunnittelu.

Toisena lukuvuotena keskitytään kliinis-epidemiologiseen päätöksentekoon ja lääkärin oppimis-, opetus- ja opiskelutaitoihin.

Learning outcomes [Finnish source]

Työelämätaidot-opintojaksojen (1.-3. ja 5.-6. lukuvuosilla) tavoitteena on oppia opiskelun ja lääkärin työn kannalta keskeisiä geneerisiä taitoja, joiden opettaminen ei sisälly muille opintojaksoille.

Yleisten geneeristen taitojen osalta tavoitteena on, että opiskelija ymmärtää kliinis-epidemiologiseen päätöksenteon konseptin, rajoitteet tutkimustulosten tulkinnassa ja ymmärtää, miksi opetustaidot ovat tärkeitä sekä opiskelussa että tulevaisuudessa lääkärin töissä.

Official course record: [MM00AX43](#)

MM00AX58 | Working life skills 3

1 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Työelämätaidot-opintojaksolla 1.-6. vuosikursseilla (pl. 4. lukuvuosi) opiskellaan niitä lääkärin työn kannalta keskeisiä geneerisiä taitoja. Työelämätaidot-opintojaksojen sisältöihin kuuluvat seuraavat aihealueet:

- ammatillinen etiikka
- kliinis-epidemiologinen päätöksenteko
- terveydenhuollon laatu ja menetelmien arviointi
- priorisointi
- monikulttuurisuuden huomioiminen potilastyössä ja yhteiskunnassa
- digitaalisten työkalujen käyttö
- tekoälyn hyödyntäminen
- työ- ja opiskeluhyvinvoinnin tukeminen
- oppimis-, opetus- ja opiskelutaidot
- valmistautuminen työelämään ja urasuunnittelu.

Kolmantena lukuvuotena keskitytään etiikkaan, monikulttuurisuuteen potilastyössä ja yhteiskunnassa, tekoälyyn potilastyössä ja kliinis-epidemiologiseen päätöksentekoon.

Learning outcomes [Finnish source]

Työelämätaidot-opintojaksojen (1.-3. ja 5.-6. lukuvuosilla) tavoitteena on oppia opiskelun ja lääkärin työn kannalta keskeisiä geneerisiä taitoja, joiden opettaminen ei sisälly muille opintojaksoille.

Official course record: [MM00AX58](#)

MM00AY45 | Working life skills 4

1 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Työelämätaidot-opintojaksolla 1.-6. vuosikursseilla (pl. 4. lukuvuosi) opiskellaan niitä lääkärin työn kannalta keskeisiä geneerisiä taitoja. Työelämätaidot-opintojaksojen sisältöihin kuuluvat seuraavat aihealueet:

- ammatillinen etiikka
- kliinis-epidemiologinen päätöksenteko
- terveydenhuollon laatu ja menetelmien arviointi
- priorisointi
- monikulttuurisuuden huomioiminen potilastyössä ja yhteiskunnassa
- digitaalisten työkalujen käyttö
- tekoälyn hyödyntäminen
- työ- ja opiskeluhuvinvoinnin tukeminen
- oppimis-, opetus- ja opiskelutaidot
- valmistautuminen työelämään ja urasuunnittelu.

Viidentenä lukuvuotena keskitytään digitaalisiin työkaluihin lääkärin työssä, priorisointiin, terveydenhuollon laatuun, terveydenhuollon menetelmien arviointiin ja lääkärin oppimis-, opetus- ja opiskelutaitoihin.

Learning outcomes [Finnish source]

Työelämätaidot-opintojaksojen (1.-3. ja 5.-6. lukuvuosilla) tavoitteena on oppia opiskelun ja lääkärin työn kannalta keskeisiä geneerisiä taitoja, joiden opettaminen ei sisälly muille opintojaksoille.

Official course record: [MM00AY45](#)

MM00AY64 | Working life skills 5

1 ECTS | Subject not supplied | | Finnish

Person in charge: Juha Auvinen

Content [Finnish source]

Työelämätaidot-opintojaksolla 1.-6. vuosikursseilla (pl. 4. lukuvuosi) opiskellaan niitä lääkärin työn kannalta keskeisiä geneerisiä taitoja. Työelämätaidot-opintojaksojen sisältöihin kuuluvat seuraavat aihealueet:

- ammatillinen etiikka
- kliinis-epidemiologinen päätöksenteko
- terveydenhuollon laatu ja menetelmien arviointi
- priorisointi
- monikulttuurisuuden huomioiminen potilastyössä ja yhteiskunnassa
- digitaalisten työkalujen käyttö
- tekoälyn hyödyntäminen
- työ- ja opiskeluhuvinvoinnin tukeminen
- oppimis-, opetus- ja opiskelutaidot
- valmistautuminen työelämään ja urasuunnittelu.

Kuudentena lukuvuotena keskitytään tekoälyn hyödyntämiseen potilastyössä, etiikkaan, työhyvinvointiin, valmistautumiseen työelämään ja urasuunnitteluun.

Learning outcomes [Finnish source]

Työelämätaidot-opintojaksojen (1.-3. ja 5.-6. lukuvuosilla) tavoitteena on oppia opiskelun ja lääkärin työn kannalta keskeisiä geneerisiä taitoja, joiden opettaminen ei sisälly muille opintojaksoille.

Official course record: [MM00AY64](#)

419120J | Writing a PhD summary (compilation thesis)

1 ECTS | Subject not supplied | Post-graduate Studies | English

Person in charge: Pauliina Rautio

Content

The course consists of four monthly meetings. The meetings consist of reading and familiarizing oneself with compilation theses in different fields of education and learning and discussing about best practices for writing one's own compilation.

Learning outcomes

After the completion of the course, the participants are able to:

- plan and construct an initial plan for the structure and contents of their compilation part
- identify and describe the function and style of the compilation as an academic text
- evaluate existing compilation texts from different fields of study and relate these to own work.

These learning outcomes include the development of the following generic skills: analytical, critical and creative thinking; multidisciplinary and interdisciplinary collaboration; and communication, interaction and digital skills.

[Official course record: 419120J](#)

DP00AU27 | Writing academic manuscripts for high-quality publications

2-5 ECTS | Subject not supplied | | English

Person in charge: vastuuopettaja

Content

Part I

Day 1: Introduction to the academic writing process

Day 2: Storyline & structure of the manuscript

Day 3: Journal selection & ethics

Course Assignment / Homework for Part II

Part II

Day 4: Writing about your findings

Day 5: Review process and finalizing your manuscript

Learning outcomes

Upon completing the course, the student is able to:

- Understand and master the process for writing a high-quality journal publication on own research discipline/topic
- Apply the gained knowledge for improving own writing skills
- Have in-depth knowledge of the publication requirements in high-quality journals
- Understand the journal review process and central review criteria
- Adapt the required skills in developing own academic writing

[Official course record: DP00AU27](#)

920033J | Writing Research Grant Proposals

1 ECTS | Other studies | Post-graduate Studies | English

Person in charge: Jani Haapakoski

Content

Part 1: How to write a good proposal 1/2 (writing funding applications)
Part 2: How to write a good proposal 2/2 (CV building for funding applications)
Part 3: Funding sources
Part 4: Researcher's career
Part 5: Impact and project design

Learning outcomes

Upon completion of the course, the student will be able to:

- * describe his/her own research in a way that is optimal for research grant proposals
- * recognize what information and skills are required to write a research grant proposal
- * plan for applying for funding as part of graduate studies
- * list key funding agencies
- * recognize what impact and end users his/her research has

The learning outcomes of the course contribute to the following common generic skills of the university (examples in parentheses):

- Well-being and self-development skills (building a career in research)
- International and multicultural skills (building international cooperation in research)
- Sustainability, responsibility, and ethics skills (Impact in research projects)
- Multidisciplinary and interdisciplinary skills (forming multidisciplinary research consortia)
- Communication, interaction, and digital skills (preparing funding applications and describing the impact of research)

[Official course record: 920033J](#)

NP00BC10 | Zero Carbon Energy Technologies in the Arctic

5 ECTS | Subject not supplied | Advanced Studies | English

Person in charge: Jussi Malila, Joula Siponen

Content

- Sustainable development and dimensions of sustainability in the Arctic context; climate change, biodiversity loss, geopolitics and other grand challenges in the Arctic, need for the green transition.
- Renewable energy sources in the Arctic context: hydro, wind, wave and solar power: basic technologies, challenges and solutions.
- Challenges and solutions for fossil-free energy storage and transportation.
- Simultaneous effects of climate change and green transition on Arctic ecosystems and communities, especially on indigenous peoples.

Learning outcomes

After the course, the student

- understands the need for a green transition and the reduction of greenhouse gas emissions from (fossil) fuel production
- understands the special role and vulnerability of the Arctic region in the Anthropocene
- recognizes the interdependencies between the dimensions of sustainability (social, ecological, economic, cultural) and is able to assess the impacts of climate change, biodiversity loss, geopolitics and the green transition on the sustainable development of the Arctic
- is able to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in the Arctic context, including addressing ethical questions with sound reasoning as well as justifying their actions ethically, taking into account different backgrounds, power relations, values, and environments
- is able to apply creative thinking and problem solving in analysing arguments and identifying potential solutions to energy-related issues in the Arctic
- is able to apply analytical and critical thinking when considering the synergistic and antagonistic effects of climate change and the green transition on Arctic ecosystems and communities
- is able to work in international cooperation and take the international operating environment into account in their activities

Official course record: NP00BC10

Humanities & society

700633P | 20th Century Philosophical Trends

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

The 20th century philosophical trends

Learning outcomes

The student knows central philosophical trends of the 20th century or immerses oneself in one of them,

[Official course record: 700633P](#)

AY700633P | 20th Century Philosophical Trends (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content [Finnish source]

1900-luvun filosofiset suuntaukset.

Learning outcomes [Finnish source]

Opiskelijaa tuntee 1900-luvun keskeisiä filosofisia suuntauksia tai syventyy johonkin niistä tarkemmin.

[Official course record: AY700633P](#)

694612A | A Supplementary Literature Examination

5 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Anna Suorsa

Learning outcomes

Upon completion of the course, students will be able to describe the conceptual premises, research questions, choices of methods and important results of research related to selected fields in Information Studies.

[Official course record: 694612A](#)

687184A | A Survey of a Chosen Method of Literary Studies

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Introduction to the basics of a chosen method of literary studies

Learning outcomes

The course works as an introduction to the basics of a chosen method of literary studies. Upon completion of the course, students will be able to name the most central concepts of a method of literary studies of their choosing, and to explain their basic meanings. They will also be able to describe in outline the different stages of development of the chosen method and the classics of the field.

[Official course record: 687184A](#)

HA00BB45 | Advanced Field Studies

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Janne Ikäheimo

Content

The course consists of archaeological fieldwork and related practical tasks. Content may include participation in excavations, surveys, archaeological field schools, or work related to archaeological projects. Emphasis is placed on hands-on learning, documentation, and reflection on fieldwork practices.

Learning outcomes

After completing the course, the student will know key practices of archaeological fieldwork and be able to apply theoretical knowledge in practical contexts. The student will develop skills in documentation, observation, and reporting, and understand the role of fieldwork in archaeological research and heritage management.

Official course record: [HA00BB45](#)

700629A | Advanced Studies in History of Philosophy

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

History of Philosophy

Learning outcomes

The student studies the history of philosophy comprehensively or immerses oneself in one problem, thinker or period in the history of philosophy

Official course record: [700629A](#)

AY700629A | Advanced Studies in History of Philosophy (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content [Finnish source]

Filosofian historia

Learning outcomes [Finnish source]

Opiskelijaa perehtyy kokonaisvaltaisesti filosofian historiaan tai syvällisesti johonkin filosofian historian ongelmaan, ajatteliijaan tai aikakauteen.

Official course record: [AY700629A](#)

HA00AF90 | Advanced Studies of Theories and Methods I

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

Clarification of the conceptual, theoretical and methodological field of problems and familiarisation with the research of the central methodological and theoretical framework relevant for the theses; deepening the theoretical and methodological knowledge of a specialised field and skills to apply it to practice through literature and group and independent exercises; exercises thematically connected to research done in the programme.

Learning outcomes

Upon completion of the course, students will be able to analyse and interpret different types of research data and employ approaches relevant to their Master's Thesis. Students will be able to identify scientific theories and apply them to their research.

[Official course record: HA00AF90](#)

HA00AF91 | Advanced Studies of Theories and Methods II

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

Clarification of the conceptual, theoretical and methodological field of problems and familiarisation with the research of the central methodological and theoretical framework relevant for the theses; deepening the theoretical and methodological knowledge of a specialised field and skills to apply it to practice through literature and group and independent exercises; exercises thematically connected to research done in the programme.

Learning outcomes

Upon completion of the course, students will be able to analyse and interpret different types of research data and employ approaches relevant to their Master's Thesis. Students will be able to identify scientific theories and apply them to their research.

[Official course record: HA00AF91](#)

700159S | Advanced Studies on Methodology

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

Study of the methodology of research in the History of Science and Ideas.

Learning outcomes

Students will be able to identify the theoretical and methodological premises of the History of Science and Ideas, and apply them in their own theses. Students will also be able to select and apply special methods needed to research history.

[Official course record: 700159S](#)

HT00AS54 | Advanced study of the approaches of philosophy of history

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content [Finnish source]

Klassisen historianfilosofian oppijärjestelmien ja väitteiden luonne sekä filosofinen argumentaatio

Learning outcomes

After the course the student

- has deepened her or his understand of analytical philosophy of history, speculative philosophy of history. or one of the contemporary approaches in philosophy of history
- is able to evaluate philosophical contributions of the chose topic
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

[Official course record: HT00AS54](#)

687182A | Aesthetics, Poetics and Rhetoric

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Introduction to the basics and history of aesthetics, poetics and rhetoric

Learning outcomes

The course works as an introduction to aesthetics, poetics and rhetoric and their respective histories. Upon completion of the course, students will be able to name the most central concepts of aesthetics, poetics and rhetoric and explain their basic meanings. Students will also be able to describe the most essential contexts in the history of aesthetics, poetics and rhetoric and to apply various research trends to the classics of the field.

[Official course record: 687182A](#)

HC00BB06 | Analysis of research materials

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Taina Kinnunen

Content

The teaching covers organizing, thematizing, and categorizing ethnographic data. The course introduces the basics of content analysis, discourse analysis, narrative analysis, and phenomenological analysis. In group exercises, students practice the analysis process of existing material, from coding to writing the results, from various analytical perspectives.

Learning outcomes

Upon completing the course, the student has basic skills in applying various analysis methods, particularly in handling ethnographic data. They are able to reflect on and evaluate the characteristics of different types of data in various research settings. The student recognizes the suitability of different analysis methods for solving different research problems. They are prepared to carry out analysis in a guided group setting. The student has developed skills in logical and critical thinking and in the abilities required for teamwork.

[Official course record: HC00BB06](#)

HC00BB07 | Anthropology of mobility

5 ECTS | Cultural Anthropology | Intermediate Studies |

Person in charge: Bruno Lefort

Content

The course introduces anthropology's take on mobility from multiple perspectives and discusses contemporary debates on the topic. Combining lectures, seminars, and project work, the course introduces how anthropology can contribute to the current developments in mobility studies and migration research, especially through reflections on power dynamics and the complex spatial and temporal dimensions that are set in motion by migratory movements. The completion of the course includes a short research project to offer a view on an ethnographic research practice that can address the multi-dimensional questions raised by mobility processes.

Learning outcomes

By the end of the course, students will be able to: Demonstrate a critical understanding of key theoretical and conceptual frameworks in the anthropology of mobility, including major ethical and political issues related to migration and mobility, such as (post)colonialism, racism, or social marginalization; Analyze diverse mobility experiences using both primary sources (e.g., ethnographic observations, life histories, digital media) and secondary academic literature; Apply key anthropological concepts to independently analyze empirical case studies related to the topic of migration.

Official course record: HC00BB07

687241A | Anthropology of Religion

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Sami Lakomäki

Content

Central concepts of the field (e.g. religion, ritual) and the varying forms of religion and similar kinds of beliefs systems. The basics of cultural anthropological study of religions and similar belief systems and the main research traditions of this field.

Learning outcomes

Students will be familiar with the basics of the anthropological study of religions and similar belief systems. They will be able to analyze critically the concept of religion and to recognize how the phenomena classified as "religions" are linked to other aspects of social life. In terms of generic skills, students will learn to recognize the significance of analytical, critical, and creative thinking in scientific, professional, and ethical contexts. They will be able to assess critically the knowledge produced in their field and to apply this knowledge to solve complex problems. Additionally, they will learn about cultural diversity, as well as to recognize problems related to cultural and ethnic stereotypes. Students will, furthermore, learn to compare and recognize similarities and differences between their own field and related fields and to apply interdisciplinary perspectives in their work.

Official course record: 687241A

687255A | Anthropology of Sustainability

5 ECTS | Cultural Anthropology | Intermediate Studies | English

Person in charge: Anna Krzywoszynska

Content

The course offers an introduction to the history, current trends and central concepts relating to the field of anthropological sustainability studies. The course offers tools to critically assess the notions of sustainability and development, among others. The course explores how global sustainability goals are realised locally and how ethnographic research in particular has been used to give insights into the meanings, beliefs, and values that relate to the idea of sustainability.

Learning outcomes

A student will be able to describe the main trends of anthropological sustainability research and analyse the prevailing perceptions of environment, sustainability and development present in society. The student understands the role and objectives of anthropological sustainability research as part of a broader, multidisciplinary study of sustainability. He/she is able to explain what the notion of cultural sustainability stands for and understands the notion in relation to the other three dimensions of sustainability (ecological, social, economic).

[Official course record: 687255A](#)

700150A | Antiquity and the Middle Ages

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The History of Science and Ideas of antiquity and the Middle Ages

Learning outcomes

Students will be able to define the special characteristics of the history of science and ideas in antiquity and the Middle Ages. They will also be able to contextualise the ideological world of antiquity and the Middle Ages within their historical and social backgrounds.

[Official course record: 700150A](#)

687244A | Applied Anthropology

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Tiina Suopajärvi

Content

Application of anthropological methods and theories in practice in collaboration with different disciplines and/or partners outside the university. A project is planned and implemented in the course, the results of which are also presented to an audience outside the university where possible.

Learning outcomes

Students will be able to apply anthropological methods and anthropological knowledge in different areas of society and explain how anthropological research can be used in solving and developing various problems. Areas of application may include design anthropology, cultural heritage, environmental planning, and mobility issues.

Generic skills: 1) analytical, critical and creative thinking skills; 2) well-being and self-development skills; 3) international and multicultural skills; 4) sustainability, responsibility and ethics skills; 5) multidisciplinary and interdisciplinary skills; 6) communication, interaction and digital skills

[Official course record: 687244A](#)

687379S | Archaeology and Society

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Jari Okkonen

Content

The relationship between the discipline of archaeology and the profession of archaeology to society.

Learning outcomes

After completing the course, students will be able to:

- examine cultural heritage expertise and the profession of archaeology in relation to the contemporary society,
- identify the breadth of their expertise and opportunities in relation to different career paths.

Official course record: [6873795](#)

700321A | Arctic History

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Matti Salo

Content

Familiarisation with the phenomena of the historical developments of northern and arctic regions from early history to contemporary history.

Learning outcomes

Upon completion of the course, students will be able to define and explain the significant developments of the history and the special multicultural characteristics of northern and arctic regions, as well as make connections between the aforementioned developments and a broader international development.

Official course record: [700321A](#)

417235A | Arctic perspectives to gender and globalization

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Ilmari Leppihalme

Content

- Globalization, gender, northern and Arctic sociocultural contexts and societies
- Gender and gender awareness in the context of Arctic and global issues
- Impacts of globalization at Global North and Global South
- Indigenous knowledge production and gender studies knowledge production
- Socially sustainable future

Learning outcomes

The person who has completed the course is able to:

- *define the concept of globalization and identify globalization as a phenomenon which have also gendered connections and consequences
- *identify, how globalization is linked with and how it affects Arctic cultures and societies, and the lives of people living in the Arctic
- *identify sociocultural issues and questions related to Arctic sociocultural contexts, as well as aspects related to the natural environment
- *analyze similarities and differences regarding sociocultural impacts globalization may have on Global North and Global South, and to the lives of people living in these areas.
- *recognize the meaning of indigenous knowledge and it's production and analyze how it is linked with knowledge production in gender research
- *analyze aspects related to socially sustainable future in Arctic areas, especially from the gender perspective

Official course record: [417235A](#)

HH00AJ10 | Art as Cultural Heritage

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

The role of art, artists and art institutions in representing, communicating and preserving cultural heritage and building a future heritage. Art in society and culture.

Learning outcomes

After completing the course, students will be able to:

- describe the role of art institutions and artistic fields in culture.
- assess the links and ethical dimensions of art, identities, and cultural heritage.
- define the role of art in preserving, transmitting and shaping cultural heritage.

Generic skills: identifying and developing expertise, critical thinking, interaction and communication, ability to work in a virtual learning environment, time management.

[Official course record: HH00AJ10](#)

HK00AK62 | Audiovisual Expression and Analysis

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the stylistic characteristics of film.

Learning outcomes

Upon completion of this course, the students will be able to identify and define the key techniques of audiovisual cinematic expression and explain and demonstrate how they function in a film.

[Official course record: HK00AK62](#)

HK00AK69 | Audiovisual Narrative and Analysis

5 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the key characteristics of audiovisual narration.

Learning outcomes

Upon completion of the course, the students will be able to explain and distinguish the key characteristics of audiovisual narration.

[Official course record: HK00AK69](#)

HK00BA93 | Audiovisual Narrative and Analysis

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the key characteristics of audiovisual narration. ALTERNATIVE CODE.

Learning outcomes

Upon completion of the course, the students will be able to explain and distinguish the key characteristics of audiovisual narration. ALTERNATIVE CODE.

687325A | BA Thesis and Seminar (Archaeology)

10 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Janne Ikäheimo

Content

A seminar introducing the fundamental questions and themes of archaeological research. Preparation of a written BA thesis on a narrowly defined topic. Analysis of archaeological data and practical research. Writing, presenting, and orally defending BA thesis.

Learning outcomes

The student is able to carry out a small-scale research project under supervision. They can set objectives and plan the means to achieve them in collaboration with a supervisor. They are able to schedule tasks and implement the project according to the plan.

The student can acquire archaeologically relevant source material for the task and examine it analytically. They are able to distinguish essential information from non-essential material.

The student is familiar with the basics of academic writing, can express themselves clearly, and produce fluent academic prose. They are able to write reports based on a limited dataset and to document the research process and results.

The student is able to work in a group and present their work orally. They can evaluate the work of others and give and receive constructive feedback. They are able to use the terminology of their discipline in scholarly discussion.

The student has developed critical and analytical thinking and practiced formulating research questions and problem-solving skills. They have become familiar with at least one method in their field and understand the basic principles of disciplinary ethics. They have the readiness to continue on to the master's thesis (pro gradu -tutkielma).

Official course record: 687325A

687212A | Bachelor's Seminar (Cultural Anthropology)

10 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Tiina Suopajarvi

Content

Searching for research literature, collecting research materials, scholarly writing and discussion, analysing and interpreting the research materials

Learning outcomes

The student can carry out a small research project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Generic skills: 1) analytical, critical and creative thinking skills; 2) well-being and self-development skills; 3) sustainability, responsibility and ethics skills; 4) communication, interaction and digital skills

Official course record: [687212A](#)

700423A | Bachelor's Seminar and Thesis (History)

10 ECTS | History | Intermediate Studies | Finnish

Person in charge: Markku Hokkanen, Seija Jalagin, Matti Salo

Content

The course will result in a completed, independently designed Bachelor's Thesis from the field of History (approx. 20 pages). Students will go through all stages of historical research: formulating a research question and theme; searching and using source material and literature; structuring, editing, and presenting a thesis; and acting as an opponent for another student.

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [700423A](#)

HI00AJ55 | Bachelor's Seminar and Thesis (Information Studies)

10 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Noora Hirvonen

Content

Perceiving the research questions of their research and searching for literature for their research. Skills of information seeking and management. Completing a research project and presenting it in the seminar, acting as an opponent. Research ethics and scholarly writing.

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [HI00AJ55](#)

700226A | Bachelor's Seminar and Thesis

10 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

The course will result in a completed, independently designed Bachelor's Thesis from the field of the History of Science and Ideas (approx. 20 pages).

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [700226A](#)

417140P | Basic course in gender studies

5 ECTS | Gender Studies | Basic Studies | Finnish

Person in charge: Ilmari Leppihalme

Content

- The historical formation of feminist movements and gender studies.
- Central concepts.
- Recent theories and discussions in gender studies.
- Critical and gender responsible social analysis.

Learning outcomes

A person who has completed the course has demonstrated a capability to:

- understand the history of the feminist movement and how gender studies as a discipline has developed
- name and define basic concepts of gender studies
- identify current theoretical trends in gender studies and basic issues related these discussions
- critically analyze societal developments and phenomena related to gender issues

Official course record: [417140P](#)

414067P | Basic course in sociology

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

- * Classic, modern, and current traditions and trends in sociological research, their central concepts and theories, along with current applications
- * The nature of knowledge in social sciences
- * The nature and place of sociology among the sciences in general

Learning outcomes

Having completed the course, the student knows:

- * the connections and differences between the field of sociological research and sociology and other disciplines of science,
- * how to distinguish between research trends in sociology and
- * how to use the most important concepts of sociology.

[Official course record: 414067P](#)

AY414067P | Basic course in sociology (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

- Classic, modern, and current traditions and trends in sociological research, their central concepts and theories, along with current applications
- The nature of knowledge in social sciences
- The nature and place of sociology among the sciences in general

Learning outcomes

Having completed the course, the student knows

- the connections and differences between the field of sociological research and sociology and other disciplines of science,
- how to distinguish between research trends in sociology and
- to use the most important concepts of sociology.

[Official course record: AY414067P](#)

687517P | Basics of Media Education

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the key research questions and methods of media and film education.

Learning outcomes

Upon completion of the course, the students will be able to define and explain the key research questions and methods of media and/or film education.

[Official course record: 687517P](#)

AY687517P | Basics of Media Education (OPEN UNI)

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the key research questions and methods of media and/or film education.

Learning outcomes

Upon completion of the course, students will be able to define and explain the key research questions and methods of media and/or film education.

HT00AQ95 | Basics of the History of Science and Ideas

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

Basic concepts and methods of the history of sciences and ideas, historical perspectives on the history of ideas and scientific activity.

Learning outcomes

The student recognizes and is able to conceptualize the special nature of the history of sciences and ideas and familiarizes themselves with the central methods and theoretical foundations of the subject. The student can also conduct their own analysis of source material and research literature in the history of sciences and ideas.

Official course record: HT00AQ95

687361P | Biology and Culture

5 ECTS | Archaeology, Cultural Anthropology | Basic Studies | Finnish

Person in charge: Heli Maijanen

Content

Biocultural evolution of humans; relationship of biology, culture, and the environment; biological and cultural variation and adaptation; cultural construction of concepts of health, sickness, gender, and embodiment

Learning outcomes

Students will be able to utilise basic concepts of biological anthropology and explain the evolution of the human species and its geographical variations. Students will be able to define interaction and relations between biology, culture and the environment. Students will also be able to explain the variations of the human species. Students will be able to define the concepts concerning health, gender, age, embodiment, and human being as culturally and socially constructed.

Generic skills: analytical, critical and creative thinking skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

Official course record: 687361P

AY687361P | Biology and Culture (OPEN UNI)

5 ECTS | Archaeology | Basic Studies | Finnish

Person in charge: Heli Maijanen

Content

Biocultural evolution of humans; relationship of biology, culture, and the environment; biological and cultural variation and adaptation; cultural construction of concepts of health, sickness, gender, and embodiment

Learning outcomes

Students will be able to utilise basic concepts of biological anthropology and explain the evolution of the human species and its geographical variations. Students will be able to define interaction and relations between biology, culture and the environment. Students will also be able to explain the variations of the human species. Students will be able to define the concepts concerning health, gender, age, embodiment, and human being as culturally and socially constructed.

Generic skills: analytical, critical and creative thinking skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

KE00AR80 | Body and Culture

5 ECTS | Gender Studies | Basic Studies | Finnish

Person in charge: Ilmari Leppihalme

Content

Basic knowledge of concepts, questions, and theorization related to embodiment studies from a gender studies perspective.

Learning outcomes

Upon completing the course, the student:

- 1) Understands how the body is shaped within cultural, historical, and political contexts – and recognizes that the body is also a central site of resistance, agency, and change.
- 2) Is familiar with key feminist and gender studies approaches to the study of embodiment.
- 3) Can identify and analyze the normative frameworks that regulate embodiment.
- 4) Understands the interconnections between body, gender, and sexuality, as well as other intersecting factors related to embodiment.

Official course record: KE00AR80

HV00AW88 | Changing media culture as research subject

5 ECTS | Science Communication | Advanced Studies | Finnish

Person in charge: Maija Kallinen

Content

Developments of media culture

Learning outcomes

Upon completion of the course, students will be able to explain the media and media culture as social, economic and technological phenomena. They will be able to explain the historical changes and current trends in media and journalism. Students will be able to interpret communication cases in terms of entertainment theory, the theory of public sphere, freedom of speech, social responsibility in communication, and the power of the media.

Official course record: HV00AW88

AY00AY89 | Changing media culture as research subject (OPEN UNI)

5 ECTS | Science Communication | Advanced Studies | Finnish

Person in charge: Maija Kallinen

Content

Various schools within the communication research and their historical developments.

Learning outcomes

Upon completion of the course, students will be able to explain the historical development of communication research, as well as analyse and compare various schools and approaches within it.

Official course record: AY00AY89

414082P | Changing World - Sociological approaches

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

Globalisation as a focus of sociological research

Learning outcomes

Having completed the course, the student

- * has familiarized her/himself with important current research on globalization
- * can describe the main concepts, the theoretical tradition and current research on this area.
- * knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: 414082P](#)

AY414082P | Changing World - Sociological approaches (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

The course introduces the student to current research on globalisation.

Learning outcomes

The student has familiarised her/himself with important current research on globalisation. Having completed the course, the student has a mastery of the main concepts, the theoretical tradition and current research on this area. The student knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: AY414082P](#)

414091A | Citizenship in Motion

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Anu Alanko

Content

Current research on citizenship

Learning outcomes

Having completed the course, the student

- * knows how to approach citizenship critically from the sociological and cultural perspective
- * can describe the main concepts, the theoretical tradition and current research related to the field
- * knows how to use this knowledge in research and practical working duties and how to participate in societal discussion concerning the issue.

[Official course record: 414091A](#)

687166S | Classics of Literature 2

5-10 ECTS | Literature | Advanced Studies | Finnish

Content

A reading list of literature and possibly research related to it.

Learning outcomes

Deepening the knowledge of certain genre, period, style, thematic field, or such.

After completing, the student has a deeper knowledge of a certain literary phenomena related to the MA thesis (in progress).

[Official course record: 6871665](#)

920011J | Communicating Science to the Media, General Public and Decision Makers

1 ECTS | Science Communication | Post-graduate Studies | Finnish, English

Person in charge: Satu Räsänen

Content

How to communicate your research to policy makers and the public? What communication skills every scientist should have?

Learning outcomes

Upon the complementation of the course, the student will be able to

- * understand the meaning of science communication in the society
- * recognize the different means and possibilities to communicate about his/her own research

[Official course record: 920011J](#)

HK00AK64 | Creative Medias, Gender, Society

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

The approaches of Cultural Studies and Media Studies, with a concentration on Film theories and methods.

Learning outcomes

Upon completion of this course, the students will be able to identify and specify different features and dimensions of audiovisual media culture and describe the sociocultural factors influencing these. The students will learn to apply their critical interpretation to observing cultural representations in audiovisual media for instance in relation to gender and agency.

[Official course record: HK00AK64](#)

AY00AL96 | Creative Medias, Gender, Society (OPEN UNI)

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

The approaches of Cultural Studies and Media Studies, with a concentration on Film theories and methods.

Learning outcomes

Upon completion of this course, the students will be able to identify and specify different features and dimensions of audiovisual media culture and describe the sociocultural factors influencing these. The students will learn to apply their critical interpretation to observing cultural representations in audiovisual media for instance in relation to gender and agency.

[Official course record: AY00AL96](#)

HK00AK65 | Creative Process

5 ECTS | Multimedial Creative Narration | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Kurssi tutustuttaa opiskelijan luovaan prosessiin etenkin luovan kirjoittamisen ja käsikirjoittamisen näkökulmasta eri medioissa. Opiskelija perehtyy käytännön harjoitusten kautta luovan kerronnan eri osa-alueisiin ideoinnista editointiin.

Learning outcomes [Finnish source]

Osaa hahmottaa luovaa prosessia ja soveltaa sitä omaan luovaan työhönsä.

Osaa määritellä luovan kirjoittamisen peruskäsitteet ja soveltaa niitä luovaan kirjoittamiseen ja käsikirjoittamiseen eri medioihin.

Osaa niin antaa kuin ottaa vastaan palautetta luovasta työstä.

Official course record: [HK00AK65](#)

HK00AL21 | Creative Processes in Practice

5 ECTS | Film Studies | Intermediate Studies | Finnish

No description supplied in the collected record.

Official course record: [HK00AL21](#)

HK00AK74 | Creative Project or Internship

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Learning outcomes

Internship: Upon completion of this course, the students will recognize the key phenomena of creative fields and acknowledge how to implement related tasks. They are able to apply the skills they have learnt during their studies to practical work and are competent to reflect on their own work.

Creative Project: The students will familiarize with creative thinking by the means of making an artistic project. The course will add up to essential skills of committing to creativity, such as taking initiative, self-expression, courage and open-mindedness. At the same time, during the course the students will practice handling different emotional states related to the realization of the creative process.

Official course record: [HK00AK74](#)

HK00AK66 | Creative prose fiction

15 ECTS | Literature | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Proosamuotoisen kertovan tekstin suunnittelu, kirjoittaminen, analysointi ja editoiminen.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija: -tuntee proosakerronnan keskeiset keinot ja osaa soveltaa niitä omaan kirjoittamiseensa -tunnistaa proosakerronnan eri lajityyppejä hahmottaa niiden merkityksen tekstin rakenteessa ja tyyliässä -osaa analysoida proosatekstiä kerronnan näkökulmasta ja antaa siitä rakentavaa palautetta -osaa hyödyntää omasta proosakerronnastaan saamaansa palautetta -osaa lukea omaa tekstiään kriittisesti ja editoida sitä tehokkaasti

[Official course record: HK00AK66](#)

HK00AL24 | Creative prose fiction (intermediate studies)

15 ECTS | Multimedial Creative Narration | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Proosamuotoisen kertovan tekstin suunnittelu, kirjoittaminen, analysointi ja editoiminen.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija: -tuntee proosakerronnan keskeiset keinot ja osaa soveltaa niitä omaan kirjoittamiseensa -tunnistaa proosakerronnan eri lajityyppejä hahmottaa niiden merkityksen tekstin rakenteessa ja tyyliässä -osaa analysoida proosatekstiä kerronnan näkökulmasta ja antaa siitä rakentavaa palautetta -osaa hyödyntää omasta proosakerronnastaan saamaansa palautetta -osaa lukea omaa tekstiään kriittisesti ja editoida sitä tehokkaasti

[Official course record: HK00AL24](#)

687181A | Creative Writing

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

Introduction to the theory and practice of creative writing

Learning outcomes

Upon completion of the course, students will be able to apply different forms, strategies and practices of creative writing to individual or group writing. They will also be able to recognise different registers of writing.

[Official course record: 687181A](#)

700322A | Cultural and International Interaction

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Henry Oinas-Kukkonen

Content

The major aspects of the history of cultural and international interaction

Learning outcomes

Upon completion of the course, students will be able to define and explain the significant developments, and phenomena of cultural and international interaction, as well as the factors that have affected them

[Official course record: 700322A](#)

HH00AJ12 | Cultural Heritage Research

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

Themes, theories and research topics that cut across the disciplines of cultural heritage studies. The links between research, knowledge and practice in heritage work.

Learning outcomes

After completing the course, students will be able to:

- identify cross-disciplinary themes related to cultural heritage research.
- identify current research issues in the field.
- assess the theoretical background and objectives of cultural heritage thinking.
- explain the links between research, research knowledge and working life.

Generic skills: analytical thinking and argumentation, oral and written communication, developing professional competence.

Official course record: [HH00AJ12](#)

687125S | Cultural Work in Practice

5-10 ECTS | Literature | Advanced Studies | Finnish

Content

Work practice and/or a career course preparing students for employment

Learning outcomes

Upon completion of the course, students will be able to describe and compare the employment opportunities of their field. With the help of career guidance, students will be able to assess their preparedness for employment and their professional abilities.

Official course record: [687125S](#)

414086A | Culture and everyday life

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Tuija Huuki

Content

Current research on culture and everyday life.

Learning outcomes

Having completed the course, the student

- * knows how to approach culture and everyday life critically from the sociological and cultural perspective
- * can describe the main concepts, the theoretical tradition and current research related to the field
- * knows how to use this knowledge in research and practical working duties and how to participate in societal discussion concerning the issue.

Official course record: [414086A](#)

700686A | Culture, Environment and Ethics

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes

Students will be able to describe the key issues of philosophy and ethics concerning the environment and culture in Finland.

[Official course record: 700686A](#)

AY700686A | Culture, Environment and Ethics (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes

Students will be able to describe the key issues of philosophy and ethics concerning the environment and culture in Finland.

[Official course record: AY700686A](#)

417146P | Current discussions in gender studies

5 ECTS | Gender Studies | Basic Studies | Finnish, English

Person in charge: Ilmari Leppihalme

Content

Essay/written assignment or guest lecturers, who shed light to current discussions and trends in gender studies.

Learning outcomes

Upon completing the course, the student is familiar with and able to analyze the most recent key questions in gender studies through new theoretical perspectives.

[Official course record: 417146P](#)

694697S | Current topics in information studies

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Heidi Enwald

Content

Themes selected based on current research in information studies. The societal relevance of information studies research. Information studies in relation to other disciplines. Familiarisation with the principles of sustainable development and reflection on the chosen research topic in the light of the principles of sustainable development.

Learning outcomes

The student is able to examine current social phenomena from the perspective of information studies. He/she is able to justify the choice of research topic and reflect on the social significance of the research. The student is able to reflect on the chosen research theme in light of the principles of sustainable development.

[Official course record: 694697S](#)

687365A | Data Acquisition and Information Processing in Archaeology I 5 ECTS cr

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Jari Okkonen

Content

Identifying archaeological sites in field, collecting spatial information on archaeological sites and learning the basics of archaeological cultural heritage legislation

Learning outcomes

After completing the course, students will be able to:

- identify different archaeological sites,
- know the conventions of archaeological survey, search for sites, documentation and reporting and is able to apply them independently,
- assess the significance of field observations for land use and to identify the legislative dimensions of archaeological cultural heritage conservation,
- use of a total station, RTK-GPS device and terrestrial laser scanner in conducting archaeological documentation and collecting geographical information,
- process the field data and have basic knowledge of the use of data archives relevant to fieldwork.

[Official course record: 687365A](#)

687366A | Data Acquisition and Information Processing in Archaeology II

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Preparations for an intrusive fieldwork, recovery of research material, documentation in the field, field work and the use, maintenance and storage of documentation equipment; treatment, identification and listing the findings and samples; organising, working on and archiving the documentation produced during fieldwork; producing a report and other related documents and utilising other data acquired through fieldwork.

Learning outcomes

Upon completion of the course, students will be able to explain the significance of intrusive fieldwork methods as part of archaeological data acquisition. Students will be able to use and apply research and documentation methods at the archaeological sites as well as research tools to acquiring new archaeological data. Students will be able to organise, classify and archive the material and documentation from the research in the field and prepare a related report. Additionally, students will learn to use data from earlier fieldwork as well as archival and library sources. Students will familiarise themselves with critical and creative thinking, problem identification, recognition of personal strengths and weaknesses, tolerance of uncertainty and discomfort, and assessing the environmental and ecological impacts of one's own field.

[Official course record: 687366A](#)

KE00AH00 | Decolonial and intersectional feminism

5 ECTS | Gender Studies | Intermediate Studies | English

Person in charge: Ilmari Leppihalme

Content

This course explores and evaluates traditional, experimental, and decolonial methods of learning as we encounter themes of intersectional, transnational and decolonial feminisms. Course assignments will offer students a variety of options designed to allow participants choice in how to participate in the learning process, including standard academic readings, readings from contemporary culture, film and documentary viewings, reflective practice, arts-based practice, embodied practice, and activities in collaborative creation.

Learning outcomes

Upon completion of the course students will understand relationships and divergences in currents of global feminist thought, and will be able to critically analyse and reflect upon normative whiteness, coloniality, and gendered social structures.

Official course record: [KE00AH00](#)

694698A | Development of Library and Information Services

5 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Anna Suorsa

Content

Library and information services, assessment and development, multiprofessional collaboration, service design

Learning outcomes

The student is able to analyze key areas of library and information services development and understands the significance of development. The student gains skills to improve their own work and future services in multidisciplinary collaboration. The student is able to plan the activities and services of a knowledge-based organization in various contexts, taking into account issues related to ethicality, sustainability, and diversity.

Official course record: [694698A](#)

HK00AS71 | Digital animation

5 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

During this course, the students will familiarize with the emergence and origins, and the current role and impact of digital animation in global, intermedial film culture. The course topics touch upon for instance the development of the internet, digital games, advertisements, special effects and music videos.

Learning outcomes

Upon completion of this course, the students will be able to distinguish and analyze the position, key developments, and transitions of digital animation in the changing film industry.

Official course record: [HK00AS71](#)

414083P | Education and equality

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

Education and equality as a focus of sociological research

Learning outcomes

Having completed the course, the student

- * has familiarized her/himself with important current research on educational sociology and education as a social phenomenon.
- * can describe the main concepts, the theoretical tradition and current research on the area.
- * knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: 414083P](#)

AY414083P | Education and equality (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

Education and equality as a focus of sociological research

Learning outcomes

Having completed the course, the student

- has familiarized her/himself with important current research on educational sociology and education as a social phenomenon.
- can describe the main concepts, the theoretical tradition and current research on the area.
- knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: AY414083P](#)

687385S | Elective Studies

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Heli Maijanen

Content

The course can be completed by participating in the offered implementations. The content of the implementation may vary from year to year. Students may also complete the course by attending guest lectures, dissertation defenses, seminars, or similar events, and writing a learning diary or a comparable written assignment based on them. For the lecture portfolio, the student must attend guest lectures or dissertation defenses for a total of 24 hours. If you wish to complete the course as a lecture portfolio or otherwise independently, please contact the responsible teacher.

Learning outcomes

The student demonstrates the ability to reference a range of scholarly research within their discipline, articulate their own viewpoints, and critically position their perspective in relation to existing literature. Furthermore, they are capable of reflecting on information based on their prior knowledge. Generic skills: analytical, critical and creative thinking skills, communication, interaction and digital skills.

[Official course record: 687385S](#)

HK00BA89 | Elokuvakritiikki

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarizing with the role and history of film criticism in film culture through supplementary reading, practical work.

Learning outcomes

Upon completing the course, the students will have mastered the fundamentals of film criticism: they will understand the role and history of film criticism within film culture; recognize and apply film terminology and key concepts of film analysis learned in previous courses when writing reviews; and be able to adapt the style and presentation of criticism according to the publication platform and its requirements. The students will not only be able to analyze the audiovisual elements and context of films but also produce well-reasoned film criticism suited to the target audience, applying referencing principles and/or selected theoretical frameworks. The students will be capable of arguing for the significance and quality of films either in writing or orally. They will appreciate the diversity of films, understand their cultural and ideological dimensions, and learn to view criticism as part of a broader cultural conversation rather than merely a personal opinion.

[Official course record: HK00BA89](#)

700323A | Environment and Health

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Ritva Kylli

Content

The main developments and research questions of the History of Environments and Health

Learning outcomes

Upon completion of the course, students will be able to define the main developments of the history of environments and health, as well as the research questions and views shared by the histories of environments and health

[Official course record: 700323A](#)

700678P | Equality and Justice

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Heini Hakosalo

Content

Central concepts and main perspectives in gender studies

Learning outcomes

After completing the course, students will recognise the fundamental concepts in Gender Studies and will be able to display an understanding of their meaning. Students will also be able to explain the societal significance of the themes of equality.

[Official course record: 700678P](#)

AY700678P | Equality and Justice (OPEN UNI)

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Heini Hakosalo

Content

Central concepts and main perspectives in gender studies

Learning outcomes

After completing the course, students will recognise the fundamental concepts in Gender Studies and will be able to display an understanding of their meaning. Students will also be able to explain the societal significance of the themes of equality.

Official course record: [AY700678P](#)

700630A | Ethics and Political Philosophy

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Susanne Uusitalo

Content

Ethics, moral philosophy and political philosophy

Learning outcomes

The student understands central views and theories in ethics, moral philosophy and political philosophy

Official course record: [700630A](#)

AY700630A | Ethics and Political Philosophy (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Susanne Uusitalo

Content [Finnish source]

Etiikka, moraali- ja yhteiskuntafilosofia

Learning outcomes [Finnish source]

Opiskelija perehtyy keskeisiin etiikan, moraali- ja yhteiskuntafilosofian suuntauksiin ja teorioihin.

Official course record: [AY700630A](#)

HT00AS53 | Ethics of History

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

key ethical concepts, arguments and perspective of history writing

Learning outcomes

After the course the student

- understands the ethical relevance of history writing
- understand how and why history writing is political and value-laden
- knows how ethical question emerged in theoretical discussions about historiography
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

Official course record: [HT00AS53](#)

HC00AU93 | Ethnographic Specialization I

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Tiina Suopajarvi

Content

Cultural anthropological case studies of the subject related to the Master's thesis. The connection between the case studies and one's thesis topic can be based on, for example, the shared geographical location or the similarities in the researched phenomena, methodology or terminology.

Learning outcomes

The student is able to explain and analyze ethnography related to the topic of their Master's thesis. After completing the course, the student sees the connections and differences between their thesis topic and the related anthropological research.

Generic skills: analytical, critical and creative thinking skills

[Official course record: HC00AU93](#)

HC00AU94 | Ethnographic Specialization II

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Tiina Suopajärvi

Content

Cultural anthropological case studies of the subject related to the Master's thesis. The connection between the case studies and one's thesis topic can be based on, for example, the shared geographical location or the similarities in the researched phenomena, methodology or terminology.

Learning outcomes

The student is able to explain and analyze ethnography related to the topic of their Master's thesis. After completing the course, the student sees the connections and differences between their thesis topic and the related anthropological research.

Generic skills: analytical, critical and creative thinking skills

[Official course record: HC00AU94](#)

694693A | Evaluation and organization of information contents

5 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Heidi Enwald

Content

Documentation and types of publication. Producing, evaluating and organising information content and documents. Information retrieval systems. Content description and cataloguing. The role of artificial intelligence in information organisation.

Learning outcomes

The student recognizes the objectives and practices of evaluating and organizing information content and documents in the formation of various collections and is able to apply them systematically. The student is able to critically evaluate how vocabularies and ontologies reflect social values and conceptions of knowledge, and what kind of effects these have on the organization and availability of information.

[Official course record: 694693A](#)

HI00AQ55 | Expertise, practices and ethics in information professions

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Noora Hirvonen

Content

The nature and societal significance of and key areas of expertise in information professions. Professional ethics and values. Practices and policies of information work.

Learning outcomes

After completing the course, students are able to describe the nature and societal importance of information professionals' work. They recognize practices relevant to information work and are able to evaluate factors that influence them, such as information policy, professional ethics and values that guide the work. The students know how to reflect on their expertise and developing professional identity. They are able to argue their viewpoints and participate constructively in discussions, taking other participants' perspectives into account.

Official course record: [HI00AQ55](#)

417230A | Feminist classics

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Ilmari Leppihalme

Content

Historical/political core contents in feminist/gender responsible thinking.

Learning outcomes

The course introduces students to the history of feminist thought and its classic texts from the eighteenth century to the present day. It examines key feminist questions and concepts from different historical periods and situates them within their historical contexts. Students learn to identify major traditions, continuities, and ruptures in feminist thought, as well as to assess the significance of classic texts from a contemporary perspective.

Official course record: [417230A](#)

KE00AR81 | Feminist Knowledges

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Suvi Pihkala

Content

Epistemological and methodological discussions in feminist knowledge production:

- * gender responsibility and critical knowledge production
- * methodological challenges and solutions in feminist research
- * ethical challenges concerning research
- * power and reflexivity in research

Learning outcomes

This course explores feminist research methods and theoretical discussions in feminist knowledge making. Through concise introductory video lectures by guest lecturers and assigned readings, you will explore various methodological traditions and contemplate what defines methods and methodologies as feminist.

Upon completion of the course, the student will be able to:

- * describe and analyze feminist epistemological and methodological discussions
- * analyze and reflect knowledge critically
- * understand ethical challenges concerning feminist research
- * identify challenges related to power and develop a reflexive approach to knowledge

417231A | Feminist science and technology studies

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Suvi Pihkala

Content

Core contents of the course are:

- * feminist science and technology studies as a field
- * gender in the practices and processes of science and technology
- * feminist contributions in understanding contemporary ecological, digital and technoscientific phenomena
- * contemporary issue and topics in feminist science and technology studies

Learning outcomes

The course familiarizes students to feminist contributions in the field of feminist science and technology studies. It offers gender responsible perspectives to the ways science, technology and society reconfigure one another, opens critical perspectives into the ways gender is part of these processes and explores feminist contributions to understanding contemporary ecological, digital and scientific phenomena.

Upon completing the course, student is able to:

- * recognize feminist science and technology studies as a field and describe its central approaches, questions and contributions
- * analyze gender in the practices and processes of science and technology
- * give examples and critically reflect the ways science, technology and society reconfigure one another and the challenges this involves.

Official course record: 417231A

687171P | Fiction 1

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

The course focuses on literary analysis and interpretation by delving into Finnish classics of modern literature (mostly narrative fiction), on which brief text analysis exercises are written and discussed. Writing an essay using the tools of literary analysis.

Learning outcomes

Among the aims of this course is for students to gain an understanding of the classic works of Finnish literature, and to practise close reading and interpretation of literature, i.e. the application of the concepts of literary analysis to practice. Upon completion of the course, students will be able to analyse and evaluate literary art through writing and discussions, closely read texts (primarily fiction) with the application of basic concepts of the study of literature, as well as give and receive feedback. They will be able to analyse the structural and thematic aspects as well as the main contextual tenets of Finnish fiction.

Official course record: 687171P

AY687171P | Fiction 1 (OPEN UNI)

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

The course focuses on literary analysis and interpretation by delving into Finnish classics of modern literature (mostly narrative fiction), on which brief text analysis exercises are written and discussed. Writing an essay using the tools of literary analysis.

Learning outcomes

Among the aims of this course is for students to gain an understanding of the classic works of Finnish literature, and to practise close reading and interpretation of literature, i.e. the application of the concepts of literary analysis to practice. Upon completion of the course, students will be able to analyse and evaluate literary art through writing and discussions, closely read texts (primarily fiction) with the application of basic concepts of the study of literature, as well as give and receive feedback. They will be able to analyse the structural and thematic aspects as well as the main contextual tenets of Finnish fiction.

[Official course record: AY687171P](#)

687172P | Fiction 2

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Jussi Ojajärvi, Nina Työlähti

Content

The course focuses on the analysis and interpretation of literature by studying the classic works of modern literature (narrative fiction as well as poetry and drama). A number of short research texts considering those works will also be studied. The taught course involves a written analysis, which should be an interpretative text using tools of literary analysis and should resemble a short article (with references) rather than essay. In the assignment, students should utilise the above-mentioned research texts. The assignment will be prepared during the course.

Learning outcomes

The course aims to deepen the students' knowledge of classic literary works and to further improve their skills in literary analysis. It also gives practical knowledge on the methodological possibilities of literary research. Upon completing the course, students will be more familiar with classic literary works and their main features. They will also be able to demonstrate skills in analysing the structures of narrative fiction, poetry and drama. They will be able to consider which methods of analysis and interpretation of literary texts can be applied to each case.

[Official course record: 687172P](#)

AY687172P | Fiction 2 (OPEN UNI)

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

The course focuses on the analysis and interpretation of literature by studying the classic works of modern literature (narrative fiction as well as poetry and drama). A number of short research texts considering those works will also be studied. The practicum involves a written assignment, which should be an interpretative text bearing more resemblance to an article than an essay. In the assignment, students should utilise the above-mentioned research texts. The assignment will be prepared during the practicum.

Learning outcomes

The course aims to deepen the students' knowledge of classic literary works and to further improve their skills in literary analysis. It also gives practical knowledge on the methodological possibilities of literary research. Upon completing the course, students will be more familiar with classic literary works and their main features. They will also be able to demonstrate skills in analysing the structures of narrative fiction, poetry and drama. They will be able to consider which methods of analysis and interpretation of literary texts can be applied to each case.

[Official course record: AY687172P](#)

700682A | Focus Areas in Ethics

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Specialisation in a specific field of ethics

Learning outcomes

The student will have a capacity to philosophically analyse central problems in ethics.

[Official course record: 700682A](#)

AY700682A | Focus Areas in Ethics (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Study of ethical perspectives in the contexts of particular special fields in Ethics

Learning outcomes

Students will be able to philosophically analyse the central contemporary problem areas in practical ethics.

[Official course record: AY700682A](#)

700324A | Focus Areas of History and International Studies

5 ECTS | History | Intermediate Studies | Finnish

Content

A focus area of history; more detailed contents and conduct to be agreed upon with the teacher responsible. The course can also include international studies completed abroad as an exchange student, or a lecture portfolio, or a course on old scripts.

Focus areas/teachers responsible:

- History of Baltic / Kari Alenius
- History of Ethnic Relations / Kari Alenius
- Social and Cultural History of War / Tiina Kinnunen
- Gender History / Tiina Kinnunen
- Local Environmental History / Esa Ruuskanen
- Global Environmental History / Esa Ruuskanen
- History of Childhood / Marianne Junila
- Health History / Ritva Kylli
- History of international relations / Henry Oinas-Kukkonen
- History of Information and Communication Systems / Henry Oinas-Kukkonen
- Food History / Ritva Kylli
- Agricultural History / Matti Salo
- History of Finnish Universities and Science / Matti Salo
- Japanese History / Juha Saunavaara
- Globalisation, Cultural Interaction and Images / Seija Jalagin
- History Of The Ancient World / Timo Sironen
- Ancient Religions / Marika Rauhala
- Northern History / Matti Enbuske
- Settlement History / Matti Enbuske

Learning outcomes

Upon completion of the course, students will have deepened their knowledge of a focus area of history, and they will be able to apply the research knowledge relating to a topic of their choosing in their Bachelor's Thesis.

Official course record: 700324A

HH00AJ71 | Focus Areas of History and International Studies I

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Kari Alenius

Content

A focus area of history; more detailed contents and conduct to be agreed upon with the teacher responsible. The course can also include international studies completed abroad as an exchange student, or a lecture portfolio, or a course on old scripts. Focus areas/teachers responsible:

- History of the Baltic region/ Kari Alenius
- History of Ethnic Relations / Kari Alenius
- Social and Cultural History of War / Tiina Kinnunen
- Gender History / Tiina Kinnunen
- Local Environmental History / Esa Ruuskanen
- Global Environmental History / Esa Ruuskanen
- History of Childhood / Marianne Junila
- Health History / Ritva Kylli
- History of international relations / Henry Oinas-Kukkonen
- History of Information and Communication Systems / Henry Oinas-Kukkonen
- Food History /Ritva Kylli
- Agricultural History / Matti Salo
- History of Finnish Universities and Science / Matti Salo
- Globalisation, Cultural Interaction and Images / Seija Jalagin
- History Of The Ancient World / Timo Sironen
- Ancient Religions / Marika Rauhala
- Northern History / Matti Enbuske
- Settlement History / Matti Enbuske

Learning outcomes

Upon completion of the course, students will have deepened their knowledge of a focus area of history, and they will be able to apply the research knowledge relating to a topic of their choosing in their Bachelor's Thesis.

Official course record: [HH00AJ71](#)

HH00AJ72 | Focus Areas of History and International Studies II

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Kari Alenius

Content

A focus area of history; more detailed contents and conduct to be agreed upon with the teacher responsible. The course can also include international studies completed abroad as an exchange student, or a lecture portfolio, or a course on old scripts. Focus areas/teachers responsible:

- History of the Baltic region / Kari Alenius
- History of Ethnic Relations / Kari Alenius
- Social and Cultural History of War / Tiina Kinnunen
- Gender History / Tiina Kinnunen
- Local Environmental History / Esa Ruuskanen
- Global Environmental History / Esa Ruuskanen
- History of Childhood / Marianne Junila
- Health History / Ritva Kylli
- History of international relations / Henry Oinas-Kukkonen
- History of Information and Communication Systems / Henry Oinas-Kukkonen
- Food History / Ritva Kylli
- Agricultural History / Matti Salo
- History of Finnish Universities and Science / Matti Salo
- Globalisation, Cultural Interaction and Images / Seija Jalagin
- History Of The Ancient World / Timo Sironen
- Ancient Religions / Marika Rauhala
- Northern History / Matti Enbuske
- Settlement History / Matti Enbuske

Learning outcomes

Upon completion of the course, students will have deepened their knowledge of a focus area of history, and they will be able to apply the research knowledge relating to a topic of their choosing in their Bachelor's Thesis.

Official course record: [HH00AJ72](#)

700123P | From Ancient Civilisations to the Early Modern Period

5 ECTS | History | Basic Studies | Finnish

Person in charge: Matti Enbuske

Content

The course will present the main developments from the High Cultures to the French Revolution. Finnish history will be introduced as a part of the development of Western Europe.

Learning outcomes

Upon completion of the course, students will be able to identify and compare the political, economic, and cultural aspects of different cultures, as well as to perceive the main development trends of the pre-modern era. Students will be able to view Finland's integration to the Western European cultural circle.

After completing the course, the student is able to make analytical conclusions, examine materials critically and identify the special characteristics of different societies. The student is also able to identify ethical questions and perspectives related to different situations

Official course record: [700123P](#)

AY700123P | From Ancient Civilisations to the Early Modern Period (OPEN UNI)

5 ECTS | History | Basic Studies | Finnish

Person in charge: Matti Enbuske

Content

Do you want to learn about the past world? This course is designed for everyone who wants to understand the political, economic, and cultural features of Western civilization from ancient cultures to the end of the 18th century. You will also learn how Finnish history is connected to the development of Europe. Join us and broaden your perspective on world history and cultural diversity!

Learning outcomes

Upon completion of the course, students will be able to identify and compare the political, economic, and cultural aspects of different cultures, as well as to perceive the main development trends of the pre-modern era. Students will be able to view Finland's integration to the Western European cultural circle.

After completing the course, the student is able to make analytical conclusions, examine materials critically and identify the special characteristics of different societies. The student is also able to identify ethical questions and perspectives related to different situations.

Official course record: [AY700123P](#)

AY00AN04 | From the ancient Near East to the early modern Europe (OPEN UNI)

2 ECTS | History | Basic Studies | Finnish

Person in charge: Matti Enbuske

Content [Finnish source]

- Opintojaksolla perehdytään keskeisiin historian linjoihin Lähi-idän korkeakulttuureista aina Euroopan varhaismoderniin aikaan saakka.
- Suomen historiaa tarkastellaan osana läntisen Euroopan kehitystä.
- Tutustuminen tieteellisen ja poliittisen ajattelun historiaan antiikista varhaismoderniin aikaan.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- kykenee tunnistamaan ja vertailemaan eri kulttuuripiirien poliittisia, taloudellisia ja kulttuurisia piirteitä
- osaa hahmottaa antiikin, keskiajan ja varhaismodernin aikakauden suuria kehityslinjoja
- kykenee näkemään Suomen kiinnittymisen Euroopan läntiseen kulttuuripiiriin

Official course record: [AY00AN04](#)

687193P | Game Design and Writing

15 ECTS | Multimedial Creative Narration | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Pelin suunnittelu, kirjoittaminen, analysointi ja kehittäminen.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija:

- tuntee pelisuunnittelun ja -käsikirjoittamisen keskeiset keinot ja työkalut sekä osaa soveltaa niitä omaan pelisuunniteluunsa.
- tunnistaa pelien eri lajityyppejä hahmottaa niiden merkityksen suunnittelussa
- osaa analysoida pelejä eri näkökulmista
- osaa antaa rakentavaa palautetta muiden peleistä niiden eri suunnitteluvaiheissa
- osaa hyödyntää omasta pelisuunnittelustaan saamaansa palautetta
- osaa tarkastella omaa pelisuunnitteluaan kriittisesti ja kehittää sitä

Official course record: [687193P](#)

HK00AK68 | Game Design and Writing (Intermediate Studies)

15 ECTS | Multimedial Creative Narration | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Pelin suunnittelu, kirjoittaminen, analysointi ja kehittäminen.

Learning outcomes [Finnish source]

- tuntee pelisuunnittelun ja -käsikirjoittamisen keskeiset keinot ja työkalut sekä osaa soveltaa niitä omaan pelisuunniteluunsa.
- tunnistaa pelien eri lajityyppejä hahmottaa niiden merkityksen suunnittelussa
- osaa analysoida pelejä eri näkökulmista
- osaa antaa rakentavaa palautetta muiden peleistä niiden eri suunnitteluvaiheissa
- osaa hyödyntää omasta pelisuunnittelustaan saamaansa palautetta
- osaa tarkastella omaa pelisuunnitteluaan kriittisesti ja kehittää sitä

Official course record: [HK00AK68](#)

700684A | Gender and Society

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The history of gender and sexual minorities in Finland.

Learning outcomes

Students will be able to describe the construction of gender identities and will be able to conceptualise how sexual identities are constructed in society.

Official course record: [700684A](#)

AY700684A | Gender and Society (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The history of gender and sexual minorities in Finland.

Learning outcomes

Students will be able to describe the construction of femininity and masculinity and will be able to conceptualise how sexual identities are constructed in society.

Official course record: [AY700684A](#)

417144P | Gender equality as a diverse phenomenon

5 ECTS | Gender Studies | Basic Studies | Finnish, English

Person in charge: Mervi Heikkinen

Content

- central concepts and theories of gender equality and diversity
- gender equality and diversity at education, labor market, leisure and other spheres of everyday life
- gender equality and diversity in decision-making, politics and gender mainstreaming
- gender equality and diversity laws, regulations and recommendations on local, national and international levels
- UN Sustainable Development Goals that course connects SDG 4, 5, 10 and 17.

Learning outcomes

Upon completion of the course, the student will be able to:

- define concepts and theories of gender equality and central research trends in it
- acknowledge research and research results of the area
- recognize and analyze the impacts and connections of equality as related to individual life span as well as with a broader social, societal and global phenomena in a gender-responsible manner
- reflect the knowledge learned from the course at a practical level (e.g. promotion of non-violence and gender equality and diversity)

Official course record: [417144P](#)

417234A | Gender studies research seminar

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Ilmari Leppihalme

Content

The research seminar supports students in applying feminist and gender studies perspective in research processes. Students develop gender studies themes, theories and methodological starting points in the context of their own thesis or small-scale studies. The course is underpinned by intersectional and gender responsible approach as we all feminist reflections on methodologies and ethics. The contents of thesis/studies depend on students interests and can relate to, for example, everyday environments, school, early education or peer relationships.

Learning outcomes

Having completed the course, the student

- * knows how to apply knowledge gained on gender studies and feminist methodologies in writing research
- * is able to produce academic research text.

Official course record: [417234A](#)

687180A | Gender, Class and Multiculturalism

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Jussi Ojajärvi, Kasimir Sandbacka

Content

The course offers a deeper insight into literary and cultural research concerning gender and sexuality, class and capitalism, or ethnicity and nationality. For exam or independent work option, students have to choose one of those areas.

Learning outcomes

The course works as an introduction to the themes of gender, class and ethnicity in literature and culture. Upon completion of the course, students will be able to define and critically evaluate different socio-cultural categories, including gender and sexuality; class; "race", ethnicity and nationality. They will be able to apply literature to these questions and will have knowledge of the history and current state of the traditional theories concerned with these themes (i.e. feminist literary research, Marxist theory and postcolonialism).

417233A | Gendered violence

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Suvi Pihkala

Content

- * Multidisciplinary research on violence from a gender perspective.
- * Multidisciplinary research on violence from a gender perspective.
- * Basic concepts of gender-based violence, the prevalence of the phenomenon, its different manifestations and its possible accumulation in the course of human life in different areas of life.
- * International agreements and multidisciplinary approaches to detect and prevent violence in different settings.

Learning outcomes

When completed the course the student can:

- * Define the basic concepts of gender-based violence, taking into account the dimensions of othering.
- * Identify factors that predispose them to different forms of gender-based violence at different stages of life.
- * Identify and analyze the effects of gender-based violence on the individual's life course, but also as a wider social and global phenomenon.
- * Reflect on their own actions in terms of preventing violence, developing equality and promoting equality.

Official course record: 417233A

HK00AK70 | Genre and Adaptation

5 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the characteristics of film genres and/or the characteristics of adaptation and their research.

Learning outcomes

Upon completion of the course, students will be able to identify and examine the characteristics of different types of film (genre) and/or analyze adaptation processes, as well as evaluate how these concepts can be applied to research.

Official course record: HK00AK70

HK00BA92 | Genre and Adaptation

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the characteristics of film genres and/or the characteristics of adaptation and their research. ALTERNATIVE CODE.

Learning outcomes

Upon completion of the course, students will be able to identify and examine the characteristics of different types of film (genre) and/or analyze adaptation processes, as well as evaluate how these concepts can be applied to research. ALTERNATIVE CODE.

Official course record: HK00BA92

HT00BB20 | Global history of science and knowledge

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

The Global History of Science and Knowledge examines the creation, movement and transformation of scientific and other knowledge in different cultures around the world. It combines the traditional history of science with broader questions about the production of knowledge, power, globalisation, cultural contacts and forms of knowledge. While the history of traditional science often focuses on the natural sciences and European development, the history of knowledge instead emphasizes the formation of knowledge, the processes of producing knowledge, and the relationships between different types of knowledge. The global approach asks why certain forms of knowledge were considered valuable while others were not, and how colonialism affected the dynamic circulation and selection of knowledge. Scientific and technical innovations and, for example, medical and cartographic data are examined as part of extensive exchange networks in which the information was transformed along the way.

Learning outcomes

After completing the course, the student

- is able to critically evaluate knowledge, understand its formation and is able to apply this to the solution of complex questions.
- recognises how knowledge moves between cultures and how different knowledge traditions affect the development of science.
- is able to examine the formation of science and knowledge from the perspective of ethical and responsibility issues – especially with regard to the colonial circulation of knowledge and the structures of power.
- is able to act and think interdisciplinarily – the global history of knowledge combines history, anthropology, and the sociology of science and knowledge, for example.
- is able to structure and present complex knowledge clearly.

[Official course record: HT00BB20](#)

700681P | Global Issues and Nationalism

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Kalle Kananoja

Content

Introduction to global problems and proposed solutions that represent various contexts of the history of ideas

Learning outcomes

After completing the course, students will know central global issues and discussions as well as suggested solutions about them. Students will also be knowledgeable about the history of and research about nationalism.

[Official course record: 700681P](#)

AY700681P | Global Issues and Nationalism (OPEN UNI)

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Kalle Kananoja

Content

Introduction to global problems and proposed solutions that represent various contexts of the history of ideas

Learning outcomes

After completing the course, students will know central global issues and discussions as well as suggested solutions about them. Students will also be knowledgeable about the history of and research about nationalism.

Official course record: [AY700681P](#)

700340S | History as a Profession

10 ECTS | History | Advanced Studies | Finnish

Person in charge: Matti Mäntylä

Content [Finnish source]

Työelämävalmiuksia parantavat opinnot ja/tai harjoittelu

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tunnistaa historiatieteen ja historiatiedon yhteiskunnallisen merkityksen ja osaa kansantajuistaa, elävöittää ja havainnollistaa historiallista tietoa ja tutkimusta erilaisia esittämisen ja median muotoja hyväksi käyttäen. Ohjatussa työelämäharjoittelussa opiskelija kykenee hankkimaan itselleen harjoittelupaikan, pystyy toimimaan työyhteisössä, soveltamaan historia-alan taitoja ja tietoja työelämässä sekä refleктоimaan omaa työelämäosaamistaan.

Opintojakso tukee Oulun yliopiston geneeristen taitojen osaamistavoitteita kehittämällä opiskelijan kriittistä ajattelua ja tiedon arviointikykyä, vuorovaikutus- ja viestintäosaamista sekä digitaalisia valmiuksia. Lisäksi opintojakso vahvistaa opiskelijan itseohjautuvuutta, urasuunnittelutaitoja ja valmiuksia toimia muuttuvissa ja monialaisissa työelämäympäristöissä.

Official course record: [700340S](#)

HK00AK61 | History of Creative Medias I

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with the general film history and/or the general history of media or the history of animation.

Learning outcomes

Upon completion of this course, the students will be able to describe the main developments in the history of film, and/or the developments in the general media history or the developments in the history of animation.

Official course record: [HK00AK61](#)

HK00AK71 | History of Creative Medias II

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Broadening the understanding of film history obtained in the basic level studies.

Learning outcomes

Upon completion of this course, the students will be able to describe the characteristics and developments of various focus areas in film history. The students will also be able to recognize the different contexts in film history and distinguish aesthetic, technological, economic, and social phenomena related to them. Additionally, the focus is on the relationship between film and historical research.

[Official course record: HK00AK71](#)

HC00BB08 | History of Cultural Anthropological Theory

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Sami Lakomäki

Content

Schools of thought and central theories of cultural anthropology and their philosophical backgrounds.

Learning outcomes

Students will be familiar with the main currents of the history of theory in cultural anthropology from the Enlightenment to the present and will be able to describe the central features and philosophical foundations of the field's main theoretical traditions. In addition, they will understand the role of theory in research, as well as how theories, methods, and research topics are interconnected. In terms of generic skills, students will be able to recognize and describe the role of critical, analytical, and creative thinking in scientific research, as well as to evaluate critically the knowledge produced in cultural anthropology. Furthermore, they will be able to discuss cultural anthropological scholarship in a clear and analytical fashion.

[Official course record: HC00BB08](#)

706026S | History of Historiography

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Tiina Kinnunen

Content [Finnish source]

Perehtyminen historiantkirjoituksen ja -tutkimuksen historian globaaleihin ja pohjoismaisiin päälinjoihin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on perehtynyt historiantkirjoituksen ja -tutkimuksen päälinjoihin varhaisvaiheista nykyaikaan sekä kykenee hahmottamaan eri vaiheiden keskeiset piirteet ja paradigmamuutokset. Suomalaisen historiantkirjoituksen opiskelija osaa nähdä osana laajempaa pohjoismaista kokonaisuutta.

[Official course record: 706026S](#)

687173A | History of Literature 4: Finland

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

A course in the history of Finnish literature.

Learning outcomes

Upon completion of the course, students will have deepened their knowledge on the history of Finnish literature. They will be able to better analyse and interpret the classics of Finnish literature in their literary and historical contexts.

HT00AM59 | History of medicine and health

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Heini Hakosalo

Content

The course discusses different cultures of healing, both healing practices and the theoretical concepts and conceptions that underlie them, over several centuries. History of diseases is also represented. Diseases, healing and medical thinking is discussed in historical and cultural context.

Learning outcomes

The course introduces the student to the field of the history of medicine and health, which covers, apart from Western medical history, also other healing cultures and conceptions of health and disease. The course also provides the student with a preliminary view on the specific methods and sources of history of medicine and health.

Official course record: HT00AM59

700163S | History of Philosophy

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

Familiarisation with the history of Western philosophy

Learning outcomes

Students will be able to describe the developments in the history of philosophical thought and explain the central questions of the history of Western philosophy.

Official course record: 700163S

700157A | History of Religious Ideas

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

The course examines the ideology and historical development of world religions. The key themes are historical turning points related to canonization, doctrinal disputes and the formation of orthodoxy. Revival movements, modernisation and secularisation have influenced religious ideas through interpretation, authority and the social relationship of religion. Under the influence of colonialism, globalisation and migrations, religiosity has taken on syncretistic forms. The course introduces the key concepts and perspectives of the history of religions, which can be used to describe, compare and analyse the ideological change of religions. In addition, the course deals with philosophical diversity in an international and multicultural environment and the connections between religious ideas and practices and ethical issues, responsibility and sustainability.

Learning outcomes

After completing the course, the student

- is able to identify and define the key concepts (e.g. concepts of God, the sacred, the meaning of life) in the religions discussed in the course.
- is able to compare and analyse the views of different religious traditions on the historical background of these concepts and to justify their comparison with examples.
- is able to explain the significance of religion in relation to the scientific worldview (compatibility, tensions, independence) and evaluate key arguments.
- is able to analyse religiosity from the central perspectives of the study of religions based on the literature of the course.
- is able to examine the history of religions in an international and multicultural environment by recognising philosophical diversity, describing key similarities and differences, and applying culturally sensitive and respectful interaction.
- is able to assess the connections between religious ideas and practices and sustainability, responsibility and ethical issues (e.g. the concept of humanity, relationship with nature, community, norms) and identify ethical tensions and justify their views with the concepts of the course.

Official course record: [700157A](#)

700155A | History of Science and Ideas in Finland

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The History of Science and Ideas in Finland.

Learning outcomes

Students will be able to define the special characteristics of the Finnish history of science and ideas. The students will also be able to analyse the Finnish ideological and scientific developments within their historical and social contexts.

Official course record: [700155A](#)

700221S | History of Science and Ideas Seminar

10 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen, Jouni-Matti Kuukkanen

Content

Presenting the various stages of the student's own Master's Thesis, and acting as an opponent for other students (two times), participation in conversations about the theses presented in the seminar.

Learning outcomes

After active participation in the seminar work in two years, students will have the abilities required for research and scientific discourse. The students will be able to demonstrate these abilities in their Master's Thesis.

Official course record: [700221S](#)

HT00AS52 | History of science and its philosophy

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Foundations of the historiography of science, conceptual possibilities and philosophical challenges

Learning outcomes

After the course the student

- understands the main challenges and concepts of the writing of the history of science
- knows main approaches in the historiography of science
- understands the particularity of the history of science in comparison other forms of history writing
- understand the significance of historiography of science for philosophy of science
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

[Official course record: HT00AS52](#)

700156A | History of Science and Technology

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

The History of Science and Technology

Learning outcomes

Students will be able to familiarise with the main historical trends of science and technology from antiquity to the modern day. They will also be able to analyse the interaction between science, technology, and society.

[Official course record: 700156A](#)

414070A | History of sociology

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Anu Alanko

Content

- * History of sociological theory and research tradition
- * History of sociology and classical sociology
- * Relevance of classical sociology for current research

Learning outcomes

Having completed the course, the student

- * knows the classic background central to sociology, and can continue familiarization with relevant theory independently, which will benefit the student in advanced studies in sociology as well as other subjects.
- * recognizes the relevance of sociological classics for current sociology
- * knows how to apply classical sociology for his/her own research

[Official course record: 414070A](#)

700326S | History Research Today

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Tiina Kinnunen

Content

The lecture course will focus on the main fields, research questions, approaches, and methodologies of contemporary research; students will complete an essay based on lecture materials and additional supplementary literature, as well as take part in group discussions

Learning outcomes

Upon completion of the course, students will be familiarised with the topical fields of historical research, their research questions, approaches, and methodologies; the students will also be able to evaluate and utilise them in their own theses.

Official course record: 7003265

687363P | Humans and the Environment

5 ECTS | Cultural Anthropology, Archaeology | Basic Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Examining the relation between the protection of environment and the protection of cultural heritage in the context of cultural anthropology and archaeology; learning about the ways in which different civilisations and communities have reacted to change in the environment in a global context; examining the climate change from the chronological perspective provided by archaeology and cultural anthropology; studying interaction between humans, animals and nature; familiarising with the central concepts and perspectives of contemporary research in environmental anthropology.

Learning outcomes

Students will be able to define the relationship between protecting cultural heritage and protecting the environment. Students will also be able explain the fundamentals of the interaction between people and the environment, as well as the fundamentals of the concept of nature from a chronological perspective. Students will be able to discuss how specific cultures have adapted to their environments. Students will also be able to define human being's relation to animals and to their immediate environment. In addition, students will be able to define the cultural factors that control these relations. Students will also be able to discuss contemporary environmental questions and their effects on local communities.

Official course record: 687363P

AY687363P | Humans and the Environment (OPEN UNI)

5 ECTS | Cultural Anthropology | Basic Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Examining the relation between the protection of environment and the protection of cultural heritage in the context of cultural anthropology and archaeology; learning about the ways in which different civilisations and communities have reacted to change in the environment in a global context; examining the climate change from the chronological perspective provided by archaeology and cultural anthropology; studying interaction between humans, animals and nature; familiarising with the central concepts and perspectives of contemporary research in environmental anthropology

Learning outcomes

Students will be able to define the relationship between protecting cultural heritage and protecting the environment. Students will also be able explain the fundamentals of the interaction between people and the environment, as well as the fundamentals of the concept of nature from a chronological perspective. Students will be able to discuss how specific cultures have adapted to their environments. Students will also be able to define human being's relation to animals and to their immediate environment. In addition, students will be able to define the cultural factors that control these relations. Students will also be able to discuss contemporary environmental questions and their effects on local communities.

Official course record: [AY687363P](#)

687165S | Identity, Culture and Society

5-10 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

Advanced study of cultural theory and societal literary research. Special fields of cultural theory and trends of societal literary research, especially critical research examining the relationships of an individual, culture and society.

Learning outcomes

Upon completion of the course, students will be able to assess and analyse cultural theory and will be especially familiar with the social, cultural and sociopsychological aspects affecting the formation of identity, and the researching of these aspects in literature. They will have familiarised themselves with the classics and later discussion on the areas of cultural studies and/or societal literary research. They will be able to apply their knowledge to the critical interpretation of cultural representations and societal contents of literature.

Official course record: [687165S](#)

AY00BA81 | In search of knowledge - entry points to information literacy (OPEN UNI)

2 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

The course provides skills for critical information use, digital citizenship, and recognizing disinformation. The course is suitable for students who are interested in information-related issues, media, social phenomena, technology, and developing critical thinking skills. The course develops independent working skills.

Learning outcomes

How can we identify reliable information? How do algorithms affect what we see online? The course introduces the key areas of information literacy: identifying information needs, acquiring and evaluating information, and using information responsibly. The course strengthens understanding of the nature of information and information sources. In addition, the course provides an overview of the concept of information literacy, its definitions, and its social significance.

Students will learn to recognize phenomena and concepts related to information literacy and apply this understanding to identifying information needs and acquiring, evaluating, and using information responsibly. Students will develop their ability to analyze, evaluate, and use information critically and ethically.

Official course record: [AY00BA81](#)

694690S | Information and knowledge in society

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Noora Hirvonen

Content

Sociology of knowledge, information and knowledge, reality, institutionalization, legitimation, socialization, mediatization, datafication, agency.

Learning outcomes

Students will be able to recognize the idea of reality as socially constructed. They are able to describe the social as well as media- and technology-mediated nature of knowledge construction using the key concepts presented in the literature. The students are able to engage independently with scientific literature, identify its core content and organize and interpret large-scale phenomena. They make use of their language skills to engage with scientific literature in a foreign languages

[Official course record: 694690S](#)

694662P | Information Behaviour and Practices

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

Concepts of information behaviour and practices, theoretical background and empirical studies. The course provides perspectives for understanding the ways in which individuals and communities acquire, share and use information.

Learning outcomes

Upon completion of the course, students will be able to identify, analyse and assess the essential terminology of information behaviour and practices, and to present and apply the models of the field to the context of everyday life and occupations. The course deepens understanding of complex phenomena related to human behavior in different cultural contexts.

[Official course record: 694662P](#)

AY694662P | Information Behaviour and Practices (OPEN UNI)

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

We interact with information every day - seeking, receiving, sharing and producing it. Sometimes we also avoid information, for a variety of reasons. This course provides perspectives for understanding the ways in which individuals and communities acquire, share and produce information. It will also introduce you to theoretical concepts and models related to information behaviour and practices.

Learning outcomes

Students will be able to identify, analyse and evaluate key concepts and models of information behaviour and practices and apply them to the context of everyday life and professions. The course deepens understanding of complex phenomena related to human behavior in different cultural contexts.

[Official course record: AY694662P](#)

694679A | Information Law and Ethics

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Aira Huttunen, Noora Hirvonen

Content

Information law, information ethics, freedom of expression, fake news and information influencing.

Learning outcomes

Upon completion of the course, students will be able to identify the basic principles of the judicial system and distinguish ethical principles and statutory norms. Students will be able to apply the essential laws of the field and to comment on the ethical questions of the field. The course develops the competencies needed to act responsibly and sustainably as an information professional. After completing the course, the student recognizes the foundations of professional ethics in their field and is able to act in accordance with them.

[Official course record: 694679A](#)

AY694679A | Information Law and Ethics (OPEN YO)

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Aira Huttunen

Content

In this independently studied course, you will learn about the ways in which legislation in Finland affects the publication and use of information. In the course, you will examine not only legislation, but also various ethical aspects related to the subject, for example in a library context. You will also explore the issues of information influencing, hate speech and disinformation and consider the social implications of these issues.

Learning outcomes

Upon completion of the course, students will be able to identify the basic principles of the judicial system and distinguish ethical principles and statutory norms. Students will be able to apply the essential laws of the field and to comment on the ethical questions of the field. The course develops the competencies needed to act responsibly and sustainably as an information professional. After completing the course, the student recognizes the foundations of professional ethics in their field and is able to act in accordance with them.

[Official course record: AY694679A](#)

694684P | Information Seeking and Retrieval

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Anna Suorsa

Content

Information seeking and retrieval, channels, information sources, basic information retrieval methods such as search algorithms, the use of controlled descriptions and relevance assessment. Introduction to cataloguing as expert work.

Learning outcomes

The student is able to identify and use various channels for information retrieval, particularly digital information search systems. They are able to analytically and systematically apply basic information retrieval techniques when planning and conducting searches, including in information service work. The student is able to critically assess the tools for information retrieval and the impact of different technological platforms on information searching.

[Official course record: 694684P](#)

AY00AW78 | Information Seeking and Retrieval (OPEN UNI)

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

We live in an era where more information is available than ever before. Information retrieval skills help filter the relevant information from the irrelevant. Finding the right and up-to-date information is essential for both personal and professional decision-making. In this course, students will learn how to identify and use different digital information retrieval systems. You will become familiar with the analytical and systematic use of basic information retrieval techniques. The course will also prepare students to understand information service work.

Learning outcomes

The student is able to identify and use various information retrieval channels, especially digital information retrieval systems. They are able to analytically and systematically utilize the basic techniques of information seeking and retrieval when planning and implementing information seeking and retrieval, also in information service work.

[Official course record: AY00AW78](#)

694694A | Informetrics, scientific libraries and open science

5 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Heidi Enwald

Content

Study of scientific communication by informetric methods. The role of scientific libraries in research evaluation. Open science.

Learning outcomes

Students can apply informetric research methods in the study of scientific communication and consider scientific communication from the viewpoints of scientific libraries and open science.

[Official course record: 694694A](#)

687185A | International Exchange I

10-15 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

Organising of a target country of an international exchange, studies in the university of stay and presentation and subsequent crediting of the studies in the University of Oulu

Learning outcomes

Upon completion of the course, students will have diversified the study attainments of their Intermediate Studies, acquainted themselves with studies and culture abroad and will be able to utilise these study attainments, experiences, knowledge and skills in their Bachelor's Degree.

[Official course record: 687185A](#)

687188S | International Exchange II

20 ECTS | Literature | Advanced Studies | Finnish

Content

Organising of a target country of an international exchange, preparation of visit, studying in the university of stay and presentation and subsequent crediting of the studies in the University of Oulu

Learning outcomes

Upon completion of the course, students will have diversified the study attainments of their Intermediate Studies, acquainted themselves with studies and culture abroad and will be able to utilise these study attainments, experiences, knowledge and skills in their Master's Degree.

Official course record: [6871885](#)

687359P | Introduction to Archaeology and Cultural Anthropology

5 ECTS | Archaeology, Cultural Anthropology | Basic Studies | Finnish

Person in charge: Anna-Kaisa Salmi

Content

Cultural anthropology and archaeology as disciplines; central research methods, history of science, central concepts and theories of the disciplines; as well as the standing of the disciplines in relation to other disciplines and each other; understanding, recording and producing past and contemporary cultures from a northern perspective.

Learning outcomes

Students will be able to display knowledge of the subfields, research methods, histories and philosophies of science, fundamental concepts and theories of anthropology, especially cultural anthropology and archaeology, as well as the connections between these disciplines. In addition, students will be able to define the standing of the disciplines in relation to other disciplines. Students will also be able to define the significance of enculturation to our concepts of reality.

Official course record: [687359P](#)

AY687359P | Introduction to Archaeology and Cultural Anthropology (OPEN UNI)

5 ECTS | Cultural Anthropology or Archaeology | Basic Studies | Finnish

Person in charge: Anna-Kaisa Salmi

Content

Cultural anthropology and archaeology as disciplines; central research methods, history of science, central concepts and theories of the disciplines; as well as the standing of the disciplines in relation to other disciplines and each other; understanding, recording and producing past and contemporary cultures from a northern perspective

Learning outcomes

Students will be able to display knowledge of the subfields, research methods, histories and philosophies of science, fundamental concepts and theories, as well as connections between anthropology, especially cultural anthropology and archaeology. In addition, students will be able to define the standing of the disciplines in relation to other disciplines. Students will also be able to define the significance of enculturation to our concepts of reality.

Official course record: [AY687359P](#)

HK00BA50 | Introduction to Audiovisual Medias

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Introduction to style, narrative and history of audiovisual medias, genre, contemporary applications, as well as the social role and societal connections of film.

Learning outcomes

Upon completing the course, the students have gained an overview of the technological and content-related characteristics, history and development of audiovisual medias. The students can identify research-based premises, industrial and economic interests, and social and societal dimensions connected to audiovisual medias. The students will understand the role of film within the fields of art, entertainment and audiovisual media culture, and will be able to assess the significance of changing film culture at the local, national and international levels. After completing the course, the students will be able to analyze audiovisual source material using analytical approaches at a basic level. After finishing the course, the students may also delve deeper into the topics presented during the course in the subsequent courses of the study subject.

[Official course record: HK00BA50](#)

AY00BA51 | Introduction to Audiovisual Medias (OPEN UNI)

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Introduction to style, narrative and history of audiovisual medias, genre, contemporary applications, as well as the social role and societal connections of film.

Learning outcomes

Upon completing the course, the students have gained an overview of the technological and content-related characteristics, history and development of audiovisual medias. The students can identify research-based premises, industrial and economic interests, and social and societal dimensions connected to audiovisual medias. The students will understand the role of film within the fields of art, entertainment and audiovisual media culture, and will be able to assess the significance of changing film culture at the local, national and international levels. After completing the course, the students will be able to analyze audiovisual source material using analytical approaches at a basic level. After finishing the course, the students may also delve deeper into the topics presented during the course in the subsequent courses of the study subject.

[Official course record: AY00BA51](#)

695100P | Introduction to Communication Studies

5 ECTS | Science Communication | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Basic concepts and theories of Communication Studies

Learning outcomes

Upon completion of the course, students will be able to explain communication from several points of view. Students will be able to interpret communication from the viewpoints of information transmission, community creation, and meaning construction. Students will be able to explain the ways in which people are influenced by communication and in which various messages are received. Students will be able to outline the historical development of the media as well as various approaches and schools of communication research. Students will be able to recognise, analyse, and evaluate various communication methods used e.g. in advertisements and journalistic representations. They will be able to apply communication research to new communicational situations and plan their own communication activities on the basis of the learnt principles.

[Official course record: 695100P](#)

AY695100P | Introduction to Communication Studies (OPEN UNI)

5 ECTS | Science Communication | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Basic concepts and theories of Communication Studies

Learning outcomes

Upon completion of the course, students will be able to explain communication from several points of view. Students will be able to interpret communication from the viewpoints of information transmission, community creation, and meaning construction. Students will be able to explain the ways in which people are influenced by communication and in which various messages are received. Students will be able to outline the historical development of the media as well as various approaches and schools of communication research. Students will be able to recognise, analyse, and evaluate various communication methods used e.g. in advertisements and journalistic representations. They will be able to apply communication research to new communicational situations and plan their own communication activities on the basis of the learnt principles.

[Official course record: AY695100P](#)

HK00AK72 | Introduction to Creative Media Theories

5-10 ECTS | Film Studies | Intermediate Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with theories and methods of Film Studies.

Learning outcomes

Upon completion of this course, students will be able to explain, compare and contrast the key theories and methods in Film Studies.

[Official course record: HK00AK72](#)

HH00AJ05 | Introduction to Cultural Heritage

5 ECTS | Cultural Heritage | Basic Studies | Finnish

Person in charge: Kirsi Laurén

Content

Key concepts and approaches to the protection and study of cultural heritage. The objectives and methods of museum activities. The cultural heritage process and its characteristics. Representing and using cultural heritage in different contexts.

Learning outcomes

After completing the course, students will be able to:

- define the main concepts of cultural heritage and the main tasks of museums
- describe the social, communal and individual significance of cultural heritage.
- recognise the interdisciplinary nature of cultural heritage studies.
- explain the processes of construction of the cultural heritage phenomenon.
- recognise the meaning of cultural and natural heritage and the links between their protection in the wider social context

Generic skills: oral and written communication, critical thinking and argumentation, interaction skills, promoting cultural sustainability.

AY00AZ20 | Introduction to Digital Cultural Heritage (OPEN UNI)

2 ECTS | Archaeology | Basic Studies | Finnish

Person in charge: Tiina Äikäs

Content

The digitalising world also extends to our understanding of cultural heritage. We share pictures of heritage sites on SOME, visit VR exhibitions in museums and dive into historical worlds in computer games. Researchers can explore meanings and processes related to cultural heritage by using digital material from museums and archives, for example, but increasingly material is also being created in digital form. Research can also focus on how people interact with cultural heritage in digital environments.

Key content:

- definition of digital cultural heritage
- the construction of cultural heritage in the digital environment
- digital materials in cultural heritage research

Learning outcomes

On completion of the course, the student will:

- be able to explain the meaning of the concept of digital cultural heritage
- be able to search for key digital cultural heritage resources
- understand the research aspects of digital cultural heritage research

Official course record: AY00AZ20

700680P | Introduction to Environmental Philosophy

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Introduction to environmental philosophy and its basic concepts

Learning outcomes

After completing the course, students will understand the central features of the fundamental problems and approaches in environmental philosophy.

Official course record: 700680P

AY700680P | Introduction to Environmental Philosophy (OPEN UNI)

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Introduction to environmental philosophy and its basic concepts

Learning outcomes

After completing the course, students will understand the central features of the fundamental problems and approaches in environmental philosophy.

Official course record: AY700680P

700679P | Introduction to Ethical Reasoning

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content [Finnish source]

Etiikan peruskäsitteet ja -suuntaukset

Learning outcomes [Finnish source]

Opiskelija osaa selittää teoreettisen etiikan perussuuntaukset ja kykenee analysoimaan eettisiä ongelmia niiden perusteella. Opiskelija kykenee selittämään kriittisesti myös maailmanlaajuisia eettisiä ongelmia ja määrittelemään monikulttuurisuuden eettisiä haasteita

[Official course record: 700679P](#)

AY700679P | Introduction to Ethical Reasoning (OPEN UNI)

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Fundamental concepts and ideas of ethics

Learning outcomes

Students will be able to explain the fundamental ideas of theoretical ethics and will be capable of utilising the ideas to analyse ethical problems. Students will also be able to critically explain global ethical problems and define the ethical challenges of multiculturalism.

[Official course record: AY700679P](#)

700677P | Introduction to Ethics

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Fundamental concepts of Ethics, the requirements for teaching Ethics at upper secondary and high school, as well as the basic concepts of philosophy of education.

Learning outcomes

After completing the course, students will be capable of explaining ethics as a subject of study in schools and will be able to list the fundamental goals of ethics teaching. Students will be able to guide children and young people to philosophical thinking and argumentation and is familiar with the basic concepts of the philosophy of education.

[Official course record: 700677P](#)

AY700677P | Introduction to Ethics (OPEN UNI)

5 ECTS | Ethics | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Fundamental concepts of Ethics and the history of the Western idea of humanity in a broad outline

Learning outcomes

After completing the course, students will be capable of explaining ethics as a subject of study in schools and will be able to list the fundamental goals of ethics teaching. Students will be able to demonstrate an understanding of the relationship between approaches in Ethics and the history of the Western concept of humanity.

Official course record: AY700677P

687240A | Introduction to Ethnography

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Sami Lakomäki

Content

Methods of collecting ethnographic materials, as well as their methodological backgrounds and ethical guidelines. The links of ethnographic methodology to debates on the nature of knowledge and to research in philosophy of science.

Learning outcomes

Students will be able to display an understanding of the methods of ethnographic fieldwork and are able to apply them in order to gather research material. In addition, students will know the ethical principles of ethnographic research and will be able to comprehend, as well as to plan, their own research as a project consisting of many stages. As generic skills, students will learn to recognize skills of critical, analytical, and creative thinking, to perceive those skills in their own work, and to apply them in an ethical manner. Furthermore, they will learn how to lead their own work, how to contribute to the progress of group work and collective projects, and how to work with diverse kinds of people according to the principles of professional ethics. Students will also learn to discuss in groups in a clear fashion, to listen to others, and to give and receive constructive feedback.

Official course record: 687240A

AY700740P | Introduction to Finnish Law (OPEN UNI)

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Matti Enbuske

Content

Main principles of the juridical system in Finland

Learning outcomes

Upon completing the course, students will be able to explain the main features of the juridical system in Finland. Based on this knowledge students will be able to teach Law at lower secondary school level. After completing the course, students will also be able to recognize the fundamentals of professional ethics in their field and act in accordance with them.

Official course record: AY700740P

HA00AG14 | Introduction to human osteology

5 ECTS | Archaeology | Basic Studies | Finnish, English

Person in charge: Heli Maijanen

Content

Familiarization with skeletal materials, describing and identifying skeletal features. Basic skeletal analysis and interpretation of osteological material.

Learning outcomes

In this course, students learn human skeletal anatomy and know the required terminology. Students are prepared for independent basic level osteological research and they have basic skills for osteological analysis and interpretation.

Generic skills: analytical, critical and creative thinking skills, well-being and self-development skills, international and multicultural skills, communication, interaction and digital skills.

[Official course record: HA00AG14](#)

694677P | Introduction to Information Studies

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Noora Hirvonen

Content

The development of information studies as a discipline, basic concepts, research objects and areas

Learning outcomes

Upon completion of the course, the student is able to identify and name the focal research areas, objects of research and central concepts of information studies. The student demonstrates analytical and critical thinking by examining their relationships and connections to professional practice and societal phenomena. The student is able to plan and manage their own work and to reflect on their goals and learning. The student can make use of diverse information sources and communicate orally and in writing about the course contents. The student is able to give and receive constructive feedback.

[Official course record: 694677P](#)

AY694677P | Introduction to Information Studies (OPEN UNI)

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

Information studies is a social science within the field of communication sciences that examines the interaction between people and information in different environments. The course introduces you to the development of information studies as a discipline and the research being done in the field. You will also become familiar with the key concepts and theoretical foundations of the field.

Learning outcomes

The student is able to name the key research areas, subjects, and concepts of information studies. They demonstrate analytical and critical thinking by structuring the interrelationships between these areas and their connection to professional activities and social phenomena. The student is able to plan their work and reflect on their own goals and working and learning methods. The student is able to communicate in writing about phenomena in their field and give and receive feedback.

[Official course record: AY694677P](#)

687101P | Introduction to Literary Research I

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content

Theoretical, methodological, and terminological basic skills.

Learning outcomes

An introduction to the basic concepts of literary research and their application to analysing texts. Upon completing the course, students will be able to describe different aspects of literary research, and related theories and methods. Students will also be able to use and apply terminology related to literary interpretation to practical text analysis.

[Official course record: 687101P](#)

AY687101P | Introduction to Literary Research I (OPEN UNI)

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content

Theoretical, methodological, and terminological basic skills.

Learning outcomes

An introduction to the basic concepts of literary research and their application to analysing texts. Upon completing the course, students will be able to describe different aspects of literary research, and related theories and methods. Students will also be able to use and apply terminology related to literary interpretation to practical text analysis.

[Official course record: AY687101P](#)

687156A | Introduction to Literary Studies 2: Theory and Methodology

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Pekka Kuusisto

Content

The main developments in the theory and methodology of 20th and early 21st century literary studies

Learning outcomes

The course introduces students to the development and main ideas of 20th and 21st century literary theory. Upon completing the course, students will be able to describe the central developments with respect to the theories and methodology of 20th century and early 21st-century literary studies. Students will also be able to compare and relate different approaches in literary theory and will be able to describe their essential points of departure when dealing with different materials of research.

[Official course record: 687156A](#)

687514P | Introduction to Media Culture Studies

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with general premises, research questions and trends of audiovisual media culture research, as well as the core theories and methods.

Learning outcomes

Upon completion of this course, the students will be able to describe the research premises, key research questions and trends of audiovisual media culture research. In addition, the students will be able to describe the core theories and methods of the research field.

[Official course record: 687514P](#)

414078P | Introduction to methodology and methodics

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

- * Philosophical starting points for the research
- * Planning an empirical research process, research questions
- * Different research strategies in empirical research, research data
- * Evaluating empirical research: reliability, validity and ethical issues
- * Research reflexivity

Learning outcomes

Having completed the course, the student

- * has a preliminary knowledge of the basics of research, starting-points of empirical social studies as well as the most important methods and relevant concepts, and
- * knows how to utilize reflexivity as a method in evaluating researcher's position and its implications for the whole research process
- * can apply them in her/his own empirical research.

[Official course record: 414078P](#)

AY414078P | Introduction to methodology and methodics (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

Philosophical starting points for the research
Planning an empirical research process, research questions
Different research strategies in empirical research, research data
Evaluating empirical research: reliability, validity and ethical issues
Research reflexivity

Learning outcomes

Having completed the course, the student

- has a preliminary knowledge of the basics of research, starting-points of empirical social studies as well as the most important methods and relevant concepts, and
- knows how to utilize reflexivity as a method in evaluating researcher's position and its implications for the whole research process
- can apply research methods in her/his own empirical research..

[Official course record: AY414078P](#)

HA00AG13 | Introduction to osteological research

5 ECTS | Archaeology | Basic Studies | Finnish, English

Person in charge: Heli Maijanen

Content

The course introduces essential sub-fields, basic osteological terminology and theoretical and methodological bases of osteology. The ethical guidelines regarding human skeletal remains are covered in the course.

Learning outcomes

After completing the course, students have basic knowledge of the research foci, questions and methods in osteology. Students understand the new information osteology can bring into studying the past and present and what types of sub-fields exist in osteological research. Students understand the theoretical perspectives but also different methods and their application in osteology.

Generic skills: analytical, critical and creative thinking skills, international and multicultural skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

Official course record: HA00AG13

700634P | Introduction to Philosophy and its History

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes [Finnish source]

Opiskelija ymmärtää filosofian keskeisten kysymysten ja suuntausten historiaa antiikista 1900-luvulle sekä tuntee alan keskeisten klassikkojen ajattelua.

Official course record: 700634P

AY700634P | Introduction to Philosophy and its History (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki, Jouni-Matti Kuukkanen

Learning outcomes [Finnish source]

Opiskelija ymmärtää filosofian keskeisten kysymysten ja suuntausten historiaa antiikista 1900-luvulle sekä tuntee alan keskeisten klassikkojen ajattelua.

Official course record: AY700634P

700127P | Introduction to Research Methods

5 ECTS | History | Basic Studies | Finnish

Person in charge: Henry Oinas-Kukkonen

Content

The basics of research methods; familiarisation with the latest research

Learning outcomes

Upon completion of the course, students will be able to read, analyse, and assess historical research by utilising the basic approaches and principles of the field; based on that, students will be able to formulate a summarised oral presentation and take part in discourse in the field of science of history. Students will be able to outline how the research of history is conducted in practice. Students will also be familiar with the research process and the practices of the field. Students will develop their independent and group work skills, practice scientific writing and critical reading of scientific texts.

Official course record: 700127P

AY700127P | Introduction to Research Methods (OPEN UNI)

5 ECTS | History | Basic Studies | Finnish

Person in charge: Henry Oinas-Kukkonen

Content

How is historical research read? How are research results analyzed? What is source criticism? In this course, you will learn to analyze and evaluate historical research and familiarize yourself with various source materials. You will learn to prepare concise oral presentations and participate in historical discussions. The course will give you an understanding of how historical research is practically conducted. You will learn about the research process, where to find sources, and the practices of the field.

Learning outcomes

Upon completion of the course, students will be able to read, analyse, and assess historical research by utilising the basic approaches and principles of the field; based on that, students will be able to formulate a summarised oral presentation and take part in discourse in the field of science of history. Students will be able to outline how the research of history is conducted in practice. Students will also be familiar with the research process and the practices of the field. Students will develop their independent and group work skills, practice scientific writing and critical reading of scientific texts.

Official course record: [AY700127P](#)

HI00AQ06 | Introduction to research methods in information studies

5 ECTS | Information Studies | Intermediate Studies |

Person in charge: Tuula Nygård

Content

- An introduction to conducting research in the field of information studies
- The main methods of data collection and analysis and the starting points for qualitative and quantitative research
- Responsible conduct of research and research ethics

Learning outcomes

Upon completion of the course, students will be able to identify the main research methods in information studies and will be able to use them. Students will know the characteristics of qualitative and quantitative research and the ethical principles of conducting research. The course will enable students to choose a research method and critically evaluate research. After completing the course, students will be able to draw analytical conclusions under guidance, examine materials critically, and identify key research ethical issues. In addition, students will be able to use digital and artificial intelligence applications relevant to their field in an appropriate, safe, and responsible manner in their studies.

Official course record: [HI00AQ06](#)

AY694597S | Introduction to Science Communication (OPEN UNI)

5 ECTS | Science Communication | Advanced Studies | Finnish

Person in charge: Maija Kallinen

Content

Basics of science communication

Learning outcomes

Upon completion of the course, students will be able to explain the key issues in the public communication of science. They will be able to explain how internal and external communication of science works, how science is popularised, how science is disseminated, and how science is represented in the media. Students will be able to recognise the different cultures of science and journalism. They will be familiar with the principles of writing a press release aimed at the media and the public.

Official course record: [AY694597S](#)

700169P | Introduction to Scientific Thinking

5 ECTS | History of Science and Ideas | Basic Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

Students familiarize with the basic features of scientific thinking. During the course students discuss the meaning of knowledge, and in particular the scientific knowledge. The boundaries of science and pseudoscience, the differences and similarities between human sciences and natural sciences, the scientific argumentation, the critical source literacy, the processes of observation, inference and interpretation, the ethics and norms in science, the publicity of science and the encryption of knowledge, the scientific communication, and the historical development of scientific thinking are dealt during the course.

Learning outcomes

Students become acquainted with the basic characteristics of scientific thinking and can describe the differences and similarities between scientific and non-scientific thinking.

[Official course record: 700169P](#)

HT00AQ62 | Introduction to Scientific Thinking

3 ECTS | History of Science and Ideas | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Introduction to the foundations of scientific thinking. In this course, we (i) examine the nature of knowledge and scientific knowledge as well as the demarcation criteria between science and pseudoscience; (ii) learn the basics of critical thinking, such as good reasoning and identifying argumentative fallacies; (iii) get acquainted with science ethics and good scientific practice.

Learning outcomes

Students become acquainted with the basic characteristics of scientific thinking and can describe differences and similarities between scientific and non-scientific thinking.

[Official course record: HT00AQ62](#)

700126P | Introduction to the Study of History

5 ECTS | History | Basic Studies | Finnish

Person in charge: Tiina Kinnunen

Content

The key characteristics of the use and research of history: History as a societal phenomenon, the basic concepts, research fields and theories of the research of history. The course includes reading and writing texts, discussions and oral presentations.

Learning outcomes

After the completion of the course, students will be able to understand the multifaceted use of history in society and its nature as an academic field. Students will be familiar with the developments of historiography, the current characteristics of research, different trends and key concepts as well as the use of sources and theories in research.

[Official course record: 700126P](#)

AY700126P | Introduction to the Study of History (AVOIN YO)

5 ECTS | History | Basic Studies | Finnish

Person in charge: Tiina Kinnunen

Content

The key characteristics of the use and research of History: History as a societal phenomenon, the basic concepts, research fields and theories of the research of history.

Learning outcomes

After the completion of the course, students will be able to understand the multifaceted use of history in society and its nature as an academic field. Students will be familiar with the developments of historiography, the current characteristics of research, different trends and key concepts as well as the use of sources and theories in research.

Official course record: [AY700126P](#)

HA00AG15 | Introduction to zooarchaeology

5 ECTS | Archaeology | Basic Studies | Finnish, English

Person in charge: Anna-Kaisa Salmi

Content

Familiarization with vertebrate animal skeletal materials and the basics of identification of skeletal remains of vertebrate animals of Finland. Basic zooarchaeological analysis and interpretation.

Learning outcomes

The student is ready for independent basic level zooarchaeological research. The student has basic skills for zooarchaeological analysis and interpretation.

Official course record: [HA00AG15](#)

687175A | Knowledge of the Classics in Literature

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

Prose, lyric and drama classics, both Finnish and general examples

Learning outcomes

After completing the course, students will be able to demonstrate an understanding of the concept of a classic and will have familiarised themselves with some seminal works of literature.

Official course record: [687175A](#)

700685A | Knowledge, Values and Humanity

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Fundamental concepts and central theories in the philosophy of values and in the philosophy of science

Learning outcomes

After completing the course, students will be able to examine values philosophically in relation to the values' cultural and natural contexts. Students will be able to describe connections between philosophy of values and science, ethics and aesthetics. Students will be able to display knowledge of the fundamental questions in the philosophy of science, as well as knowledge of the special nature of the questions in the philosophy of social sciences. In addition, students will be able to analyse the metaphysical and epistemological limitations of science as well as its relation with values.

[Official course record: 700685A](#)

AY700685A | Knowledge, Values and Humanity (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Content

Fundamental concepts and central theories in the philosophy of values and in the philosophy of science

Learning outcomes

After completing the course, students will be able to examine values philosophically in relation to the values' cultural and natural contexts. Students will be able to describe connections between philosophy of values and science, ethics and aesthetics. Students will be able to display knowledge of the fundamental questions in the philosophy of science, as well as knowledge of the special nature of the questions in the philosophy of social sciences. In addition, students will be able to analyse the metaphysical and epistemological limitations of science as well as its relation with values.

[Official course record: AY700685A](#)

687371A | Landscape Archaeology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Theories and approaches used in research in landscape archaeology, applying them in the research and interpretation of natural and cultural landscapes

Learning outcomes

Upon completion of the course, students will be able to apply the methods and theories of landscape archaeology to their research. Students will be able to make interpretations of different factors affecting the formation of landscapes and what effects landscapes have had on human culture. Students will familiarise themselves with analytical, critical and creative thinking, multidisciplinary and interdisciplinary skills, and ability to cross sector boundaries.

[Official course record: 687371A](#)

700124P | Late Modern and Contemporary History

5 ECTS | History | Basic Studies | Finnish

Person in charge: Henry Oinas-Kukkonen

Content

The course will present the central developments from the French Revolution to the present.

Learning outcomes

Upon completion of the course, students will be able to name, describe, and explain the significant events and stages of Late Modern and Contemporary History. Students will be able to connect and compare events, and see the Finnish historical events as a part of world history.

[Official course record: 700124P](#)

AY700124P | Late Modern and Contemporary History (OPEN UNI)

5 ECTS | History | Basic Studies | Finnish

Person in charge: Henry Oinas-Kukkonen

Content

How does the past reflect on the present? This course offers an opportunity to dive into the key events of world history from the late 18th century to the present day. You will also learn how Finnish history is connected to global history. The course is designed for everyone who wants to form an overview of the major trends in history and their impact on the present. The course provides valuable perspectives and analytical skills that are useful in international and multicultural tasks. Broaden your perspective on significant events and phenomena in world history!

Learning outcomes

Upon completion of the course, students will be able to name, describe, and explain the significant events and stages of Late Modern and Contemporary History. Students will be able to connect and compare events, and see the Finnish historical events as a part of world history.

[Official course record: AY700124P](#)

694661P | Literacies in Different Information Environments

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Anna Suorsa

Content

Different terms of literacy, such as media and information literacy, multiliteracy, health information literacy; the significance and promotion of literacies in different environments.

Learning outcomes

Upon completion of the course, students will be able to identify the terminology and phenomena related to information literacies. Students will also be able to examine the significance of information literacy in different information environments. The students develop their communication skills as well as their ability to evaluate and use information critically and ethically. They are able to assess the significance of various technological platforms in information literacy.

[Official course record: 694661P](#)

AY00AZ54 | Literacies in Different Information Environments (OPEN UNI)

5 ECTS | Information Studies | Basic Studies | Finnish

Person in charge: Heidi Enwald

Content

Information literacy, and related literacies, can be seen as civic skills that play an increasingly important role in our society. Combating disinformation and critical information literacy are essential, inter alia, for the functioning and renewal of democracy. In this course you will learn about the different concepts of literacy, their meaning, promotion, teaching and measurement in different contexts.

Learning outcomes

Upon completion of the course, students will be able to identify the terminology and phenomena related to literacies. Students will also be able to examine the significance of literacies in different information environments.

[Official course record: AY00AZ54](#)

687183A | Literary Genres and Genre Theory

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Introduction to literary genres and genre theory

Learning outcomes

The course provides an introduction to literary genres and genre theories. Upon completion of the course, students will be able to name the most central concepts of literary genres and their theories and to explain their basic meanings. Students will also be able to describe the most essential contexts in the history of different genres and to compare various research trends with classics of the field.

[Official course record: 687183A](#)

687154P | Literary History 1: from Antiquity to the 18th Century

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Central periods in literary history and the development of major genres of literature from Antiquity to the Enlightenment

Learning outcomes

Upon completing the course, students will be able to describe the periodisation of literary history and the formation and development of major genres of literature from Antiquity to the Enlightenment.

[Official course record: 687154P](#)

AY687154P | Literary History 1: from Antiquity to the 18th Century (OPEN UNI)

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Central periods in literary history and the development of major genres of literature from Antiquity to the Enlightenment

Learning outcomes

Upon completing the course, students will be able to describe the periodisation of literary history and the formation and development of major genres of literature from Antiquity to the Enlightenment..

[Official course record: AY687154P](#)

687155P | Literary History 2: from the 18th Century to the Present

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Pekka Kuusisto

Content

Central periods in literary history and the development of major genres of literature from Romanticism to present day.

Learning outcomes

The course introduces students to the basics of literary history from the Romantic Age to the 21st century. Upon completing the course, students will be able to describe the development of major genres and styles of literature from Romanticism to the modern day.

[Official course record: 687155P](#)

AY687155P | Literary History 2: from the 18th Century to the Present (OPEN UNI)

5 ECTS | Literature | Basic Studies | Finnish

Person in charge: Kuisma Korhonen, Pekka Kuusisto

Content

Central periods in literary history and the development of major genres of literature from Romanticism to present day.

Learning outcomes

The course introduces students to the basics of Western literary history from the Romantic Age to the 21st century. Upon completing the course, students will be able to describe the development of major genres and styles of literature from Romanticism to the modern day.

[Official course record: AY687155P](#)

687157A | Literary History 3: Periods and Genres

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content

The course focuses on a particular period in literary history, or alternatively the history of a particular type of literature. Available periods include, e.g. a) Antiquity, b) the Middle Ages, c) the Renaissance, d) Classicism and the Enlightenment, e) Romanticism, f) Realism, g) Symbolism, and h) Modernism. Available types of literature include, e.g. drama, novel, lyric and essay.

Learning outcomes

Familiarisation with a particular period of literary history or the history of a particular genre of literature.

Upon completing the course, students will be able to better describe the essential writers, styles, and issues regarding the study of a particular period of world literature. Students will also be able to apply this knowledge to the analysis of individual literary texts. Alternatively, students will be able to describe the history of a particular type of literature as well as the central issues related to its research, and apply their knowledge to the analysis of individual texts.

[Official course record: 687157A](#)

687187S | Literary History 5: Elective Language Area

5 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Pekka Kuusisto

Content

An elective course in the literary history of an elective language area

Learning outcomes

The course advances the students' knowledge on the literary history of an elective language area. Upon completion of the course, students will be better able to analyse and interpret the classics of the chosen language area in their literary and historical contexts.

[Official course record: 6871875](#)

687196S | Literary Theory I

5 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Kirjallisuuden teoria.

Learning outcomes [Finnish source]

Syventävä perehtyminen kirjallisuusteoriaan. Opintojakson suorittamisen jälkeen opiskelija osaa käynnistää pro gradu -työskentelyn ja osaa soveltaa siinä syvällistä näkemystä kirjallisuuden teoriakentän nykyisestä moninaisuudesta ja sen integroitumisesta taiteen ja kulttuurin tutkimukseen. Opiskelija pystyy perustellusti valitsemaan oman tutkielmansa teoreettiset lähtökohdat ja sijoittamaan ne kirjallisuuden- ja kulttuurintutkimuksen kokonaisuuteen

[Official course record: 687196S](#)

687151S | Literary theory II

5-10 ECTS | Literature | Advanced Studies | Finnish

Content

Theory and history of literary research

Learning outcomes

Advanced study of literary theory. Upon completion of the course, students will be able to assess and describe deeply the history, classic works and most recent discussion of a field of literary research. If need be, students will be able to apply what they have learned to the analysis and interpretation of literature.

[Official course record: 687151S](#)

687176A | Literature and Literary Art for Children and Youths

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content

The basics of literature and literary art for children and youths

Learning outcomes

An introduction to literature and language art for children and youths. Upon completing the course, students will be able to discuss the classic works of children's and youth literature as well as related scholarly discourse. Students will also be able to apply their knowledge of theory and tradition to the analysis of single texts and/or literature and language art classes for children and youths.

[Official course record: 687176A](#)

687146S | Literature and Philosophy

5-10 ECTS | Literature | Advanced Studies | Finnish

Content

Covering of philosophical themes in literature, the effects of philosophy on literary theory and philosophical literature as a genre

Learning outcomes

Advanced study of the connections between literature and philosophy. Upon completion of the course, students will be able to

- 1) recognise themes of Western philosophy in literature,
- 2) apply the formation of philosophical theories to the theory and interpretation of literature,
- and/or 3) analyse philosophical texts taking into account their literary aspects.

[Official course record: 687146S](#)

687174A | Literature in Society

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

Introduction to the societal contexts of Finnish literature as well as the foundations and current state of the literary institution.

Learning outcomes

The course works as an introduction to the relation between literature and society as well as to the aspects of literary institution, particularly in Finland. Upon completion of the course, students will be better able to aspire to the societal contextualisation of literature and the assessment of the activities of different branches of the literary institution. Students will also be better acquainted with the societal contents of Finnish literature. They will be able to historically outline literary life, acquire knowledge of cultural discussions past and present, and see potential employment prospects in the literary field.

[Official course record: 687174A](#)

HH00AJ13 | Living heritage, environment, and nature

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

Cultural dimensions of natural and cultural environments. Natural heritage, cultural heritage and heritage processes.

Learning outcomes

After completing the course, students will be able to:

- define the cultural aspects of natural areas and natural heritage.
- assess the process of living heritage in environmental cultures.
- explain the relationships and meanings between cultural and natural environments.

Generic skills: written communication, self-management, scientific argumentation, critical and abstract thinking, promoting sustainable development.

Official course record: [HH00AJ13](#)

687253S | MA Thesis

30 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Academic writing and discourse, as well as content analysis and interpretation of research data

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [687253S](#)

687153S | MA Thesis Seminar

10 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Kuisma Korhonen

Content

Seminar

Learning outcomes

Upon completion of the course, students will be able to carry out and present an academic research plan and completed research by utilising the principles and methods of academic research. Students will also be able to use the most recent research and sources in their own research. They will also be able to give and receive constructive feedback.

[Official course record: 687153S](#)

694695A | Management and expertise in knowledge-based organizations

5 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Anna Suorsa

Content

Management and leadership, strategy and competence, communication and marketing, knowledge capital and finance within organisational environment. Knowledge creation, interaction, information management and expertise of information work in knowledge-based organizations.

Learning outcomes

Students will be able to identify the main areas of management and understands the role of expertise in knowledge-based organizations. They will be capable to plan the use of different managerial tools to enhance knowledge creation and information management in ethical and sustainable way. The students strengthen their interaction and communication skills, can share their knowledge in various interaction situations, and understands their importance in management and expert work.

[Official course record: 694695A](#)

HK00AL23 | Manuscript

5-15 ECTS | Film Studies, Multimedial Creative Narration | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Kertovan tekstin, käsikirjoituksen tai pelisuunnitelman itsenäinen eteenpäin työstäminen, editointi ja loppuun saattaminen

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa soveltaa aiemmin oppimaansa oman kertovan tekstin, käsikirjoituksen tai pelisuunnitelman eteenpäin työstämisessä, editoimisessa ja loppuun saattamisessa.

[Official course record: HK00AL23](#)

700430S | Master's Seminar

10 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius, Tiina Kinnunen

Content

A seminar requiring active attendance and lasting for two semesters, during which students plan and present a research plan, a research literature essay, and a seminar presentation. In addition, students act as an opponent for other students' research plan and presentation. Defining previous PSPs.

Learning outcomes

Upon completion of the course, students will know the methods for completing a Master's (Pro Gradu) Thesis and students will have practiced taking part in scientific discourse. In addition, students will have a plan for completing their degree, built in a way that reflects their employment goals.

[Official course record: 7004305](#)

700337S | Master's Thesis

30 ECTS | History | Advanced Studies | Finnish

Person in charge: Tiina Kinnunen, Kari Alenius

Content [Finnish source]

Itsenäisesti laadittu tutkielma

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

[Official course record: 700337S](#)

694632S | Master's Thesis Seminar

10 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Anna Suorsa, Heidi Enwald

Content

Information seeking and retrieval, literature review and research plan on the topic chosen by the student, scientific discussion, scholarly expression and writing, responsible conduct of research and research ethics.

Learning outcomes

The student is able to plan and conduct a theoretical or empirical study on a chosen topic in accordance with good scientific practice. They are able to communicate about their research topic orally and in writing and gain proficiency in scientific communication. They can present their own thesis, justifying their choices, as well as evaluate the theses of others and give and receive peer feedback.

[Official course record: 694632S](#)

687195S | Masters's thesis (Literature)

30 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Pro gradu -tutkielma.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

[Official course record: 687195S](#)

687197S | Master's Thesis in Minor Subject (Literature)

30 ECTS | Literature | Advanced Studies | Finnish

No description supplied in the collected record.

[Official course record: 687197S](#)

694699S | Master's Thesis

30 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Noora Hirvonen

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [694699S](#)

687362P | Material Culture

5 ECTS | Cultural Anthropology | Basic Studies | Finnish

Person in charge: Taina Kinnunen

Content

Culture materializes in artefacts, built environment and human bodies. Meanings attached to material vary across time and places, and material itself modifies concepts and habits. Material heritage is reconstructed and destroyed. How is value created to material and how its circulation produces social orders? How is history approached through artefacts? Or what kind of agency does technology owe? The course is a unique combination of archaeological and cultural anthropological approaches to material culture. It familiarizes the student with classical research of material culture as well as provides knowledge of fresh theories and research methods of the subject.

Learning outcomes

Student will be able to explain how the material culture reflects and moulds our ways of thinking and acting in various social and cultural contexts. Student will be able to define meanings of material culture from the perspectives of cultural anthropology and archaeology, as well as examine materiality by applying different research methods and from various theoretical perspectives.

Official course record: [687362P](#)

AY687362P | Material Culture (OPEN UNI)

5 ECTS | Cultural Anthropology | Basic Studies | Finnish

Person in charge: Taina Kinnunen

Content

Culture materializes in artefacts, built environment and human bodies. Meanings attached to material vary across time and places, and material itself modifies concepts and habits. Material heritage is reconstructed and destroyed. How is value created to material and how its circulation produces social orders? How is history approached through artefacts? Or what kind of agency does technology owe? The course is a unique combination of archeological and cultural anthropological approaches to material culture. It familiarizes the student with classical research of material culture as well as provides knowledge of fresh theories and research methods of the subject.

Learning outcomes

Student will be able to explain how the material culture reflects and moulds our ways of thinking and acting in various social and cultural contexts. Student will be able to define meanings of material culture from the perspectives of cultural anthropology and archaeology, as well as examine materiality by applying different research methods and from various theoretical perspectives.

Official course record: [AY687362P](#)

687374A | Material Culture Studies

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Different methods and theories of material culture used in archaeological research, applying them to research on artefacts and buildings, examples of the use of different methods and theories in archaeological interpretations

Learning outcomes

Upon completion of the course, students will be able to apply the key methods and theories of material culture studies in their research and make interpretations about the significance of material culture in the different fields of human culture. Students will familiarise themselves with analytical, critical, and creative thinking, international and multiculturalism, and multidisciplinary skills.

Official course record: [687374A](#)

700424A | Maturity Examination (History Majors)

0 ECTS | History | Intermediate Studies | Finnish

Person in charge: Markku Hokkanen, Seija Jalagin, Matti Salo

Content

A maturity test ('kypsyysnäyte') is a study unit required by the Government Decree on University Degrees, through which the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. The essay written for the maturity test is based on the topic of the thesis.

Learning outcomes

The student is able to present the methodological approach, results and conclusions of their thesis in an expert, condensed and focused manner.

Official course record: [700424A](#)

700432S | Maturity Examination (History)

0 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius, Tiina Kinnunen

Content

An abstract of a Pro Gradu Thesis

Learning outcomes

Upon completion of the course, students can present the main methodological aspects, results and conclusions of their Theses in an expert, condense and selective manner

[Official course record: 7004325](#)

694573A | Maturity Test (for Bachelor's Degree/Information Studies)

0 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Heidi Enwald

Content

A written examination based on the Bachelor's Thesis

Learning outcomes

Based on their assignment, students will be able to produce an essay, fluent in language and content, in which they evaluate the theoretical and methodological background and essential results of their thesis.

[Official course record: 694573A](#)

694584S | Maturity Test (for Master's Degree/Information Studies)

0 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Noora Hirvonen

Content

Abstract of the Master's Thesis

Learning outcomes

Upon completion of the course, students will have been able to describe the main methodological premises, results and conclusions of their theses in an expert, concise and selective manner.

[Official course record: 694584S](#)

687326A | Maturity Test for Bachelor's Degree / Archaeology

0 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Janne Ikäheimo

Content

Essay based on Bachelor's Thesis

Learning outcomes

The student is able to write, based on a given topic, a linguistically and substantively sound essay of approximately 500 words, in which the theoretical and methodological background of the BA thesis as well as its key results are presented.

[Official course record: 687326A](#)

687213A | Maturity Test for Bachelor's Degree / Cultural Anthropology

0 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Tiina Suopajärvi

Content

Exam based on the Bachelor's Thesis (Candidate's Thesis)

Learning outcomes

Students will have the skills to write an exam paper, based on a given assignment, which is academic in terms of language and content, and in which they will be able to demonstrate the theoretic and methodological background and central results of their thesis in an evaluative way.

Official course record: [687213A](#)

687122A | Maturity Test for Bachelor's Degree / Literature

0 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

Maturity Test

Learning outcomes

The students who succeed in completing maturity test have the skill to describe their thesis and the field in general in an analytical, logical way and show fluent writing skills.

Official course record: [687122A](#)

700224A | Maturity Test for Bachelor's Degree /History of Science and Ideas

0 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Learning outcomes

Students can write an essay, of high-level in content and language, in which they present the theoretical and methodological background and the central results of their thesis.

Official course record: [700224A](#)

687331S | Maturity Test for Master's Degree / Archaeology

0 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

A summary of Master's Thesis

Learning outcomes

Students can present the central methodological starting points, results, and deductions of their thesis expertly, concisely and selectively.

Official course record: [687331S](#)

687221S | Maturity Test for Master's Degree / Cultural Anthropology

0 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Aila Mustamo

Content

An abstract of the Master's (Pro Gradu) Thesis

Learning outcomes

Students will be able to present the central methodological points of departure, results and conclusions of their research in a professional, compact and selective manner.

Official course record: [687221S](#)

700225S | Maturity Test for Master's Degree / History of Science and Ideas

0 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen, Jouni-Matti Kuukkanen

Learning outcomes

Students will be able to discuss the central methodological premises, results and deductions of their thesis in a manner that is competent, concise and selective.

Official course record: [700225S](#)

687131S | Maturity test for Master's Degree / Literature

0 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Kuisma Korhonen

Content

Maturity Test

Learning outcomes

Upon completion of the maturity test, students will be able to describe their theses analytically and consistently in the language used in the thesis.

Official course record: [687131S](#)

AY694532S | Media Law and Ethics in the Media (OPEN UNI)

5 ECTS | Science Communication | Advanced Studies | Finnish

Person in charge: Erkki Karvonen

Content

Media self-regulation (Council for Mass Media, Guidelines for Journalists, YLE's Broadcasting Guidelines) and the laws and regulations governing the media. Special attention will be paid to copyrights and accessibility.

Learning outcomes

Upon completion of the course, students will be able to evaluate journalistic activities on the basis of the ethical guidelines for journalists and the most important aspects of communications legislation. They will be able to distinguish between legal, moral, and ethical issues in journalism. Students will be able to explain copyright legislation, in particular, with a view to the publication of textual and visual material. They will also be able to apply this knowledge to publishing decisions related to journalistic work.

Official course record: [AY694532S](#)

687186S | Media Writing

5 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

Practical reflection, practicing and self-assessment of writing literary and cultural criticism and popular academic writing, and other writing in new or old media.

Learning outcomes

The course works as an introduction to media writing, especially literary and cultural criticism. Upon completion of the course, students will be better able to write literary criticism, essayistic literature on culture or e.g. literary articles or reviews popularising science/academic research. They will be able to recognise genres of writing about art, culture and research and the formal requirements of the publishing forum.

[Official course record: 6871865](#)

HA00AG16 | Methods in human osteology

5 ECTS | Archaeology | Basic Studies | Finnish, English

Person in charge: Heli Maijanen

Content

The course deepens the knowledge of one specialized field of biological anthropology or bioarchaeology and its methods, for example study of human biological variation, paleopathology, forensic anthropology, imaging methods or paleoanthropology. The theme may vary annually.

Learning outcomes

After completing the course, students master the basics of one field of biological anthropology or bioarchaeology and its methods. Students will be able to independently and critically apply what they have learned to practice.

Generic skills: analytical, critical and creative thinking skills, well-being and self-development skills, communication, interaction and digital skills.

[Official course record: HA00AG16](#)

HA00AG17 | Methods in zooarchaeology

5 ECTS | Archaeology | Basic Studies | Finnish, English

Person in charge: Anna-Kaisa Salmi

Content

The course deepens the knowledge of one specialized field of zooarchaeology, for instance palaeopathology, osteometry, morphometry, or zooarchaeology of a specific period or region.

Learning outcomes

After completing the course, students master the basics of one field in zooarchaeology and its methods. Students will be able to independently and critically apply what they have learned to practice.

[Official course record: HA00AG17](#)

687179A | Methods of Cultural and Social Literature

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Jussi Ojajärvi

Content

The course offers an introduction to the methodology of sociological or otherwise "worldly" methods in literary studies, of cultural studies, and to many concepts of cultural theory.

Learning outcomes

During the course, students will familiarise themselves with the theoretical and methodological questions and the history and current state of cultural studies or societal literary research. They will also familiarise themselves with cultural theory, the history of its concepts and their practical applications. The emphasis relative to skills in literary analysis and interpretation is above all on fortifying the students' grasp on historical and contextualising aspects. Upon completion of the course, students will have a better understanding of what methods and emphases of cultural and societal studies mean in relation to the study of literature. They will also have a preliminary understanding of the meanings of concepts central to cultural theory, as well as the contexts of its progress and its potential applications to practice.

Official course record: 687179A

HT00BB19 | Modern political ideologies

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

The course examines the development of political ideas from the late 1700s to the 2000s. Its central themes are the major political ideologies of the modern age (liberalism, conservatism, socialism), various forms of nationalism, and the crisis ideas and mass politics of the 20th century (fascism and Nazism, communism), which emerged in the context of modern mass societies, industrialization and globalization. They were shaped by revolutions, world wars, technological revolution and the expansion of democracy. The course shows how political ideas are linked to changes in the state, the economy and civil society. The examination is also extended to welfare state models and economic ideologies (social democracy, neoliberalism), as well as identity politics and the ideas of social movements (feminism, environmental movements).

Learning outcomes

After completing the course, the student

- is able to identify and explain the key political ideas of the modern era from the end of the 1700s to the present day
- understands the context in which political ideologies emerge and change in relation to modernisation, globalisation and social upheavals
- is able to compare political ideas and explain the tensions, similarities and historical roots between them
- is able to apply the concepts of the history of political ideas to the study of history, the analysis of political movements and the understanding of the phenomena of contemporary societies
- is trained in critical literacy and argumentation when analysing the original sources of political thinkers

Official course record: HT00BB19

414071A | Modern trends in sociology

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Anu Alanko

Content

- * Recent theoretical trends in sociology
- * Reflexive modernisation
- * Constructive synthesis
- * Globalisation
- * New forms of social interaction

Learning outcomes

Having completed the course, the student

- * is familiarized with current sociological discussion and debate
- * can make use of it in her/his studies and in sociology and other subjects as well.

[Official course record: 414071A](#)

700683A | Multiculturalism and Minorities in Finland

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

Dynamics of international migration processes. History of an ethnic minority and central themes of multiculturalism in Finland

Learning outcomes

Students will be able to describe dynamics between multiculturalization and international migration. Students will also be able to describe the history, culture and practices of ethnic minorities in Finland, and explain the problems that have arisen between the minorities and the general population. Students will be able to recognise and analyse the problems arising from the encounters between different cultures and ethnic groups in Finland.

[Official course record: 700683A](#)

AY700683A | Multiculturalism and Minorities in Finland (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

Dynamics of international migration processes. History of an ethnic minority and central themes of multiculturalism in Finland

Learning outcomes

Students will be able to describe dynamics between multiculturalization and international migration. Students will also be able to describe the history, culture and practices of ethnic minorities in Finland, and explain the problems that have arisen between the minorities and the general population. Students will be able to recognise and analyse the problems arising from the encounters between different cultures and ethnic groups in Finland.

[Official course record: AY700683A](#)

HH00AJ07 | Museums and Cultural Heritage

5 ECTS | Cultural Heritage | Basic Studies | Finnish

Person in charge: Jari Okkonen

Content

The role of the museum as a societal actor. The history, structure and current status of the Finnish museum institute. Museums and history culture. Concepts of cultural and natural heritage. Tangible and intangible cultural heritage; cultural and natural environments. Guidelines and agreements on cultural heritage in the museum sector

Learning outcomes

After completing the course, students will be able to:

- explain the social role of the museum institution in the past, present and future
- define the role of the museum as a protector and conservator of cultural and natural heritage
- assess the ethical issues related to the relationship between museums and cultural heritage

Generic skills: critical thinking and argumentation, ethics and responsibility, internationality, time management, production of structured professional texts.

[Official course record: HH00AJ07](#)

HK00BA94 | Narration in Various Media

5 ECTS | Multimedial Creative Narration | Basic Studies | Finnish

Person in charge: Kasimir Sandbacka

Content

The course introduces students to the general features of storytelling across different media. The student becomes familiar with the basic concepts of narratology (the study of narrative), as well as dramaturgy and ludology. In addition, the module examines the historical, cultural, and societal significance of narrativity

Learning outcomes

After completing the course, the student:

- is able to define the basic concepts of narration and narrative studies.
- is able both to analyze the fundamental elements of narration and, when necessary, apply them to their own narrative work.
- understands the factors that connect and distinguish different media from the perspective of narrativity.
- recognizes the key ethical questions related to narration.

[Official course record: HK00BA94](#)

687375A | Natural Sciences and Archaeology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Janne Ikäheimo

Content

The scientific worldview and the production of scientific knowledge; familiarization with one or more branches of the natural sciences applicable to archaeology (e.g. dating methods, geoarchaeology, and analytical chemistry).

Learning outcomes

The student is able to explain how the natural sciences contribute to archaeological knowledge production and to evaluate the suitability of different scientific methods for solving archaeological research problems.

[Official course record: 687375A](#)

687144S | Northern Literature and Culture

5-10 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Nina Työlähti

Content

History and current state of Northern literature and culture and the principles and fields of their research.

Learning outcomes

Upon completion of the course, students will be able to give in-depth descriptions of Northern literature and culture. They will be able to describe the historical development and special aspects of a chosen field.

Official course record: 6871445

HC00AG04 | Optional Advanced Studies of Anthropological Methods

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Independent search of research literature and an in-depth exploration and assessment of the methodologies and methods of cultural anthropology towards student's research interests.

Learning outcomes

Students will be able to preliminarily develop the methodology of their own Master's Thesis (Pro Gradu Thesis) and student can read, interpret and write scientific texts and knows the rules for scientific writing and reference systems.

Official course record: HC00AG04

HC00AG06 | Optional Advanced Studies of Anthropological Theories

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Hannu Heikkinen

Content

Independent search of research literature and an in-depth exploration and assessment of the theories in cultural anthropology towards student's research interests.

Learning outcomes

Students will be able to construct the preliminary theoretical framework of their own Master's Thesis (Pro Gradu Thesis) and student can read, interpret and write scientific texts and knows the rules for scientific writing and reference systems.

Official course record: HC00AG06

HK00AM34 | Optional Course in Literature

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Opiskelija voi valita yhden valinnaisen kurssin seuraavista Kirjallisuuden oppiaineen 5op kurseista:

Kirjallisuuden tutkimuksen perusteet I

Kirjallisuushistoria 1: antiikista 1700-luvulle

Kirjallisuushistoria 2: 1700-luvulta nykypäivään

Kirjallisuushistoria 3: periodit ja lajit

Kirjallisuushistoria 4: Suomi

Kirjallisuus yhteiskunnassa

Kirjallisuuden klassikoiden tuntemus

Lasten ja nuorten kirjallisuus ja sanataide

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee paremmin jotain oman luovan kirjoittamisensa kannalta tärkeää kirjallisuun osa-aluetta.

Official course record: [HK00AM34](#)

700247S | Optional course to support advanced studies

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Content

One course from the Basic Studies in Digital Humanities or a course separately agreed upon with the examiner.

Learning outcomes

Student deepens their knowledge and skills by participating in a course that supports advanced studies

Official course record: [700247S](#)

AY00AY90 | Organizational communication (OPEN UNI)

5 ECTS | Science Communication | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

External organisational communication

Learning outcomes

Upon completion of the course, students will be able to outline the developments of the theory and practice of organisational communication and PR. Students will be able to interpret various image-related issues from a number of viewpoints. Students will also be able to explain the principles of corporate social responsibility and cultivation of corporate reputation. Students will be able to explain various brand-building processes and the phenomenon of experience economy. Students will be able to explain how organizational communication should be managed in crisis situations. Students will also be able to apply various communication theories to single cases.

Official course record: [AY00AY90](#)

HH00AJ06 | Organizations of cultural heritage and audience

5 ECTS | Cultural Heritage | Basic Studies | Finnish

Person in charge: Kirsi Laurén

Content

Pedagogical and communication activities in museums. Museums as producers and publishers of research information.

Learning outcomes

After completing the course, students will be able to:

- define the role and functions of museums as preservers, mediators and builders of cultural heritage.
- explain the specific nature of museums as learning environments.
- identify ways, forms and tools of pedagogical action in heritage work.
- describe the different stages of a museum exhibition.
- explain the principles of audience work.

Generic skills: ethics, critical evaluation and application of knowledge, written communication skills, knowledge of the principles of cultural sustainability, time management.

Official course record: [HH00AJ06](#)

HA00BB43 | Osteology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Heli Maijanen

Content

The student may choose either the Introduction to human osteology or the Introduction to zooarchaeology from the minor studies in osteology. If the student includes these courses in their osteology minor, they may request an alternative independent assignment for this course from the teacher in charge.

Learning outcomes

After completing the course, the student has basic knowledge of the human or animal skeleton and the analysis of their bones.

Official course record: [HA00BB43](#)

694675S | Other Research Area of Information Studies

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Heidi Enwald

No description supplied in the collected record.

Official course record: [694675S](#)

700227Y | Personal Study Plan 3 (Master's degree)

0 ECTS | History of Science and Ideas | General Studies | Finnish

Learning outcomes

Students will have a plan for completing their Master's degree, including education in relation to future (employment) plans.

Official course record: [700227Y](#)

KE00AR63 | Perspectives on Critical Queer Studies

5 ECTS | Gender Studies | Basic Studies | Finnish

Person in charge: Ilmari Leppihalme

Content

We will familiarize ourselves with the historical, cultural and theoretical origins of queer theory, as well as various current trends that provide tools for critical knowledge production, activism and interdisciplinary dialogue. We will discuss queer not only in the context of gender and sexuality, but also in relation to other theoretical frameworks. We will expand our queer theoretical outlook beyond Western formulations and ask what is the role of queer studies now and in the future.

Learning outcomes

After completing the course, the student:

- is able to place queer theory in its historical and cultural context
- is familiar with current trends in queer studies and can describe them as part of a wider theoretical field
- is able to critically evaluate contemporary discussions surrounding gender and sexuality

Official course record: [KE00AR63](#)

700631A | Philosophy of History

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Philosophy of History

Learning outcomes

The student gets to know philosophy of history as a field and one of its contemporary orientation.

Official course record: [700631A](#)

AY700631A | Philosophy of History (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content [Finnish source]

Historianfilosofia

Learning outcomes [Finnish source]

Opiskelija perehtyy historianfilosofiaan alana ja johonkin sen nykyajan suuntaukseen.

Official course record: [AY700631A](#)

HT00AS51 | Philosophy of History: main approaches

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

The key concepts, arguments and perspectives of philosophy of history

Learning outcomes

After the course the student

- knows main topics and concepts of philosophy of history as well as its most important philosophers
- is able to analyse and assess its philosophical content
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

HT00AS55 | Philosophy of intellectual ideas and concepts

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

History of ideas and conceptual perspective, philosophical challenges regarding these, historical case studies

Learning outcomes

After the course, the student

- understands how ideas and concepts can be determined
- understands the challenges regarding ideational and conceptual change and stability
- knows philosophical discussions about ideas and concepts and about their change
- knows at least one historical case about ideational or conceptual change
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

Official course record: [HT00AS55](#)

700632A | Philosophy of Language

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Philosophy of language

Learning outcomes

The student understands the nature of philosophy of language and knows its central problems

Official course record: [700632A](#)

AY700632A | Philosophy of Language (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content [Finnish source]

Kielifilosofia

Learning outcomes [Finnish source]

Opiskelija perehtyy kielifilosofian luonteeseen ja keskeisiin ongelmiin.

Official course record: [AY700632A](#)

700636A | Philosophy of Science

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes

Students will be able to display an advanced comprehension of the contemporary questions in the philosophy of science.

AY700636A | Philosophy of Science (OPEN UNI)

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes

Students will be able to display an advanced comprehension of the contemporary questions in the philosophy of science. Students will also be able to display an advanced understanding of the theoretical questions in the history of science, the philosophy of science, and historiography.

Official course record: AY700636A

687178A | Poetry Therapy

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Kuisma Korhonen

Content

The basics of literary therapy

Learning outcomes

The course offers an introduction to the basics of poetry therapy. Upon completion of the course, students will be able to identify and describe the approach of literary therapy (writing and bibliotherapy), and to assess the scholarly discussions regarding the subject.

Official course record: 687178A

687243A | Political Anthropology

5 ECTS | Cultural Anthropology | Intermediate Studies | Finnish

Person in charge: Sami Lakomäki

Content

Main schools and theories of political anthropology, as well as how, according to cultural anthropology, relations of power are constructed and how they shape social life. Applying theoretical ideas and concepts to research.

Learning outcomes

Students will know the central traditions, concepts, and theories of political anthropology and will be familiar with ongoing debates in the field. They will understand how power, politics, and culture are intertwined and why cultural anthropological perspectives are necessary in the study of power and politics. Students will be able to analyze relations of power in their own society, as well as in other societies. They will be able to read current political anthropological research and to discuss it critically. In terms of generic skills, students will learn to recognize the significance of analytical, critical, and creative thinking in scientific, professional, and ethical contexts. They will be able to assess critically the knowledge produced in their field and to apply it to solve complex problems. Additionally, they will learn about cultural diversity and to recognize problems related to cultural and ethnic stereotypes.

Official course record: 687243A

700239S | Political use of history

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Themes and case studies dealing with the political interpretation and use of history

Learning outcomes

After the course the student

- is able to analyse the relation between the and the political
- is familiar with the ways in which history has been interpreted in light of politics and for political purposes
- is able to use sources for research purposes
- is familiar with the conventions of academic writing

[Official course record: 7002395](#)

687521P | Practical Media Education

5 ECTS | Film Studies | Basic Studies | Finnish

Person in charge: Aino Isojärvi

Content

Familiarisation with practical methods of media education.

Learning outcomes

Upon completion of this course, the students will be able to apply practical methods of media education and analyze contemporary media texts. The students will also be able to design exercises that may be used in media education for various target groups.

[Official course record: 687521P](#)

687248S | Practical Training

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Tiina Suopajarvi

Content

The unit consists of Practical Training

Learning outcomes

The student is able to arrange a traineeship position for herself/himself, to manage the training process, and to work as a member of a professional community. In addition, the student is able to verbalize her/his own expertise, to apply her/his studies in cultural anthropology into working life, and to reflect on his/her own abilities. Finally, s/he will possess skills and knowledge that assist him/her in finding a job in the field.

Generic skills: 1) analytical, critical and creative thinking skills; 2) well-being and self-development skills; 3) international and multicultural skills; 4) sustainability, responsibility and ethics skills; 5) multidisciplinary and interdisciplinary skills; 6) communication, interaction and digital skills

[Official course record: 687248S](#)

694692A | Practical Training

6-8 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Heidi Enwald

Content

Internship in information tasks in an administrative or research organization, library, archive, museum, companies or other information-based organization.

Learning outcomes

The student recognizes key phenomena in the areas of Information studies in an organizational environment and knows how to work in information field tasks. He is able to use the new skills learned in his studies in practical work and to reflect on his own work and expertise.

Official course record: [694692A](#)

HI00AU39 | Practical Training

10 ECTS | Information Studies | Intermediate Studies | Finnish

Person in charge: Heidi Enwald

Content

Internship in information tasks in an administrative or research organization, library, archive, museum, companies or other information-based organization.

Learning outcomes

Students will recognize key phenomena in information studies in organizational environments and be able to work in information-related tasks, possibly as part of a multidisciplinary or multicultural community. They are able to apply the skills they have learned in their studies to practical work and to reflect on their own work and expertise. Students become familiar with the organization of the field and develop their general working life skills. Students are able to describe their professional skills and competencies.

Official course record: [HI00AU39](#)

HH00AJ09 | Practical training in cultural heritage work

5 ECTS | Cultural Heritage | Basic Studies | Finnish

Person in charge: Kirsi Laurén

Content

Learning at work in a museum

Learning outcomes

After completing the course, students will be able to:

- organise a traineeship in museum.
- apply in practice the theoretical knowledge acquired during their studies.
- report in writing on the practical aspects and tasks of the placement.
- evaluate the development of their own expertise.

Generic skills: interaction skills, managing and regulating own activities, time management, professional skills, promoting cultural sustainability.

Official course record: [HH00AJ09](#)

HC00AG03 | Practicum of Advanced Studies of Anthropological Methods

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Roger Norum

Content

An in-depth exploration of how to apply the methods and methodologies of cultural anthropology in research.

Learning outcomes

Students taking this course will learn to understand, describe, compare, and apply distinct methodological approaches used in anthropological research and fieldwork. Students will learn to analyze various research settings and to devise their own methodological approaches to conducting research. They will also learn the fundamental ethical principles of anthropological research and the methods involved, and will learn to write relevant scientific texts.

Official course record: HC00AG03

HC00AG05 | Practicum of Advanced Studies of Anthropological Theories

5 ECTS | Cultural Anthropology | Advanced Studies | Finnish

Person in charge: Roger Norum

Content

In-depth exploration and application of multiple theories employed in cultural anthropology

Learning outcomes

Students will learn about current theoretical discussions in cultural anthropology and will understand how these fit within classical theoretical traditions in the social sciences and humanities. Student will be able to critically read and interpret writings on various theoretical perspectives, and will learn to apply anthropological theories to different research contexts.

Official course record: HC00AG05

687383S | Pro gradu -thesis

30 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content [Finnish source]

Pro gradu -tutkielman tekeminen.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [687383S](#)

700245S | Pro gradu -thesis

30 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [700245S](#)

HH00AJ15 | Professional Activity

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

Becoming familiar with cultural heritage professionals and their tasks. Developing personal expertise through independent exploration and networking in the working field. Project work.

Learning outcomes

After completing the course, students will be able to:

- relate the theoretical knowledge studied to practical working life skills
- identify and find occupations and professions related to the studies undertaken
- describe and evaluate jobs in the cultural heritage sector
- plan a career relevant to studies

Generic skills: deepening professional expertise, career planning, time management, interaction and networking skills.

[Official course record: HH00AJ15](#)

HH00BB02 | Project working skills

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

The multidisciplinary course investigates a selected built site and its surroundings as tangible and intangible cultural heritage and as a social and material place of everyday life. During the course, students will gain practical experience in using archive and media materials, archaeological inventorying, ethnographic methods, and project communication. Project work essentially involves working in a group, planning and implementing the project, scheduling, presenting the results, and evaluating the project.

Learning outcomes

After completing the course student can:

- identify the practices of a multidisciplinary project
- apply scientific knowledge in practice
- plan and implement a project
- explain the significance of different research methods for the project
- evaluate the success of the project and own work contribution
- present the results of project work
- apply the project skills learned in the course in working life

Generic skills:

- analytical, critical and creative thinking skills
- communication, interaction and digital skills
- multidisciplinary and interdisciplinary skills
- well-being and self-development skills

[Official course record: HH00BB02](#)

687121A | Proseminar and Bachelor's Thesis (Literature)

10 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

Analysis and interpretation of literature and academic writing and discussion

Learning outcomes

The student can carry out a small research project. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [687121A](#)

700638P | Reading Classic Philosophical Texts

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes [Finnish source]

Opiskelija oppii lukemaan ja tulkitsemaan itsenäisesti filosofian klassikkoja sekä valmistamaan pienimuotoisen tutkielman rajatusta teemasta ja keskustelemaan siitä ryhmässä

Official course record: [700638P](#)

AY700638P | Reading Classic Philosophical Texts (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes [Finnish source]

Opiskelija oppii lukemaan ja tulkitsemaan itsenäisesti filosofian klassikkoja sekä valmistamaan pienimuotoisen tutkielman rajatusta teemasta ja keskustelemaan siitä ryhmässä.

Official course record: [AY700638P](#)

417240A | Relationships and sexuality education

5 ECTS | Gender Studies | Intermediate Studies | Finnish, English

Person in charge: Eeva-Maria Korhonen

Content

- * central mechanisms and processes of harassment, violence and bullying in the peer relations of children and young people and their entanglements with gender and sexuality
- * Gender and sexual diversity in childhood and youth
- * methods and practices in relationships and sexuality education as well as in social and emotional skills and safety education

Learning outcomes

After completing the course, the student will be able to:

- * identify key mechanisms of harassment, violence and bullying in the peer relations of children and young people, including their entanglements with gender and sexuality
- * recognize gender and sexual diversity in the lives and growth of children and young people
- * apply and use methods and practices developed for relationships and sexuality education as well as for social and emotional skills and safety education in age-appropriate ways with children and young people

Official course record: [417240A](#)

694682S | Research Methods

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Anna Suorsa

Content

The main research methods of Information Studies, and applying them to empirical research, planning the research process.

Learning outcomes

Upon completion of the course, students will be able to use main research methods in information studies and can plan carrying out a empirical research project in an ethically sustainable way. Students will be able to justify the choice of research method and operationalise theoretical terminology. Additionally, students will be able to comply with the principles of scholarly research, writing and practices.

Official course record: [694682S](#)

694691S | Research methods in human and social sciences

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Tuula Nygård

Content

Research methods in human and social sciences

Learning outcomes

Students will be familiar with the main research methods of human and social sciences in the field of information studies. The aim of the learning method is to develop the ability to read and write scientific texts, to think analytically and critically, and to manage large-scale issues. After completing the course, students will be able to independently draw analytical conclusions, critically examine materials, and identify key research ethical issues. In addition, they will be able to develop their general and subject-specific language skills in a foreign language.

Official course record: [694691S](#)

414076A | Research methods in sociology

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Tuija Huuki

Content

- * Phases in sociological research
- * Data collection and analysis in qualitative and quantitative sociological research

Learning outcomes

Having completed the course, the student

- * knows the process of sociological research
- * knows different (qualitative, quantitative) methods in sociological research
- * knows how to utilize these learning outcomes in Sociological research seminar while planning and implementing a small-scale research of her/his own

[Official course record: 414076A](#)

694669S | Research on Information Behaviour and Practices

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Aira Huttunen

Content

The main theories of information behaviour and information practices, theoretical parsing and methods

Learning outcomes

Upon completion of the course, students will be able to compare the main theories, models and theoretical parsing of information behaviour and information practices. Students will be able to identify the philosophical premises of science and the methodological possibilities applicable to them. After completing the course, the student is able to analyze and structure extensive bodies of material and recognize the essential content within them. In addition, they are able to make use of their language skills when engaging with discipline-specific literature.

[Official course record: 694669S](#)

694668S | Research on Information Environments and Scientific Communication

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Heidi Enwald

Content

Scientific communication, informetric research, different information environments

Learning outcomes

Students will learn to analyze and describe the theoretical structures of scientific communication, related research problems, and the application of informetric methods to different information environments. After completing the course, the student will be able to analyze and structure large entities and identify the key content of the material. In addition, they will be able to utilize their language skills in assimilating field-specific literature.

[Official course record: 694668S](#)

694688S | Research on Information Literacies

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Noora Hirvonen

Content

The concept of information literacy and its development, its science philosophical background assumptions, approaches and methods.

Learning outcomes

Students have advanced understanding on the concept of information literacy and its historical and theoretical development. They are able to reflect on the significance of information literacy in different contexts and to critically evaluate research approaches and methods in the field. The students are capable of independently engaging with scholarly literature, identifying its key contents and structuring and interpreting extensive bodies of information. They utilise their language skills to comprehend foreign-language scientific literature relevant to their field.

[Official course record: 6946885](#)

694672S | Research on Information Management and Knowledge Management

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Anna Suorsa

Content

Information management, knowledge management, information and knowledge in organisation environments, information and knowledge sharing and creating new knowledge in knowledge-based organisations

Learning outcomes

The student is able to analyze the theoretical foundations, methods, and tools of information management and information leadership research, as well as justify their significance and role in various information and organizational environments. Upon completing the course, the student is able to analyze and structure large entities and identify the key content of the material. Additionally, they are able to utilize their language skills to comprehend subject-specific literature.

[Official course record: 694672S](#)

694673S | Research on Information Seeking and Retrieval

5 ECTS | Information Studies | Advanced Studies | Finnish

Person in charge: Heidi Enwald

Content

Research on information seeking and storage, the methods and contexts of information seeking and retrieval, the methods of and research on content representation, and retrieval based on it

Learning outcomes

Students will learn to recognize, analyze, and describe specific issues, key theories, and methods related to information retrieval and search, as well as research in these areas. After completing the course, students will be able to analyze and structure large bodies of information and identify key content. In addition, they will be able to utilize their language skills in assimilating subject-specific literature.

[Official course record: 694673S](#)

HC00BB14 | Research project design and management

5 ECTS | Cultural Anthropology | Advanced Studies |

Person in charge: Élise Lépy

Content

This course introduces advanced level students to the concepts and practices of designing, planning, and managing applied research projects, with a particular emphasis on the development of academic theses. The course guides students through the full research project cycle, from defining a research problem and identifying knowledge gaps to disseminating results and assessing impact in academic and non-academic contexts. In addition, students will learn how to develop a work plan and build a budget, conduct data collection, use documentation tools, and identify stakeholders. The course also addresses data and ethical management plans, risk assessment and methods for monitoring project progress.

Learning outcomes

Upon completion of the course, students will have the tools to develop their project, such as MA thesis, and communicate their research outcomes to academic and non-academic audiences. They will be able to frame a research problem, develop a feasible project plan, manage fieldwork and stakeholder participation, and manage research data in a responsible way. Students will be able to apply the learning outcomes to other contexts, e.g. funding applications.

Official course record: [HC00BB14](#)

700637A | Research seminar in Philosophy

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes

Students will familiarise themselves with the conduction of a philosophical study and with critical discussion through a contemporary research theme.

Official course record: [700637A](#)

AY700637A | Research seminar in Philosophy (OPEN UNI)

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Vili Lähteenmäki

Learning outcomes

Students will familiarise themselves with the conduction of a philosophical study and with critical discussion through a contemporary research theme.

Official course record: [AY700637A](#)

HH00AQ93 | Research Skills in History

5 ECTS | History, History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Markku Hokkanen, Kalle Kananoja

Content

Lectures will provide an overview of research process in history, methodology, key methods and research skills, that will be applied in the making of research paper and later in candidates' seminar.

Students will practice research by designing a research topic under supervision, conducting a literature survey, writing and presenting a paper based on historical research, by acting as an opponent and by active participation in a seminar group.

Learning outcomes

Upon completion of the course the students will be familiarized with key skills and methods used in researching history, the nature of historical research process and the main traditions of historical research. They will learn how to conduct a critical literature review, write a research paper (10-12p.) based on academic literature, how to present their paper in a seminar and to act as an opponent.

The course provides students with the skills and capabilities needed for information retrieval, source criticism, planning and implementation of research (question setting, collecting and analyzing primary and secondary sources), writing, presenting and critical discussion. After the completion of the course, the students have the capabilities to continue into candidates' seminar.

[Official course record: HH00AQ93](#)

700164S | Science and Politics

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

National science and politics of science; the relationships of science and warfare (e.g. the Manhattan Project); the Cold War and science; the relationship between economics and economic policy; science and racism; science in the market economy, socialist societies, and dictatorships; science and social politics (e.g. eugenics, social engineering, health politics); the relationship between science and religion

Learning outcomes

Students will have gained an in-depth knowledge of the relationship between science and politics. The students will also be able to describe how politicians, officials, and administrators have co-opted scientific results as well as determined what kind of science has been favoured and supported. The students will also be able to describe how scientists have been influenced by their own political and ideological beliefs in their research and peer-reviewing.

[Official course record: 700164S](#)

920010J | Scientific Communication

0.5 ECTS | Science Communication | Post-graduate Studies | Finnish, English

Person in charge: Pekka Belt

Content

The course includes lectures and 5 hours of personal work. Each lecture is 4 hours in length arranged as a single half-day session. Students must attend at least two different lectures from the list below to pass the course and obtain the study credits. All the three lectures will be organized both in Finnish and in English.

1. Writing scientific journal articles
2. Writing a doctoral dissertation
3. Writing the compiling part of a compilation dissertation

Personal work includes preparing and consolidating the topics treated during the lectures. This may mean familiarizing with the guidebooks provided as study material, analyzing articles in your target journal and/or analyzing doctoral dissertations in your own field by comparing them against the structures presented during this course.

Writing scientific journal articles

- * Practical tips for writing scientific articles
- * Process for efficient writing
- * Improving chances for acceptance
- * Article logic, beginning and end
- * Editor's viewpoints
- * Group dynamics for writing articles

Writing a doctoral dissertation

- * Dissertation requirements and structure
- * Monograph
- * Compilation dissertation
- * Publication process
- * Optimal order of writing
- * Schedule for dissertation process

Writing the compiling part of a compilation dissertation

- * Requirements and structure of a compilation dissertation
- * Perceiving the whole created by the articles
- * Publication process
- * Optimal order of writing
- * Schedule for writing the compilation

Learning outcomes

This course provides students with understanding over efficient writing of scientific journal articles and doctoral dissertations. The course will motivate students to start writing sooner.

After this course the student will understand what is required from scientific journal articles and doctoral dissertations and what the related publishing processes entail. The student will know the typical structures of scientific articles and doctoral dissertations and how to write effectively.

[Official course record: 920010J](#)

687192P | Screenwriting

15 ECTS | Multimedial Creative Narration | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Elokuva- ja tv-käsikirjoituksen ideointi, kehittäminen, kirjoittaminen ja analysointi.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija:

- tuntee elokuva- ja tv-kerronnan keskeiset keinot ja osaa soveltaa niitä omaan käsikirjoittamiseensa
- tunnistaa elokuva- ja tv-kerronnan eri lajityyppejä ja hahmottaa niiden merkityksen omassa käsikirjoittamisessaan
- osaa analysoida elokuvia ja käsikirjoituksia tarinankerronnan näkökulmasta
- osaa antaa rakentavaa palautetta muiden käsikirjoituksista
- osaa hyödyntää omasta käsikirjoittamisestaan saamaansa palautetta
- osaa lukea omaa tekstiään kriittisesti ja kehittää sitä tehokkaasti

Official course record: [687192P](#)

HK00AK67 | Screenwriting (Intermediate Studies)

15 ECTS | Multimedial Creative Narration | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content [Finnish source]

Elokuva- ja tv-käsikirjoituksen ideointi, kehittäminen, kirjoittaminen ja analysointi. Aineopintoina suoritettaessa kurssiin kuuluu myös reflektiivisen loppuesseen kirjoittaminen.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija:

- tuntee elokuva- ja tv-kerronnan keskeiset keinot ja osaa soveltaa niitä omaan käsikirjoittamiseensa
- tunnistaa elokuva- ja tv-kerronnan eri lajityyppejä ja hahmottaa niiden merkityksen omassa käsikirjoittamisessaan
- osaa analysoida elokuvia ja käsikirjoituksia tarinankerronnan näkökulmasta
- osaa antaa rakentavaa palautetta muiden käsikirjoituksista
- osaa hyödyntää omasta käsikirjoittamisestaan saamaansa palautetta
- osaa lukea omaa tekstiään kriittisesti ja kehittää sitä tehokkaasti
- osaa analysoida omaa luovaa prosessiaan suhteessa käsikirjoittamisen teoriaan

Official course record: [HK00AK67](#)

687329S | Seminar

10 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

Presenting a Master's Thesis section by section, e.g., first a research plan and a disposition proposal, introduction and a chapter of the thesis, and finally the entire manuscript

Learning outcomes

Upon completing the course, students can carry out an independent research project. Students have prepared their own thesis in teaching-oriented interaction with the seminar group and the teachers

Official course record: [687329S](#)

HC00BB13 | Seminar (Cultural Anthropology)

10 ECTS | Cultural Anthropology | Advanced Studies |

Person in charge: Hannu Heikkinen

Content

Presentation and inspection of the students' Pro Gradu research plans, theory and methodology presentations (laudatur presentations) and Pro Gradu Thesis manuscripts. Acting as an opponent for one Pro Gradu manuscript and writing the meeting minutes in the Pro Gradu manuscript seminar of one other student. Lectures and writing workshops.

Learning outcomes

Students will be able to plan and justify a research approach for their Master's Thesis (Pro Gradu Thesis). In addition, students will be able to apply the guidelines of research ethics to their research and to comment on research produced by others.

Official course record: [HC00BB13](#)

AY00BA74 | Short Introduction to Archaeology and Cultural Anthropology (OPEN UNI)

2 ECTS | Cultural Anthropology or Archaeology | Basic Studies | Finnish

Person in charge: Anna-Kaisa Salmi

Content [Finnish source]

Kulttuuriantropologia ja arkeologia tieteenaloina, keskeiset tutkimusmenetelmät, tieteenhistoria, esimerkkejä erityisaloista.

Learning outcomes [Finnish source]

Opiskelija tuntee antropologian, erityisesti kulttuuriantropologian ja arkeologian, osa-alueita, oppiaineiden keskinäisistä yhtymäkohtia, tutkimusmenetelmiä, tieteenhistorioita- ja filosofioita sekä kahden erityisalan perusteet.

Official course record: [AY00BA74](#)

AY00BA75 | Short introduction to literary studies (OPEN UNI)

2 ECTS | Literature | Basic Studies | Finnish

Person in charge: Kuisma Korhonen

Content

An introduction to literature as a field of study and academic discipline.

Learning outcomes

The course introduces literary studies as an academic discipline and provides an overview of literature studies and research at the University of Oulu. The course explores literature as a phenomenon as well as the research approaches offered by literary theory.

Official course record: [AY00BA75](#)

HA00BB44 | Social Archaeology

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Jari Okkonen

Content

Archaeological research on social relations

Learning outcomes

After completing the course, students will be able to:

- define the main outlines of the archaeological research on social relations of past societies,
- identify social units, hierarchies and interdependencies in archaeological data
- analyze and interpret their observations critically.

Official course record: [HA00BB44](#)

414073A | Social structure and change

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Anu Alanko

Content

- * Theories and research on social structures and change
- * Well-being and social inequality
- * Social stratification and class
- * Social mobility
- * Changing role of the state

Learning outcomes

Having completed the course, the student

- * has the basic knowledge regarding social structures and change from the perspective of individuals and social action
- * understands the social and structural conditions of social action

Official course record: [414073A](#)

687360P | Social World

5 ECTS | Archaeology, Cultural Anthropology | Basic Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Change in and transformation of communities; theories and critique of social evolution; various aspects of sociality; construction of social reality through, for example, shared meanings

Learning outcomes

Upon completion of the course, students will be able to explain what the concept of social evolution means. Students will familiarise themselves with past and contemporary forms of society, as well as with the construction of social world in the context of, for example, rituals, language, identity, power, violence, religion, and kinship. Student will familiarise themselves with critical thinking, multicultural skill, and equality and non-discrimination between different human groups.

Official course record: [687360P](#)

AY687360P | Social World (OPEN UNI)

5 ECTS | Archaeology | Basic Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Change in and development of communities; theories and critique of social evolution; various aspects of sociality; construction of social reality through, for example, shared meanings

Learning outcomes

Upon completion of the course, students will be able to explain what the concept of social evolution means. Students will familiarise themselves with past and contemporary forms of society, as well as with the construction of social world in the context of, for example, rituals, language, identity, power, violence, religion, and family ties.

[Official course record: AY687360P](#)

414081P | Sociological environment research

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

Environment as a focus in sociological research

Learning outcomes

Having completed the course, the student

- * has familiarized her/himself with important current studies in sociological environmental research.
- * can describe the main concepts, theoretical tradition and current research in this field.
- * knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on the theme.

[Official course record: 414081P](#)

AY414081P | Sociological environment research (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

Environment as a focus in sociological research

Learning outcomes

Having completed the course, the student

- has familiarized her/himself with important current studies in sociological environmental research.
- can describe the main concepts, theoretical tradition and current research in this field.
- knows how to use this knowledge in research and practical working duties and how to take part in societal discussion on the theme.

[Official course record: AY414081P](#)

414080P | Sociological research on family and lifespan

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

Family and life span (especially childhood and youth) as a focus of sociological research

Learning outcomes

Having completed the course, the student

- * has familiarized her/himself with important current research in family and lifespan (especially childhood and youth) studies.
- * can describe the essential concepts, theoretical traditions and current research in this area.
- * knows how to use this knowledge in research and practical working duties and how to take part in social discussion on these issues.

[Official course record: 414080P](#)

AY414080P | Sociological research on family and lifespan (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Tuija Huuki

Content

Family and life span (especially childhood and youth) as a focus of sociological research

Learning outcomes

Having completed the course, the student

- has familiarized her/himself with important current research in family and lifespan (especially childhood and youth) studies.
- can describe the essential concepts, theoretical traditions and current research in this area.
- knows how to use this knowledge in research and practical working duties and how to take part in social discussion on these issues.

[Official course record: AY414080P](#)

414077A | Sociological research seminar

5 ECTS | Sociology | Intermediate Studies | Finnish

Person in charge: Tuija Huuki

Content

- * Formulating a research problem
- * Creating a theoretical frame of reference for the research
- * Data collection and analysis
- * Writing a research report

Learning outcomes

Having completed the course, the student

- * knows how to synthesize what has been learnt in sociology and/or in gender studies so far by writing a small-scale, research within an agreed theme
- * has abilities for scientific writing and discussion

[Official course record: 414077A](#)

694644S | Sociology and Philosophy of Science

5 ECTS | Science Communication | Advanced Studies | Finnish

Person in charge: Maija Kallinen

Content

The key concepts and theories of the philosophy of science and the sociology of science

Learning outcomes

Students will have a general knowledge of philosophic theories of science and analysis of scientific argumentation, as well as different points of view of the study of science and the sociology of science. Students will be able to recognise the central theories of the philosophy of science, and they will be able to analyse scientific discourse. Students will be able to recognise and analyse the sociological factors of the interaction between science and society. Students will also be able to describe the key elements of the most important approaches in the sociology of science.

[Official course record: 6946445](#)

414084P | Sociology of racism and multiculturalism

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

Racism and multiculturalism as a focus of sociological research

Learning outcomes

Having completed the course, the student

- * has familiarized her/himself with important current research on racism and multiculturalism.
- * can describe the main concepts, the theoretical traditions and current research on the field.
- * knows how to use this knowledge in research and in practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: 414084P](#)

AY414084P | Sociology of racism and multiculturalism (OPEN UNI)

5 ECTS | Sociology | Basic Studies | Finnish

Person in charge: Anu Alanko

Content

Racism and multiculturalism as a focus of sociological research

Learning outcomes

Having completed the course, the student

- has familiarized her/himself with important current research on racism and multiculturalism.
- can describe the main concepts, the theoretical traditions and current research on the field.
- knows how to use this knowledge in research and in practical working duties and how to take part in societal discussion on relevant topics.

[Official course record: AY414084P](#)

687370A | Spatial Archaeology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Jari Okkonen

Content

The use of GIS (Geographic information systems) and spatial analysis in archaeology.

Learning outcomes

After completing the course, students will be able to:

- import a database into a GIS,
- conduct spatial analysis in GIS,
- present the results in the form of maps.

Official course record: 687370A

HT00AS56 | Special fields I

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Any chosen topic and relevant literature in the philosophy of history.

Learning outcomes

The student deepens her or his understanding of the chosen topic in the history of philosophy and is able to express a well-reasoned view about it.

Official course record: HT00AS56

HT00AS57 | Special fields II

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Content

Any chosen topic and relevant literature in the philosophy of history.

The topic must be different from Special Fields I.

Learning outcomes

The student deepens her or his understanding of the chosen topic in the philosophy of history and is able to express a well-reasoned view about it

Official course record: HT00AS57

700626A | Special Fields of Philosophy

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes

Students will be able to display an advanced understanding of a special field of philosophy and contemporary research questions in this field.

Official course record: 700626A

AY700626A | Special Fields of Philosophy (OPEN UNI)

5 ECTS | Philosophy | Intermediate Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes

Students will be able to display an advanced understanding of a special field of philosophy and contemporary research questions in this field.

Official course record: [AY700626A](#)

700329S | Specialisation Studies and International Studies 1

5 ECTS | History | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: [700329S](#)

700330S | Specialisation Studies and International Studies 2

5 ECTS | History | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: [700330S](#)

700341S | Specialisation Studies and International Studies I

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius

Content [Finnish source]

Opiskelija perehtyy oman erikoisalansa keskeisiin tutkimustuloksiin ja teoreettis-metodologisiin näkökulmiin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on perehtynyt oman erikoisalansa uusimpaan tutkimukseen sisällöllisesti ja teoreettis-metodologisesti sekä kykenee hyödyntämään ja soveltamaan sitä seminaariesitelmää ja pro gradu -tutkielmaa laatiessaan.

Official course record: [700341S](#)

700342S | Specialisation Studies and International Studies II

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius

Content [Finnish source]

Opiskelija perehtyy oman erikoisalansa keskeisiin tutkimustuloksiin ja teoreettis-metodologisiin näkökulmiin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on perehtynyt oman erikoisalansa uusimpaan tutkimukseen sisällöllisesti ja teoreettis-metodologisesti sekä kykenee hyödyntämään ja soveltamaan sitä seminaariesitelmää ja pro gradu -tutkielmaa laatiessaan.

Official course record: [700342S](#)

700343S | Specialisation Studies and International Studies III

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius

Content [Finnish source]

Opiskelija perehtyy oman erikoisalansa keskeisiin tutkimustuloksiin ja teoreettis-metodologisiin näkökulmiin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on perehtynyt oman erikoisalansa uusimpaan tutkimukseen sisällöllisesti ja teoreettis-metodologisesti sekä kykenee hyödyntämään ja soveltamaan sitä seminaariesitelmää ja pro gradu -tutkielmaa laatiessaan.

[Official course record: 7003435](#)

700344S | Specialisation Studies and International Studies IV

5 ECTS | History | Advanced Studies | Finnish

Person in charge: Kari Alenius

Content [Finnish source]

Opiskelija perehtyy oman erikoisalansa keskeisiin tutkimustuloksiin ja teoreettis-metodologisiin näkökulmiin.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija on perehtynyt oman erikoisalansa uusimpaan tutkimukseen sisällöllisesti ja teoreettis-metodologisesti sekä kykenee hyödyntämään ja soveltamaan sitä seminaariesitelmää ja pro gradu -tutkielmaa laatiessaan.

[Official course record: 700344S](#)

HH00BB03 | Specialised fields of cultural heritage

5 ECTS | Cultural Heritage | Intermediate Studies | Finnish

Person in charge: Kirsi Laurén

Content

Study of folk beliefs and mythology. Content:

The course introduces students to the worldview of Finnish folk beliefs and mythology, shamanism and the institution of wise man, mythical creatures, oral traditions, and research approaches to them.

History of Art. Content:

The course offers a geographically broad perspective on the forms and functions of art in the cultural heritage and history of humankind. It introduces art culture over a long period of time, from prehistory to art movements and contemporary modern art trends, significant artists, and works of art.

Learning outcomes

There are two specialization options in this course. Choose either Folk beliefs and mythology studies, 5 credits
OR Art history, 5 credits.

Folk beliefs and mythology studies, 5 credits

Learning outcomes

Upon completion of the course, students are able to:

- identify the central themes and mythical creatures of folk beliefs
- define the concepts of folk beliefs and mythology
- analyze the characteristics of the worldview of folk beliefs
- describe the key features of Finnish shamanism and the institution of the wise man
- explain the central perspectives of the study of folk beliefs and mythology

Generic skills: analytical, critical and creative thinking skills; well-being and self-development skills

History of Art, 5 credits

Learning outcomes

After completing the course, students are able to:

- explain the significance of art as cultural heritage
- identify different art forms
- distinguish between different time periods in art
- describe the key features of Finnish shamanism and the wise man institution
- define the key characteristics of different art movements

Generic skills: analytical, critical and creative thinking skills; well-being and self-development skills;
international and multicultural skills

Official course record: [HH00BB03](#)

700320A | Statistical Methods and Archive Skills

5 ECTS | History | Intermediate Studies | Finnish

Person in charge: Matti Salo

Content

Statistical sources, compilation and interpreting of statistics; using statistical methods and presenting statistical information; location and usage of domestic and foreign sources of historical research.

Learning outcomes

Upon completion of the course, students will be able to search for statistics and sources important to research questions relating to history; students will be able to use and edit quantitative material by utilising basic statistical analysis and a spreadsheet programme; students will be able to review statistics and quantitative presentations critically, as well as plan graphic representations of statistics and include them in the research text. Students will also be able to locate various data sources (private and public, digital and written, domestic and foreign), data collections, databases and archives. Students will be able to evaluate how to use the found material to solve their research question.

Official course record: [700320A](#)

687377S | Studies for Improving Employment Prospects

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Timo Ylimaunu

Content

Training consists of practical training.

Learning outcomes

The student is able to obtain a traineeship, masters the training process and is able to operate in a work community. In addition, the student is able to describe his/her personal skills in writing, apply archaeological studies at work, reflect on his/her own skills and possesses capacities that promote gaining employment in different tasks of the discipline. Students will familiarise themselves with self-development skills, development of professional identity, setting career goals, responsible decision-making, cooperation, and networking skills, and building trust.

Official course record: [6873775](#)

687364A | Study of the North and Northern Archaeology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

The basics of the Archaeology of Finland and surrounding regions from the Stone Age to the present; the characteristics of lifestyle and way of thinking in the Northern cultures and the relationship with the environment and identity; the relation between the cultural change in the Northern Fennoscandia and larger processes such as Neolithisation, early metal technology, state formation and modernisation

Learning outcomes

Upon completion of the course, students will be able to describe and explain cultural processes during the prehistoric and historical times in the Northern areas, especially in the Northern Fennoscandia. Students will have basic knowledge of the characteristics, cultural changes and continuity of Northern cultures in the long term. Students will know the idea of the North as a historical construction and will be able to view the cultural developments in the North as part of the broader cultural phenomena and processes of the past.

Official course record: [687364A](#)

687148S | Teaching Literature

5-10 ECTS | Literature | Advanced Studies | Finnish

Person in charge: Nina Työlähti

Content

Theory and (as far as possible) practice of the teaching of literature

Learning outcomes

Upon completion of the course, students will be able to assess the teaching of literature in different contexts, e.g. universities, adult education, literary art groups or poetry therapy.

Official course record: [687148S](#)

700166S | The History of a Political Idea

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

An in-depth analysis of a political or social idea: Nationalism, socialism, liberalism, fascism, anarchism, utopianism, the green movement

Learning outcomes

Students will have made an in-depth analysis of the history of a political or social idea of their choosing and can describe its major historical developments.

Official course record: [700166S](#)

700165S | The History of Academic Field

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

An in-depth analysis of the history of an academic field: In biology, for example, theories of human evolution, or, in physics, quantum physics; other possible fields are cosmology, criminology, psychiatry, psychoanalysis, neurosciences, public health sciences, genetics, political economics, history of ideas, etc.

Learning outcomes

Students will have made an in-depth analysis of the history of an academic field of their choosing and can describe the major historical developments of the field.

Official course record: [700165S](#)

700125P | The History of Sciences and Ideas

5 ECTS | History | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Do you want to know how science became the foundation of our society? What kinds of ideologies exist in the world? This course offers an opportunity to explore the development of scientific thinking and various ideological currents from antiquity to the present day. The course covers changes, upheavals, and societal dimensions of scientific thought. Additionally, you will become acquainted with the general trends in thinking about society, religion, and philosophy. Join us and broaden your understanding of ways of thinking that are unfamiliar to us!

Learning outcomes

Upon completion of the course, students will be able to describe the main developments of scientific thinking from the antiquity to the present. Students will understand the breakthroughs of scientific thinking and their significance to world views. Students will be able to locate the social requirements of sciences, the changes of the relationship between humanity and nature, and the definition of scientific rationality. Students will also be able to illustrate the developments of the ideas rationalising society, government, politics, and social movements from the antiquity to the present.

Official course record: [700125P](#)

AY700125P | The History of Sciences and Ideas (OPEN UNI)

5 ECTS | History | Basic Studies | Finnish

Person in charge: Maija Kallinen

Content

Do you want to know how science became the foundation of our society? What kinds of ideologies exist in the world? This course offers an opportunity to explore the development of scientific thinking and various ideological currents from antiquity to the present day. The course covers changes, upheavals, and societal dimensions of scientific thought. Additionally, you will become acquainted with the general trends in thinking about society, religion, and philosophy. Join us and broaden your understanding of ways of thinking that are unfamiliar to us!

Learning outcomes

Upon completion of the course, students will be able to describe the main developments of scientific thinking from the antiquity to the present. Students will understand the breakthroughs of scientific thinking and their significance to world views. Students will be able to locate the social requirements of sciences, the changes of the relationship between humanity and nature, and the definition of scientific rationality. Students will also be able to illustrate the developments of the ideas rationalising society, government, politics, and social movements from the antiquity to the present.

Official course record: [AY700125P](#)

700635P | The Problem of Knowledge and Ways of Knowing

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes [Finnish source]

Opiskelija ymmärtää tietoa, tietämistä ja tietämisen tapoja luonnehtivia filosofia käsitteitä, ongelmia ja ongelmien ratkaisuehdotuksia.

Official course record: [700635P](#)

AY700635P | The Problem of Knowledge and Ways of Knowing (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Jouni-Matti Kuukkanen

Learning outcomes [Finnish source]

Opiskelija ymmärtää tietoa, tietämistä ja tietämisen tapoja luonnehtivia filosofia käsitteitä, ongelmia ja ongelmien ratkaisuehdotuksia.

Official course record: [AY700635P](#)

700687A | The Relationship of Science and Religion

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The interaction and dynamics of scientific and religious thought from the Medieval period to the modern times in the Western Countries.

Learning outcomes

Students will be able to demonstrate a comprehensive view of the interactions between scientific thought and religious thought in different historical contexts.

Official course record: [700687A](#)

AY700687A | The Relationship of Science and Religion (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The interaction and dynamics of scientific and religious thought from the Medieval period to the modern times in the Western Countries.

Learning outcomes

Students will be able to demonstrate a comprehensive view of the interactions between scientific thought and religious thought in different historical contexts.

[Official course record: AY700687A](#)

700151A | The Renaissance and the Enlightenment

5 ECTS | History of Science and Ideas | Intermediate Studies | Finnish

Person in charge: Maija Kallinen

Content

The history of science and ideas of the Renaissance and the Enlightenment.

Learning outcomes

Students will be able to define the special characteristics of the history of science and ideas of the Renaissance and the Enlightenment. Students will also be able to analyse the intellectual developments of the Renaissance and the Enlightenment era within their relevant historical and social contexts.

[Official course record: 700151A](#)

700162S | The Study of Science

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

Familiarisation with questions in the Study of Science

Learning outcomes

Students will be able to define the central views in the Study of Science and its basic concepts enabling the students to independently follow the discussion related to the field. The students will be able to apply the terminology of the Study of Science to analyse phenomena in the history of science.

[Official course record: 700162S](#)

687367A | Theory and Methods of Archaeology

5 ECTS | Archaeology | Intermediate Studies | Finnish

Person in charge: Vesa-Pekka Herva

Content

An overview of the history and theory of archaeological thought regarding, for instance, the nature of culture, social structure and change, identity and environment; research methods in Archaeology and employing them in the study of specific archaeological questions using different data set.

Learning outcomes

Upon completion of the course, students will be able to describe the nature of archaeological information and the key research methods in Archaeology and to explain the suitability of specific theoretical perspectives and methods for the research of certain questions and sources in Archaeology. Students will be able to give examples of different theories in Archaeology. Students will be able to critically evaluate the strengths and weaknesses of different theoretical tendencies and to explain the significance of theory to the creation of archaeological information.

[Official course record: 687367A](#)

700161S | Theory and Philosophy of History and the Philosophy of Science

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

Person in charge: Petteri Pietikäinen

Content

The theories of history, the philosophical theories describing the substance of history, and philosophical theories and ideas describing central aspects of science and the development of scientific research

Learning outcomes

Students gain an in-depth understanding of the following areas: 1) various theories on history as a discipline and related criticism and discourse; 2) theory propositions explaining and arguing historical processes, the proposed laws of history, and the meaning of history; 3) the theoretical discourse regarding the nature of science, its changes, and the particular questions of scientific research (causality, paradigms, verification, objectivity, etc.).

[Official course record: 700161S](#)

687378S | Utilising and Disseminating Archaeological Information

5 ECTS | Archaeology | Advanced Studies | Finnish

Person in charge: Janne Ikäheimo

Content

The course addresses topics such as:

- academic archaeology as practice: publishing, peer review, conferences, and networking
- doctoral studies and research careers: PhD pathways, funding mechanisms, and research proposals
- archaeological knowledge in society: impact, open science, and accessibility of information
- media relations, science communication, and popularization
- pseudo-archaeology, misinterpretations, and expert responsibility
- expert identity, tacit knowledge, and career planning

Learning outcomes

After completing the course, students will:

- be familiar with the formal and informal practices of academic publishing, conferences, and research communication
- understand different career paths and employment prospects in archaeology (research, museums, heritage authorities, private sector, third sector)
- recognize the basic logic of doctoral studies, research funding, and grant applications
- be able to assess the societal relevance and impact of archaeological research and select appropriate formats for disseminating knowledge to different audiences
- understand the role of archaeologists in relation to media, public debate, and pseudo-archaeological narratives
- develop skills in expert communication, articulating one's own competence, and building professional credibility

Official course record: [6873785](#)

700628P | Values, Ethics and politics in the Contemporary World

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Susanne Uusitalo

Content

Values, applied moral, social and political philosophy

Learning outcomes

The student will understand role of values in the context of human rights, culture, and nature and learn some of the key theories in moral and political philosophy

Official course record: [700628P](#)

AY700628P | Values, Ethics and politics in the Contemporary World (OPEN UNI)

5 ECTS | Philosophy | Basic Studies | Finnish

Person in charge: Susanne Uusitalo

Content

Values, Ethics and Political Philosophy

Learning outcomes

The student will learn about the meaning of values in relation to human rights, culture and nature and learns about the central views in moral and political philosophy.

Official course record: [AY700628P](#)

HT00AQ34 | Work Training

5 ECTS | History of Science and Ideas | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: [HT00AQ34](#)

687177A | Workshop of Teaching Literature

5 ECTS | Literature | Intermediate Studies | Finnish

Person in charge: Nina Työlähti

Content

The course works as an introduction to the fundamentals of the field. In lecture format guided group work may be included, aimed at producing a sample lesson, portfolio or assignment folder with additional material.

Learning outcomes

Upon completion of the course students will be able to apply their skills in literary analysis especially from the viewpoint of a teacher. They will also be able to apply the contents of literary research to education.

Official course record: [687177A](#)

700676A | World Religions

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

An overview of the principal religions in the world as well as fundamental concepts of Religious Studies

Learning outcomes

Students will be able to analyse different religions and are capable of discussing philosophical problems related to religion.

Official course record: [700676A](#)

AY700676A | World Religions (OPEN UNI)

5 ECTS | Ethics | Intermediate Studies | Finnish

Person in charge: Kalle Kananoja

Content

An overview of the principal religions in the world as well as fundamental concepts of Religious Studies

Learning outcomes

Students will be able to analyse different religions and are capable of discussing philosophical problems related to religion.

Official course record: [AY700676A](#)

687145S | Writing

5-10 ECTS | Literature | Advanced Studies | Finnish

Content

Theory and practice of writing

Learning outcomes

Upon completion of the course, students will be able to recognise and apply different ways of expression from fiction to their own creative writing. They will also be familiar with the theory of writing and will be able to use it to analyse the goals, writing processes and results of their own and those of other writers.

Official course record: [687145S](#)

Languages & linguistics

902008Y | Academic English

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Satu Rusko

Content

The aim of the course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. This will include e.g.

- reading and discussing field-related journal articles and literature
- academic writing with a special focus on short text types in the field of Health Sciences (e.g. summary/abstract, CV, cover letter)
- developing speaking skills necessary in professional conversations, job interviews, meetings, conferences, etc.
- giving a field-related presentation
- developing skills needed in multicultural and multidisciplinary academic and working life contexts, such as teamwork, problem solving, lifelong-learning, and providing and receiving critical feedback.

Learning outcomes

Upon completion of the course, students will be able to

- read and discuss field-related journal articles and literature
- effectively communicate and interact both orally and in writing in professional, and academic contexts
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

[Official course record: 902008Y](#)

902177Y | Academic English for Business

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Joshua Ward

Content

The course contents focus on typical language structures (rhetoric) and styles (registers) of academic communication. Students will practice strategies for reading and writing academic texts in addition to compiling a research paper. This independent research work will encourage the development of effective project planning and time management skills.

Learning outcomes

By the end of the course, students will have demonstrated the ability to:

- organize written information clearly and coherently
- recognize and use appropriate academic style
- synthesize information from several sources
- discuss and form conclusions from their own research
- compile a short research paper including appropriate components (e.g., format, citations and references)
- reflect on their academic communication skills and practices.

[Official course record: 902177Y](#)

YK00AH06 | Academic English for Humanities: Academic Communication

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

In the Academic Communication course, you will focus on developing your academic and professional communication skills in English. Skills in oral interaction, including presenting academic topics to classmates, are practiced in the classroom, where there is a strong focus on working in pairs and small groups.

Homework tasks include online listening tasks, writing, and previewing assigned content in preparation for upcoming classroom discussions.

Learning outcomes

By the end of the course, you are expected to be able to

- use appropriate strategies and techniques for communicating effectively in English in an academic context, and
- present field-related subjects using appropriate academic vocabulary and style.

[Official course record: YK00AH06](#)

YK00AH05 | Academic English for Humanities: Reading for Academic Purposes

2 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

The Reading for Academic Purposes course will focus on both reading strategies and vocabulary learning; you will learn to read more extensive academic - general or discipline-specific - text with increased confidence and at sufficient speed, and to process it critically.

Homework tasks include regular reading tasks, as well as academic vocabulary learning.

Learning outcomes

By the end of the course, you are expected to be able to

- utilize your knowledge of word formation, text structure, and cohesion markers to understand the vocabulary and content of academic texts,
- identify and explain the main points in academic texts

[Official course record: YK00AH05](#)

HS00AG73 | Academic Speaking and Interaction Skills (Focus on your own field)

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Anne Koskela,

Content

Developing oral expression and communication skills, giving presentations, speeches in different situations, listening skills, analyzing and practicing the teaching and guidance situation, giving and receiving feedback, and using and understanding different registers.

Learning outcomes

The aim of the course is to develop the oral interaction skills needed in work and study.

By the end of the course, students are able to

- participate in various work-life discussions and use speeches in them
- prepare and give an oral presentation
- can discuss and argue in a group, taking into account the other participants and taking responsibility for the progress of the discussion
- act in formal and informal work-related interaction situations in their field.

Official course record: [HS00AG73](#)

682428P | Academic Writing and Communication

5 ECTS | English | Basic Studies | English

Person in charge: Steven Coats

Content

The course is designed primarily as an academic skills course, but students will be introduced to topics ranging from rhetoric and etymology to selected issues in the cultural landscape of the contemporary Anglophone world. A focus of the course will be to reinforce students' awareness of appropriate written English, including grammar, vocabulary, punctuation, and sentence structure.

Learning outcomes

Upon completing the course, students will have demonstrated competence in core skills considered essential for writing at the university level. In the first part of the course, effective reading and note-taking strategies will be introduced, along with principles of academic reference and citation. In the second part of the course, students will complete tasks designed to strengthen grammar and vocabulary skills and encourage sound rhetorical organization. Student writing will be critiqued at the draft stage in small group workshops and the importance of revision and rewriting emphasized. In the final part of the course, students will work together in small groups preparing a project.

Official course record: [682428P](#)

HS00AG72 | Academic Writing and Reading (Focus on your own field)

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Anne Koskela,

Content

Getting to know different text genres. Basics and conventions of scientific text. Stages in the writing process. Analysis of different types of factual texts. Producing one's own texts. Key issues of language planning and care (e.g. use of commas and conjunctions) and introduction to writing tools.

Learning outcomes

The aim of the course is to develop the written communication skills required for work and study in Finnish.

By the end of the course, students

- can to analyse texts of different genres
- apply knowledge of text genres in their own written work
- recognize the typical structures and phraseology of various scientific texts
- can present their own opinions and thoughts in a written text in a versatile way, can justify them and separate their own thinking from the source text
- identify spelling issues (e.g. use of commas, conjunctions) and apply the knowledge in their own texts
- have also developed their communication skills in general.

HS00AG75 | Additional optional course

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Anne Koskela

Content [Finnish source]

Jokin suomen kielen hallintaan liittyvä osa-alue S2-näkökulmasta. Sisältö voi vaihdella.

Learning outcomes [Finnish source]

Kurssin suoritettuaan opiskelija hallitsee johonkin suomen kieleen liittyvään osa-alueen syvällisesti.

[Official course record: HS00AG75](#)

683482A | Advanced Course in Research on Saami

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

Familiarisation with the multidisciplinary research on Saami and with the ways of producing information that change during the course of history and vary from society to society

Learning outcomes

After completing the course, students will be able to

- evaluate the points of departure, question settings, methods and the ways of producing information in the multidisciplinary research on Saami.

[Official course record: 683482A](#)

683401P | Advanced course in the North Saami language

5 ECTS | Saami as Foreign Language | Basic Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

Various reading, writing and pronunciation exercises, grammar and reading comprehension exercises

Learning outcomes

Upon completion of the course, students will be able to use the essential grammar and basic vocabulary of North Saami. Students will be able to read various texts and discuss them. Students will also develop their written language skills during the course.

[Official course record: 683401P](#)

693516S | Advanced ERASMUS-Studies 1

1-10 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Satu Selkälä, Sabine Grasz, Anniina Havela

Content

Students can have credits from their ERASMUS studies accredited under this module if the credits cannot be used under any other course code.

[Official course record: 693516S](#)

693517S | Advanced ERASMUS-Studies 2

1-10 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Satu Selkälä, Sabine Grasz, Anniina Havela

Content

Students can have credits from their ERASMUS studies accredited under this module if the credits cannot be used under any other course code.

[Official course record: 693517S](#)

693705S | Advanced Grammar

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Grammatical studies, topical grammatical questions in contemporary Swedish and writing techniques.

Learning outcomes

Upon completing the course, you will be able to explain and discuss grammatical questions and correct errors using reference grammars. You will also be able to use reference grammars in your own research and future profession.

[Official course record: 693705S](#)

HP00AQ29 | Advanced Language Technology for Saami Languages

5 ECTS | Saami Language, Inari Saami | Advanced Studies | Finnish

Person in charge: Petter Morottaja

Content

- * Unix command exercises
- * git version control program, make, language model tests
- * Reflection and analysis tasks related to the source code and documentation of Giellatekno tools
- * Working to improve a language model of one of the Saami languages or a language technology tool

Learning outcomes

After completing the course, the students

- * can describe the operating principles of Giellatekno's Saami language technology tools and master the basic functions related to their development and improvement
- * can create their own language model based on the Giellatekno language model and test it
- * can describe the key differences between rule-based and neural network-based language models and assess their reliability from the perspective of Saami languages
- * can act as part of a research group developing language technology tools for Saami languages

[Official course record: HP00AQ29](#)

693712S | Advanced Literature

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of literary theory. Discussion and analysis on later Scandinavian literary prose.

Learning outcomes

Students can apply one or two literary theories to the analysis and discussion of a work of fiction. The treatment is both theoretically and linguistically convincing.

They can analytically and critically discuss works of fiction in terms of both content and form.

[Official course record: 6937125](#)

HS00AG74 | Advanced Practical Training

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Work content and tasks (internship plan) as well as learning tasks related to the study unit, as well as a work placement report or portfolio, are agreed with the work life internship supervisor.

Learning outcomes

After completing the course, the student

- can function efficiently and smoothly in a Finnish-speaking work community
- recognize different language use situations in working life
- knows how to use them when practicing communication in Finnish in academic communication situations (teaching, supervision, research work, project work, etc.)

[Official course record: HS00AG74](#)

693624S | Advanced Presentation Skills

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of basics of rhetoric. Oral and written assignments.

Learning outcomes

You will understand the principles of effective communication and gain greater insight and confidence in your oral and written communication skills. You can create rhetorically effective and well-considered texts in Swedish.

You can monitor your own linguistic and professional development and learn from past mistakes and successes.

You can work cooperatively and constructively with different kinds of people.

[Official course record: 693624S](#)

HG00BC03 | Advanced Translation Exercises

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

Content

Central theories, models and processes of translation. Discussion of translation strategies when translating Finnish-German and possible translation problems and their solutions. Translation of different texts representing various text types and genres.

Familiarisation with and application of various (digital and AI supported) tools in the translation process.

Learning outcomes

Students are familiar with key theories, practices and processes of translation. They recognise potential translation problems and different translation strategies and can apply these in practice. They can analyse texts representing different text types and genres and translate them into the target language, German. They can use and critically evaluate various tools used in translation. They can carry out a translation assignment based on translation practice.

[Official course record: HG00BC03](#)

693518S | Advanced Workshop 1

1-5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz, Sandra Reimann, Satu Selkälä, Anniina Havela

Content

Practical projects related either to a course or to the degree programme in general.

Learning outcomes

Students can put the knowledge they have acquired during their studies into practice. They learn about working groups, typical work tasks and work processes in their own field and develop their professional identity in the process. After the project, they can write a report reflecting on the skills they have acquired and any challenges they may have faced.

[Official course record: 693518S](#)

693519S | Advanced Workshop 2

1-5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz, Sandra Reimann, Satu Selkälä, Anniina Havela

Content

Practical projects related either to a course or to the degree programme in general.

Learning outcomes

Students can put the knowledge they have acquired during their studies into practice. They learn about working groups, typical work tasks and work processes in their own field and develop their professional identity in the process. After the project, they can write a report reflecting on the skills they have acquired and any challenges they may have faced.

[Official course record: 693519S](#)

HY00BF16 | Anthropology of Human-Environment Relations

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy, Anna Krzywoszynska

Content

This course combines lectures and field classes, and equips students to independently investigate how humans and their environments interact and shape one another using anthropological thinking and methods. The lectures introduce some of the key approaches in environmental anthropology. Two field classes in the Oulu area combine place-based teaching and practical training in environmental anthropology research methods.

Learning outcomes

Humans and environments interact and shape one another. Human life takes place in relation to and through relationships with other beings, living (such as other species) and non-living (such as the weather, or infrastructure). By the end of the course, the students will have gained a theoretical and a practical understanding of human-environmental relations from an anthropological perspective, and will gain the tools for independent investigation of such relations.

Official course record: [HY00BF16](#)

693503S | Applied German Studies

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sandra Reimann, Sabine Grasz

Content

Theories and methods from linguistics, intercultural studies and multilingualism research with a focus on (international) business, corporate, tourism and media communication and communication in institutions in the intercultural field.

There is one topic per session. These include, for example, text types in corporate communication today, text grammar and social media, advertising and emotional linguistics, sustainability communication in companies, multilingualism and language and cultural mediation in the workplace from the perspective of interaction, translation and specialised languages, interculturality in German-Finnish institutions and intercultural tourism communication.

Part of the course will be guest lectures from academia and business.

Learning outcomes

Students are familiar with theories and methods from applied German studies, in particular applied linguistics, interculturality and multilingualism research. They will be able to apply these in analysing selected authentic examples/corpora from the fields of (international) business, corporate, tourism and media communication and communication in institutions. They are able to analyse different forms of communication (written, oral, different media) and, if necessary, evaluate them and make recommendations for action.

Official course record: [693503S](#)

683480A | Approaches on Saami Society

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

Familiarisation with the institutionalisation of Saami society, new opportunities for political participation/influence, questions concerning education and wellbeing, as well as the mobility and working life of the Saami people.

Learning outcomes

After completing the course, students will be able to

- define and explain the main developments in and functions of Saami society.
- critically compare and evaluate the social standings of the Saami as individuals and as communities in the Nordic countries and Russia.

682369S | Approaches to Cultural Interaction

5 ECTS | English | Advanced Studies | English

Person in charge: Maarit Siromaa

Content

This course examines various of theoretical concepts and research perspectives pertinent to a critical investigation of the role of human interaction and communication in the display of ideological, political and philosophical positions in various cultural 'texts' and discourses across diverse context and configurations.

Learning outcomes

Upon completion of the course, the students will be able to:

- identify and describe central qualitative approaches for analyzing culture-bound human interaction and cultural processes across diverse contexts, drawing on multidisciplinary perspectives and critical discourse analytic approaches,
- and apply the key concepts and ideas introduced in the course to critically and creatively reflect on, communicate about, and develop responsible and ethically grounded perspectives on the role of human interaction and communication in contemporary society, in in-person, printed, and digital contexts, ranging from private interactions to public and group settings.

Official course record: 682369S

682376P | Approaches to English Language Studies

5 ECTS | English | Basic Studies | English

Person in charge: Pentti Haddington

Content

Overview of selected areas of research in language studies in the unit of English.

Learning outcomes

Students completing the course should be able to

- display an understanding of the main areas of language studies in which research is conducted in the unit of English
- recognize the research approaches and the main concepts within these areas, and
- read and understand research in different areas of language studies.

In addition, during the course, students should be able to develop the following generic skills:

- examine materials critically, draw analytical inferences, propose creative solutions
- reflect on their learning through keeping a learning diary
- develop discipline-specific English language skills and present to an audience in English
- recognise ethical issues involved in the collection and use of study materials
- develop skills in project planning, group work and project reporting

Official course record: 682376P

HY00BF17 | Archaeology of Well-being

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Sanna Lipkin, Élise Lépy

Content

This course aims to introduce students to how well-being can be investigated through archaeological evidence. The course examines how emotional, social, mental, and physical well-being can be studied through human remains, material culture, and historical sources.

Through lectures and practical exercises, students will gain an understanding of how archaeologists have explored topics such as emotions associated with death, the challenges caused by adversity and the ways people coped with them, loneliness, empathy, children's well-being and diet in the past, as well as health and well-being related to lifestyles and disease. The course also provides an opportunity to examine how stress, well-being, emotional bonds between people, and human attachments to material culture and places can be studied in archaeology.

In addition, the course explores how archaeological research can contribute to the well-being of people living today. This broader perspective enables students to reflect on the wider significance and societal relevance of archaeological research.

Official course record: [HY00BF17](#)

HM00AS78 | Art and World View of the Saami People

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Marko Jouste

Content

The course explores both historical traditions and contemporary Sámi art, along with the worldview that they reflect. It provides an overview of Sámi art, its origins, and its diversity across different periods. Topics covered include music, literature, visual arts, film, and theatre, all of which contribute to the Sámi worldview. The course will also feature guest lectures by Sámi artists.

Learning outcomes

After completing the course, the student:

Will be able to describe and explain traditional Sámi art forms, their associated worldview, and contemporary Sámi art along with its historical development.

Will be able to discuss and write about Sámi art.

Official course record: [HM00AS78](#)

695012P | Assessing linguistic proficiency

5 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Sisko Brunni

Content

Assessing linguistic proficiency and skill levels in language proficiency

Learning outcomes

Upon completing the course, students will be able to conduct a language test, apply the principles of assessing language proficiency, and use Finnish and pan-European skill levels in assessing language proficiency.

Official course record: [695012P](#)

693716P | Audio-visual Translation

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

Study of theoretical and practical questions concerning audio-visual translation. Analysis of subtitles and/or dubs in television programmes and films

Learning outcomes

Upon completing the course, you will be familiar with theoretical and practical questions concerning audio-visual translation.

You can evaluate knowledge within your field of study and apply it in different situations.

[Official course record: 693716P](#)

682285A | Bachelor's Seminar and Thesis

10 ECTS | English | Intermediate Studies | English

Person in charge: Pentti Haddington

Content

In the process of writing a bachelor's thesis and of assessing those by other participants, practice will be gained in: the retrieval and presentation of scholarly materials; the use of libraries; the conduct of scholarly discussions; and the evaluation of research.

Learning outcomes

After completing the course, student will have gained knowledge on a specific topic or question that they have selected themselves, studied systematically and reported in form of a scholarly thesis. They will have the capability to continue to a master's thesis.

Additionally, student will have developed in the following generic skills: The student can carry out a small project under guidance. They can select and define a topic and relevant methods, as well as acquire materials for their project and examine them analytically. They can also set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis. They can plan and implement the thesis work, including the managing of the workload, scheduling the tasks and carrying out the project as planned. The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice.

[Official course record: 682285A](#)

693405A | Bachelor's Seminar and Thesis

10 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sabine Grasz

Content

Basic principles of an academic work: the structure of an academic work, literary sources and bibliographies, methodology and style of an academic work, citation techniques. Writing, presenting and discussing the Bachelor's Thesis.

The course also includes a text workshop (feedback on the text, correction discussions) and the [Tiedonhankintakurssi](<https://libguides oulu.fi/693405a>) organised by the university library.

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis. The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [693405A](#)

693606A | Bachelor's Seminar and Thesis

10 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Elisa Risto

Content

Study of the basics of the theory of science, research ethics, research methods within humanistic studies, research process and academic writing

Participation in a separate course in information retrieval: HY00AQ22 [Information retrieval course (Faculty of Humanities)](<https://libguides oulu.fi/hy00aq22>), 1 ECTS

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis. The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

694914A | Bachelor's Thesis (Finnish Language)

10 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Niina Kunnas

Content

Academic writing, production of a research plan and a thesis

Simultaneously [information retrieval course](<https://libguides oulu.fi/694914a>).

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements, examination of research methods, sources, and findings, advanced argumentation skills, evaluation of arguments, drawing well-founded conclusions, problem identification and formulation, and critical assessment of sources), 2) Well-being and self-development skills (effective time management, maintaining a sustainable balance between professional duties, academic commitments, and personal well-being, self-leadership, personal goals and strategies, self-reflection, ability to take responsibility for one's actions and well-being, emotional intelligence, tolerance of uncertainty and discomfort, self-compassion, and development of professional identity), 3) Sustainability, responsibility and ethics skills (including compliance with principles of good scientific practice), 4) Communication, interaction and digital skills (clear and concise academic expression, listening and conversational skills, collaboration and teamwork abilities, presentation skills, and competencies in artificial intelligence).

Official course record: 694914A

683420A | Bachelor's Thesis (North Saami)

10 ECTS | Saami Language | Intermediate Studies | Sami

Person in charge: Ante Aikio

Content

Seminar meetings, acting as opponent to academic study, basics of information search, close reading of literature, independent analysis of data; writing Bachelor's Thesis of 15–20 pages and defending it in Bachelor's seminar

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

[Official course record: 683420A](#)

683384A | Bachelor's Thesis (Saami Culture)

10 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Tiina Magga

Content

Familiarisation with the practices of research, and production of scholarly texts

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

[Official course record: 683384A](#)

683619A | Bachelor's Thesis / Inari Saami

10 ECTS | Inari Saami | Intermediate Studies | Finnish, Sami

Person in charge: Marja-Liisa Olthuis

Content

Data collection, compiling of a research plan, academic writing, writing a research and acting as an opponent

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

[Official course record: 683619A](#)

683700A | Bachelor's Thesis (Skolt Saami)

10 ECTS | Skolt Saami | Intermediate Studies | Sami

Person in charge: Markus Juutinen

Content

Information retrieval, preparation of a research plan, academic writing, writing a thesis and serving as the opponent, writing a 15–20 page Bachelor's thesis and defending it in the seminar.

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

[Official course record: 683700A](#)

683659P | Basic Course in Inari Saami I

5 ECTS | Inari Saami | Basic Studies | Finnish, Sami

Person in charge: Mervi Sistonen

Content

Basic grammar and pronunciation of Inari Saami as well the basic vocabulary pertaining to everyday life.

Learning outcomes

Upon completion of the course, students will be able to master the basic grammar and pronunciation of Inari Saami as well as the basic vocabulary pertaining to everyday life. Students will also be able to read simple texts, discuss simple topics and write short written assignments in Saami.

Official course record: [683659P](#)

683661P | Basic Course in Inari Saami II

5 ECTS | Inari Saami | Basic Studies | Sami, Finnish

Person in charge: Mervi Sistonen

Content

Revision of the speech sounds of Inari Saami; basics of nouns, adjectives, pronouns and verb inflection; basics of the syntax of Inari Saami; central syntactical differences between Inari Saami and Finnish.

Learning outcomes

Upon completion of the course, students will be able to master the grammatical and lexical foundations of Inari Saami, as well as the basics of its pronunciation. They will be able to understand simple spoken and written language and will be able to conduct simple conversation in Inari Saami. They will have acquired knowledge on the principles of the inflection system and the most important syntactical features of Inari Saami, and will be able to write about things pertaining to everyday life in Saami.

Official course record: [683661P](#)

683680P | Basic Course in Inari Saami III

5 ECTS | Inari Saami | Basic Studies | Finnish, Sami

Person in charge: Mervi Sistonen

Content [Finnish source]

Kuuntelu- ja keskusteluharjoitukset, keskeisimmät inarinsaamen ja suomen kielen lauseopilliset erot, ajankohtaisiin aiheisiin liittyvä sanasto (terveys, sää, mielipiteen ilmaisu, sanavaraston laajentaminen), verbien indikatiivi- ja konditionaalitaivutus, nominien taivuttaminen, pää- ja sivulauseet, adjektiivien vertailumuodot, inarinsaamen passiivi.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa ilmaista oman mielipiteensä ja keskustella itselleen tärkeistä aiheista inarinsaameksi. Opiskelija osaa kirjoittaa inarinsaameksi päivittäiseen elämään liittyvistä asioista. Opiskelija hallitsee verbien ja nominien yleisimpien muotojen taivutussäännöt sekä tärkeimpien lausetyyppien muodostamiseen liittyvät säännöt. Opiskelija tunnistaa analyttisen, kriittisen ja luovan ajattelun keskeiset taidot sekä osaa havainnoida niitä omassa toiminnassaan. Opiskelija tunnistaa saamelaiskulttuurien moninaisuuden ja myös niihin liittyviä stereotyyppioita.

Official course record: [683680P](#)

683400P | Basic course in North Saami language

5 ECTS | Saami as Foreign Language | Basic Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

Various reading, writing and pronunciation exercises; grammar; exercises related to the understanding of written and spoken Saami

Learning outcomes

Upon completion of the course, students will be familiarised with the core grammar of North Saami and they will be able to use it. Students will know the basic vocabulary. They will be able to read informal texts and discuss easy subjects as well as write short texts in Saami.

Official course record: 683400P

HP00AK80 | Basic course in Skolt Saami I

5 ECTS | Skolt Saami | Basic Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

the Skolt Saami alphabet and sounds; pronunciation; grade alternation; vowel changes; inflection of pronouns and monosyllabic nouns in the plural nominative and singular genitive, accusative, locative, partitive and illative cases; the inflection of all inflectional classes of verbs in present tense; the predicative and attributive forms of adjectives

exercises in listening, pronunciation and conversation

the main vocabulary in the following areas: greetings, presenting oneself, family members, occupation, place of residence, one's own apartment, numbers, days of week, seasons, months, dates, date of birth, time, illnesses, going to doctor, nature, reindeer herding, foods, colors

Learning outcomes

The student knows the sounds of Skolt Saami and the basics of pronunciation and word inflection. The student can tell about him/herself in Skolt Saami and read simple texts. The student can inflect the most common words into the most important forms.

Official course record: HP00AK80

HP00AK81 | Basic course in Skolt Saami II

5 ECTS | Skolt Saami | Basic Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

A recapitulation of grade alternation, vowel changes, inflection of monosyllabic nouns and inflection of verbs in present tense; the inflection of verbs in the past and perfect tenses; the inflection of pronouns and monosyllabic nouns in the plural and the abessive and comitative cases; postpositions and prepositions; present continuous and past continuous; pluperfect; the case marking of subject and object; imperative in the second person

listening, pronunciation and conversation exercises

core vocabulary in the following topics: foods and drinks; relatives; residence; children and family; weather; clothes; daily routines; words of time; transportation and vehicles; hobbies and topics of interest

Learning outcomes

The student masters the main vocabulary of everyday life. The student knows the rules for inflecting nouns in cases and can apply them in inflecting the most common nouns. The student knows the basics of verbal inflection in past tense and the most important infinite forms. The student can write short texts in Skolt Saami and discuss matters related to everyday life. The student is able to evaluate their own learning, provide constructive feedback, and relate with compassion to both their own and others' learning processes. The student recognizes the most important features of Skolt Saami culture. The student is able to communicate clearly in a group and listen actively to others. The student is able to use digital pedagogical tools relevant to Skolt Saami studies in an appropriate, safe, and responsible manner.

Official course record: [HP00AK81](#)

HP00AK82 | Basic course in Skolt Saami III

5 ECTS | Skolt Saami | Basic Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

Recapitulation of nominal and verbal inflection; the essive case; inflection of disyllabic nouns; conditional; pronouns and weak inflection; inflection of the pronoun *jiöčč* 'oneself'; adverbs of place; central syntactic differences between Skolt Saami and Finnish; main and subordinate clauses; conjunctions;

listening, reading, and conversation exercises

vocabulary: expressing one's opinion, topical matters, vocabulary of topics of the students' interest

Learning outcomes

The student can discuss everyday and topical matters in Skolt Saami and speak with native speakers also about relatively complex topics. The student can write in Skolt Saami about matters related to everyday life. The student masters the rules of inflecting verbs and nouns to the most common forms and the rules of forming the most important types of sentences.

Official course record: [HP00AK82](#)

HG00BC02 | Basic German

5 ECTS | German Language and Culture | General Studies | Finnish, German

Person in charge: Anniina Havela

Content

Revision of key grammatical structures, exercises in reading, listening, speaking and writing in German.

Learning outcomes

Students should achieve level B1 (Common European Framework of Reference for Languages) in reading, listening, speaking and writing in German so that they are able to study German language and culture as a minor subject. They expand and consolidate their basic vocabulary and grammar skills. Students are able to talk about themselves and their studies and discuss everyday topics.

Official course record: [HG00BC02](#)

AY00AZ50 | Basic knowledge about the usage and conditions of Saami languages for social and health professionals (OPEN UNI)

2 ECTS | Saami Language | Other Studies | Finnish

Person in charge: Laura Ylinampa

Content [Finnish source]

Sosiaali- ja terveystieteen ammattilainen tai opiskelija! Työskenteletkö tai haluaisitko työskennellä saamelaisalueella tai kohtaako työssäsi saamelaisia asiakkaita? Tämän kurssin avulla opit luomaan turvallista kielellistä ja kulttuurillista ympäristöä saamelaisille asiakkaille ja ymmärrät saamen kielten nykytilannetta sekä sitä, millaiset kehityskulut tämän päivän kieliolojen taustalla vaikuttavat. Opit lisäksi ymmärtämään saamelaisten kirjavia kielitaustoja sekä sitä, miksi kieliasia voi olla monille vaikea. Saat lisäksi oleellista tietoa saamenkielisistä sote-palveluista ja resursseja saamen kielen opiskelun aloittamiseen.

Tarkemmin sisällöistä:

- Saamen kielten käyttöön vaikuttaneet yhteiskunnalliset kehityskulut
- Saamen kielten elvytys
- Mikä on kielitrauma ja miten se ilmenee
- Mitä on kielen takaisinottaminen
- Kielisensitiivisyys
- Saamen kielten nykytilanne
- Saatavilla olevat saamenkieliset materiaalit ja resurssit oman (mahdollisen) kielenopiskelun tueksi
- Perustietoja saamenkielisistä ja kulttuurinmukaisista sote-palveluista sekä niiden lainopillisesta pohjasta (esim. saamen kielilaki)

Learning outcomes [Finnish source]

Opiskelija ymmärtää turvallisen kulttuurisen ja kielellisen ympäristön luomisen merkityksen saamelaisen asiakkaan kohtaamisessa. Opiskelija tiedostaa, miten yhteiskunnalliset tapahtumat ja kehityskulut ovat vaikuttaneet saamen kielten käyttöön. Hän tuntee saamen kielten nykytilannetta sekä ymmärtää, mitä kielitrauma, kielen takaisinottaminen sekä kielisensitiivisyys tarkoittavat saamenkielisen asiakkaan näkökulmasta. Opiskelija osaa käyttää erilaisia saamenkielisiä kirjallisia ja sähköisiä materiaaleja sekä apuvälineitä oman kielenopiskelunsa tueksi. Lisäksi hän osaa hyödyntää jo saatavilla olevia materiaaleja ja tietoja, jotka liittyvät saamenkielisiin sote-palveluihin.

Official course record: AY00AZ50

HP00AQ28 | Basic Language Technology for Saami Languages

5 ECTS | Inari Saami, Saami Language | Advanced Studies | Sami

Person in charge: Petter Morottaja

Content

- * Unix command line: operating philosophy and most important commands
- * Regular expression
- * Exercises on editing text data for machine-readability and processing data using Unix commands
- * Introduction to the key language technology tools offered by Giellatekno: Online dictionaries and their connection to morphological analyzers, SiKOR written language data collections, SKA spoken language data collections, proofreading and language checking programs, translation programs, speech synthesis and speech recognition
- * Introduction to the source code and documentation of Giellatekno tools on the Github platform

Learning outcomes

After completing the course, the students:

- * know the key language technology tools developed for the Saami languages and is able to use them to assist in their work or research
- * know how to describe how Saami language technology tools have been and are being developed, and is able to search for information on the subject independently
- * are able to edit text materials into a computer-readable format and is able to create searches and word lists based on them using language technology tools as an aid

AY00AZ48 | Basics of Aanaar Saami grammar from the perspective of the social and health sector (OPEN UNI)

2 ECTS | Saami Language | Other Studies | Finnish, Sami

Person in charge: Laura Ylinampa, Tuula Ylännä

Content [Finnish source]

Sosiaali- ja terveysalan ammattilainen tai opiskelija! Työskenteletkö tai haluaisitko työskennellä saamelaisalueella tai kohtaatko työssäsi saamenkielisiä asiakkaita? Saamen kielen osaaminen avaa mielenkiintoisia työmahdollisuuksia sosiaali- ja terveysalalla, jossa jokaiselle saamen kielen osaajalle on suuri tarve. Aloita siis kielimatkasi inarinsaamen parissa ja tule tutustumaan ainoaan vain Suomessa puhuttuun saamen kieleen ja opi samalla saamelaisesta kulttuurista! Inarinsaamen alkeisiin tutustumalla opit mm. kohtaamaan ja hyvästelemään asiakkaan hänen omalla kielellään, mikä luo tilanteessa luottamuksen ilmapiiriä. Opit lisäksi keskeistä sosiaali- ja terveysalan sanastoa inarinsaameksi. Kieliopin alkeisiin tutustumisen jälkeen sinulla on hyvät valmiudet lähteä syventämään inarinsaamen osaamistasi jatkossa. Kieliopin terminologiaa avataan kurssilla käytännönläheisesti.

Sisällöstä tarkemmin:

Inarinsaamen kirjaimet ja äänteet; ääntäminen; astevaihtelu; vokaalivaihtelu; keskeisimpien pronominiin ja substantiivien taivutus yksikön ja monikon kaikissa sijamuodoissa; verbien kaikkien taivutusluokkien taivutus preesensissä, preteritissä; ja perfektissä; adjektiivien predikatiivi- ja attribuuttimuodot (taivutusesimerkit mahdollisimman paljon sote-alalta).

Learning outcomes [Finnish source]

Opiskelija tuntee taivutusopin perusteet ja osaa taivuttaa yleisimpiä sanoja keskeisiin taivutusmuotoihin. Opiskelija tuntee inarinsaamen perussanastoa sekä sosiaali- ja terveysalan perussanastoa.

Official course record: AY00AZ48

HS00AV36 | Basics of interaction research

2 ECTS | Literature or Finnish Language | Other Studies | Finnish

Person in charge: Maria Frick

Content

An introductory course to the research of social interaction

Learning outcomes

After completing the course, students will be able to approach interaction systematically, recognizing its key rules and modalities. Students will be able to describe the stages of the conversation analysis research process and read and produce conversation analysis transcripts of spoken research material. Generic skills: analytical, critical and creative thinking skills, international and multicultural skills sustainability, responsibility and ethics skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

Official course record: HS00AV36

AY00AV37 | Basics of interaction research (OPEN UNI)

2 ECTS | Finnish Language | Other Studies | Finnish

Person in charge: Maria Frick

Content

An introductory course to conversation analysis and the study of social interaction

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa lähestyä vuorovaikutusta systemaattisesti tunnistuen sen keskeisiä sääntöjä ja modaliteetteja. Opiskelija osaa kuvata keskustelunanalyttisen tutkimusprosessin vaiheita sekä lukea ja tuottaa puhutun tutkimusaineiston keskustelunanalyttisia litteraatteja.

Official course record: AY00AV37

AY00AZ47 | Basics of North Saami grammar from the perspective of the social and health sector (OPEN UNI)

2 ECTS | Saami Language | Other Studies | Finnish, Sami

Person in charge: Laura Ylinampa

Content [Finnish source]

Sosiaali- ja terveysalan ammattilainen tai opiskelija! Työskenteletkö tai haluaisitko työskennellä saamelaisalueella tai kohtaako työssäsi saamenkielisiä asiakkaita? Saamen kielten osaaminen avaa mielenkiintoisia työmahdollisuuksia sosiaali- ja terveysalalla, jossa jokaiselle saamen kielen osaajalle on suuri tarve. Aloita siis kielimatkasi pohjoissaamen parissa ja tule tutustumaan suurimpaan Suomessa puhuttuun saamen kieleen ja opi samalla saamelaisesta kulttuurista! Pohjoissaamen alkeisiin tutustumalla opit mm. kohtaamaan ja hyvästelemään asiakkaan hänen omalla kielellään, mikä luo tilanteessa luottamuksen ilmapiiriä. Opit lisäksi keskeistä sosiaali- ja terveysalan sanastoa pohjoissaameksi. Kieliopin alkeisiin tutustumisen jälkeen sinulla on hyvät valmiudet lähteä syventämään pohjoissaamen osaamistasi jatkossa. Kieliopin terminologiaa avataan kurssilla käytännönläheisesti.

Tarkemmin sisällöistä:

Pohjoissaamen kirjaimet ja äänteet, ääntäminen, astevaihtelu, vokaalivaihtelu, keskeisimpien pronomien ja substantiivien taivutus yksikön ja monikon kaikissa sijamuodoissa, verbien taivutus indikatiivin preesensissä ja preteritissä, adjektiivien predikatiivi- ja attribuuttimuodot. Taivutusesimerkeissä käytetään mahdollisimman paljon sosiaali- ja terveysalan sanastoa.

Learning outcomes [Finnish source]

Opiskelija tuntee taivutusopin perusteet ja osaa taivuttaa yleisimpiä sanoja keskeisiin taivutusmuotoihin. Opiskelija tuntee pohjoissaamen perussanastoa sekä sosiaali- ja terveysalan perussanastoa.

Official course record: AY00AZ47

683307P | Basics of Research on Indigenous and Saami peoples

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Sigga-Marja Magga

Content [Finnish source]

Opiskelijat johdatetaan alkuperäiskansatutkimuksen eettisiin ja käsitteellisiin lähtökohtiin, ja samoin kuin saamentutkimuksen suuntauksiin. Opintojakson aikana tutustutaan alkuperäiskansa- ja saamentutkimuksen perusteisiin sekä perehdytään alkuperäiskansojen ja tutkimuksen väliseen suhteeseen. Opiskelijat johdatetaan alkuperäiskansan käsitteeseen ja sen merkitykseen kansainvälisissä yhteyksissä. Opintojakson aikana tutustutaan erilaisten alkuperäiskansojen nykypäivään ja historiaan.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee alkuperäiskansa- ja saamentutkimuksen perinteitä ja nykytilaa.

Official course record: 683307P

AY00AZ49 | Basics of Skolt Saami grammar from the perspective of the social and health sector (OPEN UNI)

2 ECTS | Saami Language | Other Studies | Finnish, Sami

Person in charge: Laura Ylinampa

Content [Finnish source]

Sosiaali- ja terveysalan ammattilainen tai opiskelija! Työskenteletkö tai haluaisitko työskennellä saamelaisalueella tai kohtaatko työssäsi saamenkielisiä asiakkaita? Saamen kielten osaaminen avaa mielenkiintoisia työmahdollisuuksia erityisesti sosiaali- ja terveysalalla, jossa jokaiselle saamen kielen osaajalle on suuri tarve. Aloita siis kielimatkasi koltansaamen parissa ja tule tutustumaan erityisesti itäisessä Inarissa puhuttuun koltansaamen kieleen ja opi samalla saamelaisesta kulttuurista! Koltansaamen alkeisiin tutustumalla opit mm. kohtaamaan ja hyvästelemään asiakkaan hänen omalla kielellään, mikä luo tilanteessa luottamuksen ilmapiiriä. Opit lisäksi keskeistä sosiaali- ja terveysalan sanastoa koltansaameksi. Kieliopin alkeisiin tutustumisen jälkeen sinulla on hyvät valmiudet lähteä syventämään koltansaamen osaamistasi jatkossa. Kieliopin terminologiaa avataan kurssilla käytännönläheisesti.

Sisällöstä tarkemmin:

Koltansaamen kirjaimet ja äänteet, ääntäminen, astevaihtelu, vokaalivaihtelu, keskeisimpien pronomien ja yksitavuisten substantiivien taivutus yksikön ja monikon kaikissa sijamuodoissa, verbien kaikkien taivutusluokkien taivutus preesensissä ja perfektissä, adjektiivien predikatiivi- ja attribuuttimuodot. Taivutusesimerkeissä käytetään mahdollisimman paljon sosiaali- ja terveysalan sanastoa.

Learning outcomes [Finnish source]

Opiskelija tuntee taivutusopin perusteet ja osaa taivuttaa yleisimpiä sanoja keskeisiin taivutusmuotoihin. Opiskelija tuntee koltansaamen perussanastoa sekä sosiaali- ja terveysalan perussanastoa.

[Official course record: AY00AZ49](#)

900013Y | Beginners' Finnish Course 1

3 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish, English

Person in charge: Heidi Niskanen

Content

Before this course, student has taken the course Survival Finnish (900017Y). The course Survival and Beginners' Finnish 1 (YK00AU01) covers also the contents of this course.

This lower elementary course aims to help students to learn communication skills in ordinary everyday situations. During the course, students broaden their vocabulary and knowledge of grammar and principles of pronunciation. They also practise to understand easy Finnish talk about everyday subjects, and reading and writing short and simple texts/messages.

The topics and communicative situations that are covered in the course are the following:

- talking about oneself, one's family, studies and daily routines, as well as asking about these things from others
- food, drink and transactions in the grocery store
- accommodation and describing it; colours and adjectives.

The structures studied are the following:

- verb types
- basics of the change of the consonants k, p and t in nouns
- basics of the partitive and genitive cases
- possessive structure
- some declension types for nouns (word types) and the basics of the local cases.

Learning outcomes

By the end of the course, students

- can understand and use some very familiar and common everyday expressions relating to themselves and everyday situations
- can read short and simple texts and messages dealing with familiar topics (for example an informal email message)
- can communicate in easy and routine tasks requiring a simple and direct exchange of information on familiar everyday matters

[Official course record: 900013Y](#)

900053Y | Beginners' Finnish Course 2

5 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Sanna Järvinen

Content

This is a post-elementary course. During the course students learn more about communication in ordinary everyday situations in Finnish. They also extend their vocabulary and knowledge of grammar. Students practise understanding simple Finnish talk and short texts.

The topics and communicative situations covered in the course are the following: talking about weather, carrying out transactions in clothing stores and at the doctor's, asking about location, asking for help/favours, expressing how you are feeling, writing an invitation and email; talking about the past, describing people and things; seasons, the names of the months, travelling, vehicles, body parts, adjectives, food, drink and parties.

The structures studied are the following: the local cases, more about the change of the consonants k, p and t, more declension types for nouns (word types), nominative plural (basic form plural), basics of the imperfect (past tense of verbs), something about the object, some postposition structures, some sentence types (predicative and necessity sentences).

Learning outcomes

By the end of the course, students

- can understand and use some common everyday expressions and sentences
- understand different kinds of short texts and can for example locate important information in them
- can interact in a simple way provided the other person speaks slowly and clearly and is willing to help
- have acquired more detailed knowledge of the Finnish language and culture.

Official course record: 900053Y

YK00AP98 | Between Cultures

2 ECTS | French Language | Language and Communication Studies | French

Person in charge: Maritta Riekk

Content

- Taking contact: Introductions, on the phone, welcoming visitors
- Timetables: Booking appointments, changing the booked times
- Telling about your work day, the planning and managing of working hours
- Travelling: Searching for information, reserving accommodation, staying at a hotel, going to a restaurant, making a reclamation
- Restaurant industry: as a client or employé at the restaurant
- Culture: Behavioral patterns and cultural aspects common in France
- Job hunt: designing a job application, CV and practicing a job interview
- Versatile activities for understanding and producing interaction

Learning outcomes

The students will learn interaction skills needed in working life, job search and studies in the French speaking environment.

The students will explore cultural differences, adapt to them and learn how to react and interact in an appropriate way.

Additionally, the course aims to add to the students' knowledge of grammar, clause structures and vocabulary.

Official course record: YK00AP98

682390A | British Drama: Shakespeare and Beyond

5 ECTS | English | Intermediate Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

This course will introduce students to British dramatic traditions through the close study of representative texts from the pre-Elizabethan era to the 21st century. Students will develop their own interpretations of these texts, and begin to situate their personal readings into broader structures of critical and academic discourse.

Learning outcomes

Upon completion the student should be able to:

- display general knowledge of developments in British drama from the Elizabethan era to the 21st century
- offer persuasive individual interpretations of particular plays that rely on internal textual evidence linked to socio-historical context and/or particular theoretical perspectives
- situate their own arguments and ideas in relation to those of other critics, scholars and students.

Students strengthen their well being and self development skills by learning to manage challenges related to workload, uncertainty, and change. They deepen their international and multicultural competencies as they reflect on their thoughts, emotions, and actions in global anglophone and historical contexts, acknowledge and make productive use of linguistic and cultural diversity in learning, and develop discipline specific language skills. In addition, students enhance their multidisciplinary and interdisciplinary abilities by valuing perspectives from other fields, recognizing their relevance for understanding dramatic literature, and applying knowledge and methods from multiple disciplines to address complex problems.

[Official course record: 682390A](#)

901018Y | Brush-up Course in Swedish

2 ECTS | Language studies, Swedish | Language and Communication Studies | Finnish, Swedish

Person in charge: Kaisu Hoikkala

Content [Finnish source]

Kurssilla harjoitellaan ruotsiksi puhumista ja kykyä ymmärtää puhuttua kieltä sekä kirjoitetaan ja luetaan lyhyehköjä ruotsinkielisiä tekstejä. Erilaisten suullisten ja kirjallisten harjoitusten avulla pyritään lisäksi kertaamaan ruotsin kielen perusrakenteita sekä kartuttamaan sanastoa.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

[Official course record: 901018Y](#)

AY901018Y | Brush-up Course in Swedish (OPEN UNI)

2 ECTS | Language studies, Swedish | Language and Communication Studies | Finnish, Swedish

Person in charge: Kaisu Hoikkala

Content

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Learning outcomes [Finnish source]

Opiskelija hallitsee riittävän yleiskielen sanaston ja perusrakenteet selviytyäkseen ruotsin kielellä erilaisissa suullisissa ja kirjallisissa viestintätilanteissa, joiden aiheet ovat yleisiä tai omaan elämään liittyviä. Opiskelija osaa myös hyödyntää erilaisia kielenoppimisen strategioita ja arvioida osaamistaan suhteessa taitotasoon B1.

Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätöitä ja tekstien analysointia.

[Official course record: AY901018Y](#)

YK00AT47 | Business English for International Business Management

1 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This course requires active participation in the Moodle course and Zoom or classroom sessions. All assignments must be completed successfully in adherence to the deadlines. The course includes individual work. The theme of the course is launching oneself as a unique person with own personal and professional competitive advantage to grow confidence in oneself as a business professional.

Learning outcomes

By the end of the course the student will have been able to demonstrate the ability to:

- assess and express in writing own personal and professional competitive advantage following self-analysis
- use an appropriate level of formality and style for business communications
- communicate both verbally and in writing with reasonable accuracy and self-corrected mistakes if they have led to misunderstandings

Official course record: [YK00AT47](#)

902128Y | Business English Interaction

2-4 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This course is a learning experience which has a focus on the major language learning skills areas such as reading, writing, speaking, listening as well as vocabulary expansion and the further development of grammatical competence. Active participation in the Moodle course and Zoom sessions is mandatory and all projects must be completed successfully. All deadlines must be met as well. Neglecting to actively participate in the Zoom sessions and group work will lead to removal from the course.

The course includes 8 projects each of which may require individual work, pair work, and/or study group work, both in the course zoom sessions as well as outside of the course zoom sessions. The course includes the possibility to practice business to business (B2B) interaction within the digital environment and includes acquiring and interacting with business partners to develop the ability to gain and maintain B2B relationships. Meetings, negotiations, and exchanging business documents are the primary activities practiced in the course.

Learning outcomes

By the end of the course the student will have been able to:

- demonstrate the ability to use an appropriate level of formality and style for business communication both verbally and in writing with reasonable accuracy and self-correct mistakes if they have led to misunderstandings
- demonstrate the ability to write clear and effective business documents including modern-day visual appeal and email messages conveying information and details accurately
- hold online meetings, negotiations and presentations
- experience and apply communication and interaction skills in the tasks of the course
- experience and apply entrepreneurial mindset and skills to the tasks of the course.

Official course record: [902128Y](#)

AY902128Y | Business English Interaction (OPEN UNI)

4 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This course is a learning experience which has a focus on the major language learning skills areas such as reading, writing, speaking, listening as well as vocabulary expansion and the further development of grammatical competence. Active participation in the Moodle course and Zoom sessions is mandatory and all projects must be completed successfully. All deadlines must be met as well. Neglecting to participate will lead to failing the course.

The course includes 8 projects each of which may require individual work, pair work, and/or teamwork, both in the course zoom sessions as well as outside of the course zoom sessions. The course includes the possibility to practice business to business (B2B) interaction within the digital environment and includes acquiring and interacting with business partners to develop the ability to gain and maintain B2B relationships.

Meetings, negotiations, and exchanging business documents are the primary activities practiced in the course.

Learning outcomes

By the end of the course the student will have been able to:

- demonstrate the ability to use an appropriate level of formality and style for business communication both verbally and in writing with reasonable accuracy and self-correct mistakes if they have led to misunderstandings
- demonstrate the ability to write clear and effective business documents including modern-day visual appeal and email messages conveying information and details accurately.
- hold online meetings, negotiations and presentations
- experience and apply communication and interaction skills in the tasks of the course
- experience and apply entrepreneurial mindset and skills to the tasks of the course.

[Official course record: AY902128Y](#)

902127Y | Business English Launchpad

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This course is a project-based learning experience which has a focus on the major language learning skills areas such as reading, writing, speaking and listening as well as vocabulary expansion. Active participation in the Moodle course and Zoom sessions and/or classroom sessions is mandatory. All projects must be completed successfully in adherence to the deadlines. The course includes a number of projects which require individual and teamwork. The theme of the course is launching oneself as a unique person with own personal and professional competitive advantage and launching a business idea by creating a company, creating and presenting a business plan presentation and a pitch.

Learning outcomes

By the end of the course the student will have been able to:

- assess and express in writing own personal and professional competitive advantage following self-analysis
- demonstrate the ability to use an appropriate level of formality and style for business communications
- demonstrate the ability to communicate both verbally and in writing with reasonable accuracy and self-corrected mistakes if they have led to misunderstandings
- demonstrate the ability to hold a pitch and a presentation
- experience and apply communication and interaction skills in the tasks of the course
- experience and apply entrepreneurial mindset and skills to the tasks of the course.

Official course record: 902127Y

YK00AJ40 | Business German

4-5 ECTS | Language studies, German | Language and Communication Studies |

Person in charge: Oliver Jarde

Content

The course focuses on themes related to current topics in the German-speaking business world as well as on the development of communicative and negotiating skills.

Learning outcomes

Upon completion of the course the student should

- be able to manage in typical professional and special-field specific communication situations in an interactive manner
- be able to actively participate in discussions about current events and special field-specific topics
- express his/her views on different matters and present the pros and cons of different options
- be experienced in giving short oral presentations about topics related to his/her special field
- understand the culture-specific nature of Finnish and German customs and practices and be able to compare them with each other.

Official course record: YK00AJ40

902126Y | Business Studies for English Competence

2-4 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This project-based course includes the practice of major language learning skills such as reading, writing, speaking, and listening. A great focus is placed on reading and field-related vocabulary expansion. The course includes several projects that are completed through the adoption of entrepreneurial ways of thinking and operating, including creative and strategic thinking and planning, flexibility, and commitment. These skills are practiced within the context of different fields of business as the course is partially integrated with courses in the subject studies through the shared use of textbooks, e.g. in Management, Accounting, Marketing and Economics. This course supports the students as they make their first contact with the linguistic world of these areas of study.

The course includes individual and group work. All projects must be completed successfully and within all deadlines.

Learning outcomes

By the end of the course, the student will be able to:

- define and demonstrate the acquisition and use of vocabulary and specialized terms related to his or her field of study
- demonstrate the ability to listen to field-related podcasts and interpret and understand field-related texts at a satisfactory level of understanding
- demonstrate the ability to verbally discuss, explore and organize information to complete various verbal and written tasks interactively and collaboratively
- experience and apply communication and interaction skills in the tasks of the course

Official course record: 902126Y

902178Y | CEFR EXAM for Language Certificate

0 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Jaana Sorvari

Content

This exam has four parts: Reading, Writing, Listening and Speaking.

The Reading and Writing part of the exam will take place in the Exam Center on campus. You can complete the exam at any time from the Monday before the exam to the Monday following the exam. You will be added to the exam after you confirm via email that you will for sure, attend the exam. So be sure to email the teacher and confirm that you are participating and then you can register for the exam center day and time that suits you. You will be given 120 minutes of time to complete these two parts of the exam.

The Listening part of the exam will take place in Moodle and Zoom and will last about 30 minutes. You must have your camera on for the duration of the Listening and Speaking parts of the exam.

The Speaking part of the exam will begin after the Listening part is over and it will last about 20 minutes per group of students (2-4 students in a group).

Please be ready to show your student ID or driver's license to prove your identification when your verbal part of the exam begins. You must have your camera on during the entire zoom part of the exam. If you do not have a working camera, you must tell the teacher a couple of days before the exam so that your exam can be booked on the campus as the teacher must be able to see you. If you want to remain anonymous for the zoom part of the exam, you can use a zoom name that does identify you (Donald Duck for example) for the whole exam. Change your zoom name before you join the zoom session.

The Exam Instructor will email you on the Monday before the exam with very precise instructions.

Learning outcomes

The objectives of this exam are the following:

- to provide the student with the opportunity to demonstrate own English skills in reading, writing, listening and speaking.

Official course record: 902178Y

HR00AZ07 | Chanson and French Culture

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Significant chansons of the 20th century and their analysis. Watching and commenting on movie clips. Films are studied from 1895 to the present day.

Learning outcomes

The students know the development of the chanson to its current form. The students are able to interpret lyrics. The development of French cinema becomes familiar. Vocabulary accumulates.

Official course record: [HR00AZ07](#)

695261A | Classics in Linguistics

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Classics in linguistics. The student will read the classic itself, not merely a secondary work. The classics selected can also be grouped so that they form a coherent whole, e.g., a particular theory (structuralism, cognitive grammar/linguistics, generative grammar, Optimality Theory etc.).

Learning outcomes

Upon completion of this course, students will be able to describe the significance of a classical work in the history of linguistics. The students will be able to classify different theoretical approaches and analyse their interrelationships.

Official course record: [695261A](#)

900100Y | Communicate with Confidence

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Niina Sarajärvi

Content

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Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

Official course record: [900100Y](#)

900102Y | Communicate with Impact

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Anu Laurikkala, Saga Skiftesvik

Content [Finnish source]

Opintojaksolla harjoitellaan viestintä- ja vuorovaikutustaitoja sekä muita geneerisiä taitoja. Opiskelijat valitsevat jonkin oman alansa ilmiön ja käsittelevät sitä erilaisissa vaikuttavissa teksteissä. Tehtäviä tehdään yksin ja pienryhmässä.

Keskeiset sisällöt:

- * asiantuntijaviestintä
- * esiintyminen ja esiintymisjännitys
- * monilukutaito
- * tieteellinen kirjoittaminen ja lähdeviittaustekniikka
- * tieteen yleistajuistaminen
- * vuorovaikutus- ja yhteistyötaidot
- * yhteiskirjoittaminen

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students. Course description is only in Finnish.

Official course record: 900102Y

900097Y | Communication in History

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Mikkola

Content [Finnish source]

Tieteellisen viestinnän käytänteet historiatieteissä, tieteen kieli ja tyyli, yhdessä kirjoittaminen, kirjoittamisen prosessi, ryhmä- ja puheviestintätilanteiden havainnoiminen, harjoittelemine ja analysoiminen, palaute.

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

Official course record: 900097Y

YK00AM45 | Communication Skills for Speech Therapist

3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Liimatta

Content [Finnish source]

Keskeiset sisällöt:

- vuorovaikutus- ja yhteistyötaidot
- asiakas- ja ohjausviestintä
- palautetaidot
- tiimikirjoittaminen
- tieteellinen kirjoittaminen
- lähdekritiikki.

Learning outcomes

This course is offered only in Finnish.

Official course record: YK00AM45

900055Y | Communication Skills in Business and Economic Life

3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Mikkola

Content [Finnish source]

Asiantuntijan viestintätilanteet, yhdessä työskentely, eri asiantuntijatekstit ja niiden kohdentaminen

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

Official course record: 900055Y

900062P | Communicative Oral Skills for Production Engineering and Management

2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Niina Sarajärvi

Content

In this course the student analyzes, practices and develops his/her communication and interaction skills and other generic skills.

Key contents:

- analyzing, practicing and developing group communication skills
- preparing and practicing an effective presentation
- feedback skills

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

Upon completion of the course the student

- is able to give a presentation as an expert in study and work-related situations
- knows how to analyze and assess his/her own oral communication and the communication of his/her peers
- knows how to give, receive and handle feedback constructively
- knows how to act efficiently in situations of group communication

[Official course record: 900062P](#)

HG00BC08 | Comparative Analyses in Literature and Culture (University of Helsinki)

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

No description supplied in the collected record.

[Official course record: HG00BC08](#)

682414S | Content Writing for the Games Industry

5 ECTS | English | Advanced Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

Text genres and production processes in game development.

Learning outcomes

Upon completion of the course, the student will be able to:

- present and evaluate ideas related to creative work
- assess and implement feedback in iterative work process
- connect their individual skill sets and training to some of the requirements in the games industry

Students strengthen their well being and self development skills by learning to present ideas confidently, evaluate their own work critically, and integrate feedback constructively within an iterative game development workflow. The course also fosters sustainability, responsibility, and ethical awareness by encouraging students to work respectfully in team based environments, acknowledge the collaborative nature of game production, and consider the ethical implications of narrative and design choices. In addition, students enhance their multidisciplinary and interdisciplinary abilities by connecting their own skill sets to industry requirements and by applying approaches from writing studies, narrative design, interaction design, and media production to practical game development tasks. Finally, they advance their communication, interaction, and digital skills by producing clear, purposeful game texts across multiple genres, presenting ideas and project outcomes effectively, and using digital tools and collaborative platforms essential to contemporary game writing work.

693484S | Contrastive Grammar Analysis

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Satu Selkälä, Anniina Havela

Content

Contrasting grammatical structures in Finnish and German

Learning outcomes

Students are able to systematically compare (syntactic) structures in German with structures in Finnish. Students are able to write a contrastive paper. They can independently plan, narrow down, analyse and interpret the subject of the paper.

Official course record: 693484S

682383A | Conversation Analysis

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The course gives an introduction to conversation analysis as a research paradigm for the study of social interaction in different everyday and institutional settings. The course contents include interactional organizations identified in conversation analysis as well as processes of data collection, transcription and analysis.

Learning outcomes

Upon completion of the course, the students

- are familiar with the kinds of social interactional phenomena that are researched with the method of conversation analysis,
- understand the core assumptions and basic concepts of conversation analysis,
- and, applying the principles of conversation analysis, are able to collect and transcribe their own data and conduct analyses of social interactional phenomena.

Moreover, the students will have developed their generic working-life skills, such as communication skills, teamwork skills and skills in project-based work.

Official course record: 682383A

AY00BD26 | Conversation Analysis (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The course gives an introduction to conversation analysis as a research paradigm for the study of social interaction in different everyday and institutional settings. The course contents include interactional organizations identified in conversation analysis as well as processes of data collection, transcription and analysis.

Learning outcomes

Upon completion of the course, the students

- are familiar with the kinds of social interactional phenomena that are researched with the method of conversation analysis,
- understand the core assumptions and basic concepts of conversation analysis,
- and, applying the principles of conversation analysis, are able to collect and transcribe their own data and conduct analyses of social interactional phenomena.

Moreover, the students will have developed their generic working-life skills, such as communication skills, teamwork skills and skills in project-based work.

Official course record: [AY00BD26](#)

900054Y | Conversational Skills in Finnish

3 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Sohvi Heikkilä

Content

During the course students strengthen their communication skills in formal and informal situations. The goal is to activate the student's Finnish skills and encourage them to use their skills in different situations. There will be various types of situational dialogue, conversation and listening exercises in the course. Sustainability as a theme will be discussed as a current topic. In addition, students will conduct a short survey which will also be reported to other students in the class.

Learning outcomes

By the end of the course students

- are able to interact fairly fluently and spontaneously with their interlocutor
- can describe and explain (clearly and in detail) on a wide range of objects, experiences and events, dreams, hopes and ambitions
- can bring out opinions, give reasons and explanations for them and explain a viewpoint on a topical issue giving the advantages and disadvantages of various options
- are able to give a prepared presentation and answer the questions posed by the audience.

Official course record: [900054Y](#)

AY00AR59 | Corso Intermedio 3 (OPEN UNI)

5 ECTS | Language studies, Italian | Language and Communication Studies | Italian, Finnish

Person in charge: Elina Palola

Content

Are you looking for fluency in Italian and a deeper understanding of the culture? This course offers an excellent opportunity to develop your language skills with a focus on more demanding grammatical structures. The course will also deepen your cultural knowledge by introducing you to Italian art, history and traditions. You will gain useful skills for working life and academic needs, with a flexible and interactive teaching approach.

The course will give you further insight into the Italian language, deepening your knowledge of Italian language structures and practising practical situations, while introducing you to Italian culture through texts, listening, video tapes. The lessons include exercises in structure and listening, as well as conversation and pronunciation exercises in pairs/small groups.

During the course, the basic structures of the language are deepened and practised. New structural topics include gerunds, passive voice in different tenses, passato remoto, use of the subjunctive and its perfect form. Topics include art, emotions, traditional events and celebrations in Italy, Italian cinema, the environment and sustainability.

Learning outcomes

The course aims to develop and improve oral and written skills, develop listening comprehension and expand vocabulary. After completing the course, the students will be able to cope with everyday conversational and spoken situations, understand general texts on familiar topics and to some extent in their field of work, master the basic structures of the language and produce comprehensible and fluent texts. They can express themselves and their opinions and views, deepen their knowledge of Italian culture, life and history and acquire knowledge of current events. They will expand their vocabulary and active language skills on topics of interest to them.

[Official course record: AY00AR59](#)

682391A | Critical Study of Cultural Practices

5 ECTS | English | Intermediate Studies | English

Person in charge: Maarit Siromaa

Content

This course does not deal with cultural awareness or cross-cultural sensitivity as such, nor does it limit its view on culture as a set of cultural products such as paintings, books or movies, for example. Instead, culture is considered in a wide sense to refer to a set of practices that are developed, maintained, altered and changed in and through interaction and that are distinctive to any given group of people. The course introduces the participants with selected concepts, theories, and research perspectives pertinent to studying human communication and cultural practices in various contexts.

Learning outcomes

Upon completion of the course, the students will be able to analyze recurrent cultural phenomena through critical discourse-analytic perspectives, drawing on concepts such as signification, interdiscursivity, (de)legitimation, myth, and Foucauldian approaches to power and knowledge, to examine how meanings, norms, and forms of legitimacy are produced, circulated, and contested in contemporary communicative environments. Through collaborative project work and critical engagement with discourse-analytic research, students will develop their generic analytical, critical and creative thinking skills, responsible and ethically grounded reflection, as well as their communication, interaction, and digital skills.

[Official course record: 682391A](#)

693473A | Cultural Life in the German Speaking World

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sabine Grasz

Content

The course covers various areas of (cultural) life in German-speaking countries: everyday culture, studying, university culture, tourism, film, art, music and other cultural areas. The course caters to the interests of the participants.

Learning outcomes

Students learn about everyday culture, university culture, and other cultural areas (tourism, art, music, etc.) in German-speaking countries. After completing the course, students are prepared to spend an extended period of time in a German-speaking country (for an exchange program or internship). They are familiar with important features of the culture of German-speaking countries and recognize similarities and differences with Finland. Upon completion of the course, students will have good communication skills to master situations they encounter during their exchange studies at a German-speaking university or an internship in a German-speaking country.

Official course record: [693473A](#)

AY693507P | Culture and Society of the German Speaking Countries (OPEN UNI)

2 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Anniina Havela

Content

Society, history, literature, and culture of the German speaking countries; the German language today and its development; introduction into communication in inter- and transcultural contexts and international business communication.

Learning outcomes

Upon completion of the course, students know the main traits of the history and current developments in society, the German language and culture of Germany, Austria, and Switzerland. Students develop an understanding of culture-specific influences on communication, especially business communication.

Official course record: [AY693507P](#)

682438S | Current topics in teaching English

5 ECTS | English | Advanced Studies | English

Person in charge: Tiina Räisänen

Content

Critical discussion of current topics and trends in teaching English, the developments ahead and their implications for the teaching profession. The course will include introductory lectures on selected topics and will proceed from problem-based approach from students' background research to designing a project for peer group of future teachers of English.

Learning outcomes

Upon completion of the course, the students will have

- developed good understanding of current topics related to teaching English
- critically discussed chosen topics in relation to their academic and societal context
- connected current topics to everyday teaching work and assessed their applications and implications
- developed project management and co-teaching skills
- reflected on how they can use acquired knowledge in their future work as language teachers

Official course record: [682438S](#)

HG00BC05 | DaF-workshop (University of Turku)

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

No description supplied in the collected record.

[Official course record: HG00BC05](#)

HS00AP86 | Derivational morphology

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Katja Västi

Content

The main principles of Finnish derivational word formation

Learning outcomes

Students will be able to explain the main principles of the Finnish derivational morphology, as well as present the main categories of derived words. In addition, students will be able to analyse linguistic material from a derivational point of view.

[Official course record: HS00AP86](#)

693505S | Deutsch lehren und lernen

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

Content

Various subject areas, including early foreign language teaching, methodological-didactic concepts for multilingualism, literature and music, digital media/AI in foreign language teaching.

Learning outcomes

Students can engage with questions relating to the learning and teaching of German as a foreign language both theoretically and practically, and evaluate them critically. On the basis of the concepts covered in the course, they will be able to plan teaching units and create teaching materials independently. They are familiar with the key requirements of the foreign language teaching profession and critically examine them. Students will learn about current concepts in foreign language teaching in particular and teaching in general (e.g. sustainable development, differentiation).

[Official course record: 693505S](#)

HP00AQ56 | Dialects of Inari Saami

5 ECTS | Inari Saami | Advanced Studies | Sami

Person in charge: Petter Morottaja

Content

Traditional local dialect division of Inari Saami, general variations related to phonetics, morphology and vocabulary, colloquial phonetic phenomena (e.g. abbreviations and insertions) and their relationship to orthography, getting to know Inari Saami tape archives (SKA, Talvadas, Elävä arkisto of Yle), listening to archive recordings and annotation and transcribing.

Learning outcomes

After completing the course, the students will be able to

- * compare different Inari Saami idiolects from the perspective of phonetics, morphology and vocabulary
- * describe the phonetic phenomena of Inari Saami spoken language and the key features of local dialects
- * evaluate language change as a temporal phenomenon
- * transcribe audio recordings using the ELAN program at the phonemic and orthographic levels and produce a morphosyntactic analysis of the transcripts
- * list the most important Inari Saami tape archives and broadly describe what they contain.

Official course record: [HP00AQ56](#)

682384A | Digital Humanities

5 ECTS | English | Intermediate Studies | English

Person in charge: Steven Coats

Content

Topics may include text markup, encoding and analysis; online tools for the analysis of literary/linguistic/cultural data; basic programming for tasks pertaining to text manipulation and analysis; corpus linguistics, lexical statistics and some of their applications; digitization of cultural heritage; access and use of online editions; and data visualization and presentation. While students familiar with basic concepts in programming may find the material more immediately accessible, the course is designed so that no background in programming or computing is required.

Learning outcomes

The course is designed to introduce students to selected aspects of the history, theory and praxis of digital humanities, with a focus on methods for the collection, manipulation and analysis of digital data in the context of linguistic and literary computing. By learning to utilize software tools in order to undertake their own analyses, students will not only gain useful practical skills, but gain insight into the interdisciplinary relevance of the study of the humanities within the broader framework of data analysis.

Official course record: [682384A](#)

695268A | Discourse Analysis

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basics of discourse analysis

Learning outcomes

Upon completion of this course, students will be able to analyse critically language use as a social phenomenon using different methods.

Official course record: [695268A](#)

682385A | Discourse Studies

5 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Räisänen

Content

The students will familiarise themselves with the major approaches and methodological tools used in discourse analysis and experiment with different techniques of data analysis. The examples include both traditional and contemporary approaches that explore technologically mediated and multimodal discourse.

Learning outcomes

Upon completion the student should be able to:

- display an understanding of the range of research approaches to the study of discourse, and
- apply some of the methods in the analysis of various data

The course develops students' analytical, critical, and creative thinking skills as they compare discourse-analytic approaches, evaluate research, and carry out an independent discourse analytic project. Through self-reflection tasks and a learning diary, they strengthen wellbeing and self-development skills, gaining insight into their learning processes. Working with multimodal and multilingual discourse fosters international and multicultural skills. Students gain sustainability, responsibility, and ethical skills by following research integrity principles and acting professionally. By engaging with multiple theoretical and methodological traditions, students enhance their multidisciplinary and interdisciplinary skills, learning to draw on and combine different perspectives. Collaborative work on digital learning platforms, along with the analysis of digital and multimodal data, develops communication, interaction, and digital skills.

Official course record: 682385A

HE00BB63 | Early Modern English: Literature, Language and History

5 ECTS | English | Intermediate Studies | English

Person in charge: Andrew Pattison

Content

The course will focus on examining the literature, language and history of the Early Modern period (ca. 1500–1700). Special emphasis will be on historical development of the English language from parochial European language to globalized language. Themes examined in the course include: linguistic variation and the standardization of English; the history of printing and censorship; historical contextualization and literary history; hand-writing and letter-writing; Shakespearian pronunciation.

Learning outcomes

Upon completion of the course, the student should:

- have an understanding of the most important developments in the English language during the Early Modern period
- have the ability to appreciate the historical context within which Early Modern English texts were written, printed and disseminated
- be able to critically analyze literary works and historical documents from the Early Modern period.

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Multidisciplinarity and Interdisciplinarity.

Official course record: HE00BB63

693496A | Einführung in die deutsche Gegenwartssprache

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sandra Reimann

Content

The course introduces selected sub-areas of the linguistic description of contemporary German and introduces the relevant basic concepts and methods. The application of analytical methods is practised. The focus is on word types, inflection, word formation, semantics and syntax.

Learning outcomes

Students will be able to systematically describe the rules of the German language in selected areas (language system), which is a prerequisite for successful language use. The course is an important basis for further courses in linguistics and in the field of "German language and culture" in general.

[Official course record: 693496A](#)

693870A | Elective Special Field

1-5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin, Maritta Riekk

Content

Familiarisation with a special field of the French language.

Learning outcomes

Students can complete studies suitable for different fields of study in French. The studies are put together with the persons responsible for the course.

[Official course record: 693870A](#)

HP00AV50 | Elective Studies (Skolt Saami)

5 ECTS | Skolt Saami | Intermediate Studies |

Person in charge: Miika Lehtinen, Markus Juutinen

Learning outcomes

The student gains deeper knowledge in a theme relevant to his or her professional competence.

[Official course record: HP00AV50](#)

HP00BB87 | Elective Studies I

5 ECTS | North Saami | Advanced Studies |

Person in charge: Kaarina Vuolab-Lohi

No description supplied in the collected record.

[Official course record: HP00BB87](#)

HP00BB88 | Elective Studies II

5 ECTS | North Saami | Advanced Studies |

Person in charge: Kaarina Vuolab-Lohi

No description supplied in the collected record.

[Official course record: HP00BB88](#)

HP00BB89 | Elective Studies III

5 ECTS | North Saami | Advanced Studies |

Person in charge: Ante Aikio

No description supplied in the collected record.

HM00AG09 | Elective Studies, Practice or Exchange Studies I

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Marko Jouste

Content

Students can take field-appropriate internships and/or study courses related to their interests in Sámi culture. They may also select individual courses from the Working Life Studies module (Työelämäopinnot 25 op), which is intended for students of the Faculty of Humanities.

Learning outcomes

After completing the course, the student will be able to independently acquire knowledge and skills in a specialized field related to Sámi culture, as well as analyze, interpret, and comment on them. Alternatively, they will be able to apply their knowledge of Sámi culture in practical work placements or exchange studies.

Official course record: HM00AG09

HM00AG10 | Elective Studies, Practice or Exchange Studies II

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Marko Jouste

Content

Students can take field-appropriate internships and/or study courses related to their interests in Sámi culture. They may also select individual courses from the Working Life Studies module (Työelämäopinnot 25 op), which is intended for students of the Faculty of Humanities.

Learning outcomes

After completing the course, the student will be able to independently acquire knowledge and skills in a specialized field related to Sámi culture, as well as analyze, interpret, and comment on them. Alternatively, they will be able to apply their knowledge of Sámi culture in practical work placements or exchange studies.

Official course record: HM00AG10

AY905080Y | Elementary Course in Chinese, part 1 (OPEN UNI)

5 ECTS | Language studies, Chinese | Language and Communication Studies | English, Chinese

Person in charge: Elina Palola

Content

Unlock the beauty of Mandarin with "Elementary Course in Chinese, part 1"—a comprehensive beginner course designed to transform beginners into confident communicators. Dive into the rhythm of the language as you master the iconic four tones, decode Chinese characters, and practice real-life conversations. Through lively drills, cultural skits, and interactive grammar sessions, you'll not only learn to ask for directions or order food but also read Chinese characters and write simple messages. Imagine surprising friends with handwritten notes, navigating markets in China, or understanding the stories behind Chinese festivals—all while building skills that bridge cultures. No prior experience needed, join us, by the end of this course, you'll greet, chat, and navigate daily life in Mandarin—while reading Chinese and writing notes with pride. Start your Chinese journey now!

Learning outcomes

Learning outcomes

By the end of the course the students are able to:

- demonstrate the ability to achieve control of the pronunciation system (especially 4 tones)
- demonstrate the ability to use basic grammar and basic sentence patterns
- demonstrate the ability to understand spoken Chinese
- demonstrate the ability to participate in daily conversations

Official course record: AY905080Y

904016Y | Elementary Course in French 1

5 ECTS | Language studies, French | Language and Communication Studies | French, Finnish, English

Person in charge: Maritta Riekk

Content

The topics of the course include, e.g., introductions, personal interests and hobbies, discussing daily plans, suggesting something, and agreeing on or declining suggestions. The main focus is on everyday life, including hobbies, studies and work. Also, cultural differences are discussed regularly during the course.

The course introduces basic structures of grammar and vocabulary, such as verb conjugation of the present and (near)future, recent past, gender and number of nouns, adjectives, and the use of articles. In addition, the main types of clauses will be presented, i.e., declarative positive and negative clauses as well as interrogative clauses.

The course includes plenty of different pronunciation and speaking exercises. In addition, listening comprehension is practiced regularly.

Learning outcomes

The students can

- talk about themselves and manage short discussions in everyday situations,
- ask questions and give short answers,
- understand the most common greetings and respond to them politely,
- ask their partners to repeat their messages or to speak more slowly,
- understand slow and clear speech in everyday life,
- pronounce French clearly,
- recognize cultural differences

Official course record: 904016Y

904017Y | Elementary Course in French 2

5 ECTS | Language studies, French | Language and Communication Studies | French, Finnish, English

Person in charge: Maritta Riekk

Content

The topics of the course include, e.g., giving directions, describing living environment, shopping, discussing daily plans and daily events, as well as telling about actions in the past.

The grammatical structures include pronouns in different forms, the partitive case, reflexive verbs, the conjugation of -er, -ir and -re verbs in the present as well as the most common irregular verbs. The formation of passé composé, i.e., the past perfect will be introduced, too.

Learning outcomes

The students can

- talk about their living environment in more detail,
- talk about past events,
- manage in everyday situations and carry out short discussions,
- understand speech in normal tempo if the topic is familiar,
- recognize French-speaking countries and their cultures,
- arrange meetings and read timetables

Official course record: 904017Y

AY904016Y | Elementary Course in French I (OPEN UNI)

5 ECTS | Language studies, French | Language and Communication Studies | French

Person in charge: Maritta Riekki

Content

The main body of the course consists of essential grammatical structures, basic vocabulary and various listening, reading, writing, discussion and pronunciation exercises. The language proficiency needs of both everyday life and working life are taken into account when selecting topics. These topics include talking about oneself, talking about one's own interests and hobbies, discussing daily plans, suggesting to do something, agreeing to do something and declining to do something. Grammatical structures covered include the most common present tense and near future tense verb forms, gender and number of nouns, definite and indefinite articles, negative and positive sentences as well as interrogative sentences.

Learning outcomes

Upon completion of the course the student will

- be able to talk about themselves and manage in basic everyday situations,
- be able to ask simple questions and give short answers,
- know the most common greetings and courtesy phrases,
- be able to ask their discussion partners to slow down their speech or to repeat,
- be able to understand slow and clear speech about everyday topics in familiar and predictable everyday situations,
- be able to pronounce French understandably.

Official course record: AY904016Y

AY904017Y | Elementary Course in French II (OPEN UNI)

5 ECTS | Language studies, French | Language and Communication Studies | French

Person in charge: Maritta Riekki

Content

Topics covered by the course include, e.g., telling directions, describing the living environment, shopping for groceries, discussing daily plans and describing daily events (also in the past).

The grammatical structures covered include, e.g., different forms of pronouns, partitive case, reflexive verbs, -er, -ir and -re verbs and the most common irregular verbs (present tense and passé composé = past perfect).

Learning outcomes

The student can

- talk about their living environment,
- talk about past events,
- manage in everyday speech situations and short dialogues,
- understand parts of normal-speed speech,
- can make everyday arrangements,
- have understanding of the French culture as well as the French-speaking world

Official course record: AY904017Y

903063Y | Elementary Course in German 1

4-5 ECTS | Language studies, German | Language and Communication Studies | German, Finnish

Person in charge: Kaisu Jarde, Veronika Ranzenhofer

Content

The course introduces basic structures of grammar and vocabulary, such as verb conjugation of the present and (near)future, gender and number of nouns, and the use of articles. In addition, the main types of clauses will be presented, i.e., declarative positive and negative clauses as well as interrogative clauses. The course includes various listening, reading, writing and discussion exercises.

The topics of the course include, e.g., talking about family, interests and hobbies, discussing daily plans, suggesting something, and agreeing on or declining the suggestions. The main focus is on everyday life, including studies and work. Also, cultural differences are discussed regularly during the course.

Learning outcomes

After successful completion of the course, the students will be

- * able to communicate by using simple phrases in everyday situations both orally and in writing.
- * able to pronounce German clearly and can communicate in a simple manner if the person they are speaking to speaks slowly and clearly and is willing to help.
- * aware of cultural differences and politeness in German-speaking countries.

Official course record: 903063Y

903064Y | Elementary Course in German 2

4-5 ECTS | Language studies, German | Language and Communication Studies | German, Finnish

Person in charge: Kaisu Jarde, Veronika Ranzenhofer

Content

The course aims to help you develop your German communication skills and introduce you to the cultures of the German-speaking countries. The main focus is on everyday life situations, including studies and work. Also, cultural differences are discussed regularly during the course. The topics covered include, for example, service and shopping situations, talking about the past, traveling, telling facts about your hometown and country, writing a short message etc.

The course introduces basic structures of grammar and vocabulary, such as verb conjugation of the present and past tense, prepositions, possessive pronouns, dative and accusative, word order etc. The course includes a variety of listening, reading, writing and discussion exercises.

Learning outcomes

The students will be

- * able to communicate by using simple phrases in everyday situations both orally and in writing.
- * able to express their opinions, talk about their plans and about past events.
- * aware of cultural differences and politeness in German-speaking countries.

Official course record: 903064Y

AY905006Y | Elementary Course in Italian 1 (OPEN UNI)

5 ECTS | Language studies, Italian | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

Want to learn the basics of Italian in a relaxed and supportive environment? This course is perfect for you if you want to expand your language skills, for example for exchange studies or professional life. The course starts with learning Italian from the very beginning. Thanks to e-learning, you can choose where you attend classes and no special technological skills are required. So don't hesitate to join in! Benvenuti!

Start learning Italian from scratch. You will learn basic Italian grammar and practice simple practical situations, while getting to know Italian culture through a variety of texts, audio and video tapes. The lessons include structuring and listening exercises as well as conversation and pronunciation exercises in pairs/small groups.

The course includes verb conjugation in the present tense, noun and adjective conjugation, articles, basic prepositions and c'è/ci sono construction. Topics include greetings, self-introductions, expressions of time, telling about your day, getting around town and asking for directions.

Learning outcomes

After completing the course, students will be able to cope with the most common practical situations, understand clear general language at a normal pace, master the most common basic structures of spoken Italian and have a basic knowledge of Italian culture and life.

Official course record: AY905006Y

AY905007Y | Elementary Course in Italian 2 (OPEN UNI)

5 ECTS | Language studies, Italian | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

Want to learn the basics of Italian in a relaxed and supportive environment? This course is perfect for you if you already have the skills needed for a basic Italian course. The course is a further introduction to the Italian language and culture. Thanks to e-learning, you can choose where you attend classes and no special technological skills are required. So don't hesitate to join in! Benvenuti!

Continue learning Italian. In this course you will learn more basic Italian grammar and practise simple practical situations, while getting to know Italian culture through texts, listening and video tapes. The lessons include structure and listening exercises as well as conversation and pronunciation exercises in pairs/small groups.

The course will cover the basic structures of the Italian language, including: possessives, piacere verb, durative present tense, reflexive verbs, use of infinitive pronouns and passato prossimo or perfect tense. Topics include shopping in cafés and restaurants, expressing preferences, making travel arrangements and telling about past events.

Learning outcomes

After completing the course, students will be able to cope with the most common practical situations, understand clear general language at a normal pace, master the most common basic structures of spoken Italian and have a basic knowledge of Italian culture and life.

Official course record: [AY905007Y](#)

905042Y | Elementary Course in Japanese 1

5 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The course offers the student basic information about Japanese grammar and essential vocabulary for everyday situations. The student will participate in a variety of exercises such as pair/group conversations, listening, making example sentences, text comprehension and exercises in textbook and Moodle.

Learning outcomes

Upon completion of the course, the student is able to communicate both orally and literally using simple phrases and idioms. The student is able to introduce himself/herself as well as other persons and discuss daily and weekly events using relevant basic structures and vocabulary. The student becomes more knowledgeable on Japanese customs and improves his/her communication skills.

Official course record: [905042Y](#)

AY905042Y | Elementary Course in Japanese 1 (OPEN UNI)

5 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish

Person in charge: Takako Karppinen

Content

The course offers the student basic information about Japanese grammar and essential vocabulary for everyday situations. The student will participate in a variety of exercises such as pair/group conversations, listening, making example sentences, text comprehension and exercises in textbook and Moodle.

Learning outcomes

Upon completion of the course the student is able to communicate both orally and literally using simple phrases and idioms. The student is able to introduce himself/herself as well as other persons and discuss daily and weekly events using relevant basic structures and vocabulary. The student is familiar with the basics of Japanese customs and communication skills.

Official course record: [AY905042Y](#)

905043Y | Elementary Course in Japanese 2

5 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

Throughout the course the student learns more about basic Japanese grammar and subordinate clauses. The student expands his/her vocabulary, learns more useful phrases and practices speaking and listening comprehension. The student practices the inflectional forms of the most essential verbs and adjectives with a partner or in small groups. The forms covered include the nai, te, tari and ta forms.

Learning outcomes

Upon completion of the course, the student will be able to manage in various simple language usage situations. Additionally, the student will be able to converse with a Japanese person using basic vocabulary, to express his/her opinions about matters relating to everyday life. The student will be able to write simple Japanese texts that include subordinate clauses with Japanese characters and read similar texts. The student becomes more knowledgeable of Japanese customs and improves his/her communication skills.

Official course record: 905043Y

AY904066Y | Elementary Course in Russian 1 (OPEN UNI)

5 ECTS | Language studies, Russian | Language and Communication Studies | Finnish, Russian

Person in charge: Elina Palola

Content

The Cyrillic alphabet, getting to know one another, introductions, language skills, at a cafe, at a restaurant, the Russian way of addressing a person, telling about workplace and likes.

Learning outcomes

Upon completion of the course the student should know the Cyrillic alphabet, be able to talk about himself/herself and his/her background in Russian and be somewhat familiar with Russian culture.

Official course record: AY904066Y

904067Y | Elementary Course in Russian 2

5 ECTS | Language studies, Russian | Language and Communication Studies | Finnish, Russian

Person in charge: Ari Hepo-aho

Content

Shopping, clothes and colours, situations in tourism, presenting one's home and surrounding, catching up, telephone conversations, visits, telling about itinerary, working life, studying, arranging a meeting, weather.

Learning outcomes

Upon completion of the course the students should be able to manage in various everyday communication situations.

Official course record: 904067Y

AY904067Y | Elementary Course in Russian 2 (OPEN UNI)

5 ECTS | Language studies, Russian | Language and Communication Studies | Finnish, Russian

Person in charge: Elina Palola

Content

Shopping, clothes and colours, situations in tourism, presenting one's home and surrounding, catching up, telephone conversations, visits, telling about itinerary, working life, studying, arranging a meeting, weather.

Learning outcomes

Upon completion of the course the students should be able to manage in various everyday communication situations.

Official course record: AY904067Y

YK00AU09 | Elementary Course in Spanish 1

5 ECTS | Language studies, Spanish | Language and Communication Studies | Finnish, Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

Speaking and interaction exercises related to everyday situations as well as pronunciation, listening, reading and writing exercises.

Topics include everyday situations like introducing oneself, talking about family, hobbies, work, ordering at a restaurant, traveling and shopping as well as cultural topics related to the Spanish-speaking world.

Grammatical structures include, for example, gender and number of nouns, inflection of adjectives, regular and irregular present tense verb conjugation, expression of (immediate) future, articles, pronouns, prepositions, question and negation.

Learning outcomes

Upon successful completion of the course, students will be able to:

- communicate by using simple phrases in everyday situations
- understand slow and clear speech about everyday life
- understand and write short, simple statements and texts
- pronounce Spanish correctly
- understand basic cultural aspects of Spanish-speaking countries.

[Official course record: YK00AU09](#)

AY905024Y | Elementary Course in Spanish 1 (OPEN UNI)

5 ECTS | Language studies, Spanish | Language and Communication Studies | Finnish

Person in charge: Veronika Ranzenhofer

Content

The course covers basic structures and vocabulary of Spanish. Topics of the course include introducing yourself, family, hobbies, restaurants and travel, as well as cultural topics related to the Spanish-speaking world.

Grammatical structures include, for example, genus and number of noun, inflection of adjectives, use of articles, regular and irregular verbs in the present tense, expression of near future, pronouns and prepositions.

Contents are practiced using a variety of listening, reading and pronunciation exercises as well as conversation and writing exercises.

Learning outcomes

After successful completion of the course, students

- * will be able to communicate in Spanish by using simple phrases in everyday routine language situations.
- * will be able to understand slow and clear speech about everyday life topics.
- * will be able to write simple texts.
- * know some basic information about Spanish-speaking countries, culture, and customs.

[Official course record: AY905024Y](#)

AY905026Y | Elementary Course in Spanish 2 (OPEN UNI)

5 ECTS | Language studies, Spanish | Language and Communication Studies | Finnish

Person in charge: Veronika Ranzenhofer

Content

Contents of the course are main structures of Spanish grammar and basic vocabulary. The course includes listening, reading and pronunciation exercises as well as conversation and writing exercises.

Topics covered include talking about the past, expressing opinions, living, studying and working, and historical and cultural issues related to Spanish-speaking countries.

Grammatical structures include, for example, the present perfect, preterite and imperfect tenses, object forms of pronouns, adjective comparison and shoe verb conjugation.

Learning outcomes

After successful completion of the course, students

- * can communicate in everyday situations and hold short conversations.
- * can talk about everyday topics such as living, travelling, studying and working, and different stages of life.
- * can talk about past events.

Official course record: [AY905026Y](#)

HP00AK93 | Endangered Status and Revitalisation of Languages

5 ECTS | Skolt Saami, Inari Saami, North Saami | Advanced Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen, Marja-Liisa Olthuis

Content

Revitalisation methods: total language immersion programmes, partial language immersion programmes and bilingualism programmes, 'local language as a second language' programmes, language community-based programmes, master-apprentice programme, language declaration programmes, language documentation.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee kielen uhanalaisuusasteet ja revitalisaatiomenetelmät ja osaa soveltaa niitä luovalla tavalla käytäntöön. Opiskelija tuntee menetelmien vahvuudet ja rajoitteet.

Opiskelija kykenee ohjatusti kehittämään oman pienimuotoisen revitalisaatio-ohjelmaehdotuksensa ennalta sovittuun kontekstiin.

Opiskelija kykenee argumentoimaan tiedeyhteisölle ja kieliyhteisölle revitalisaatio-ohjelmansa tarpeellisuudesta ja toimivuudesta.

Opiskelija osaa toimia rakentavasti epävarmuuden tilanteissa sekä kykenee ajattelemaan vaihtoehtoisia toimintatapoja kielenelvytystilanteisiin.

Opiskelija osaa ratkaista oman alansa eettisiä kysymyksiä perustellusti.

Official course record: [HP00AK93](#)

902002Y | English 1 (Reading for Academic Purposes)

2 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen (syksy/autumn 2026), Joshua Ward (keväät/spring 2027)

Content

The course will focus on reading strategies; these include recognising how texts are organised, identifying key points in a text, and understanding words in context.

Vocabulary work in the course will focus on:

- a) academic vocabulary, as used in formal scientific writing, and
- b) using your knowledge of the meanings of parts of words (affixes) to infer meaning.

Learning outcomes

By the end of the course, you are expected to demonstrate the ability to:

- utilize your knowledge of word formation, text structure, and cohesion markers to understand the vocabulary and content of academic texts,
- use effective reading strategies and techniques for studying vocabulary, and
- summarize texts both orally or in writing.

Official course record: 902002Y

902004Y | English 2 (Scientific Communication)

2 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen (syksy/autumn 2026), Joshua Ward (kevät/spring 2027)

Content

In the classroom, you will practice the skills of listening, speaking and presenting topics in your own field. The emphasis is on working in pairs and small groups. In addition, you will complete independent homework assignments to support the classroom learning. The course contents also focus on transferable skills such as problem solving, team working, multicultural communication, sustainability and responsibility.

Learning outcomes

By the end of the course, you are expected to have demonstrated the ability to:

- use appropriate strategies and techniques for communicating effectively in English in an academic context in your own field
- prepare and present scientific subjects from your own field of studies to your classmates, using appropriate field-related vocabulary.

Official course record: 902004Y

902003Y | English 3 (Reading for Academic Purposes)

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

The course focuses on reading strategies; these include recognizing how texts are organized, identifying key points in a text, and understanding words in context.

Vocabulary work in the course will focus on

- a) academic vocabulary, as used in formal and scientific writing, and
- b) using your knowledge of the meanings of parts of words (affixes) to infer meaning.

During the course, students practice transferable skills, including team-working, problem-solving, critical thinking and communicating effectively.

Learning outcomes

By the end of the course, you are expected to demonstrate the ability to:

- utilize your knowledge of word formation, text structure, and cohesion markers to understand the vocabulary and content of academic texts,
- use effective reading strategies and techniques for studying vocabulary,
- summarize texts both orally and in writing.

Official course record: 902003Y

902005Y | English 4 (Scientific Communication)

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

In the classroom, working mostly in pairs and small groups, you will practice the skills of listening, speaking, and presenting topics in your own field.

You will complete both independent homework assignments and team tasks to support the classroom learning and development of transferable skills such as problem solving, team working, multicultural communication, and negotiation skills. Throughout the course, students are encouraged to engage with ethical, responsible and sustainable principles.

Learning outcomes

By the end of the course, you are expected to have demonstrated the ability to:

- use appropriate strategies and techniques for communicating effectively in English in an academic context in your own field and practise these actively in the classroom and in teams,
- prepare and present scientific subjects from your own field of studies to your classmates, using appropriate field-related vocabulary

Official course record: 902005Y

902063Y | English Activation Course

2 ECTS | Language studies, English | Language and Communication Studies | Finnish

Person in charge: Heather Kannasmaa

Content

Easy communication tasks are provided to help you activate your use of English; you will spend a lot of time in class interacting in English with your classmates, in pairs or in small groups. Learning to learn is an important theme throughout the course, too; you will hear about a variety of alternative learning strategies (including some developed for dyslexics), and have opportunities to try them out. To help you reach an understanding of the learning strategies that work best for you, you will have chances to reflect together with your classmates, and compare past and present experiences of language learning.

Learning outcomes

By the end of the course, you are expected to be able to:

1. understand clearly-spoken English on a range of topics discussed in class
2. participate in pairwork discussion of familiar everyday topics
3. describe your own language learning style, with reference to a variety of learning strategies presented in class
4. self-evaluate objectively, and describe plans for future learning

682434A | English as a Lingua Franca

5 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Räisänen

Content

The global spread of English, forms and functions of English as a lingua franca, language users and contexts of use from linguistic, pragmatic and sociolinguistic perspectives. Analysis of data from various contexts. Discussion of English as a lingua franca in relation to multilingualism, language policy and foreign language teaching.

Learning outcomes

Upon completion of the course, the students will

- be able to demonstrate an understanding of the concept and phenomenon of English as a lingua franca
- be able to demonstrate familiarity with research developments in the field of English as a lingua franca
- have gained experience of working with authentic linguistic data and applying different research methods in the analysis of data
- be able to explain the implications of the phenomenon of English as a lingua franca for the future of English and its practical consequences
- be able to reflect how they can use gained knowledge in their future studies and work

Students develop analytical, critical, and creative thinking by engaging with academic materials, conducting research, and generating insights into English as a lingua franca communication. They strengthen wellbeing and self development skills through ongoing self reflection and learning diary assignments. The course fosters international and multicultural skills through collaborative work across cultures. Students gain sustainability, responsibility, and ethical skills by following research integrity principles, acting professionally, and promoting linguistic equality. They apply multidisciplinary and interdisciplinary skills by integrating perspectives from linguistics, intercultural communication, and education to understand ELF. They enhance communication, interaction, and digital skills by using English effectively in academic and intercultural settings and collaborating via digital platforms.

Official course record: 682434A

902165Y | English Communication for Information Processing, Oral Skills

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

Topics covered in ECIP Oral Skills include critical thinking, project management, presentation skills, technical and professional writing, interpersonal communication, negotiations, and interviewing, and the language skills and strategies needed for handling these.

In the classroom, you will practice the skills of listening, speaking, and presenting topics in your own field. The emphasis is on realistic scenarios working in pairs and small groups. Homework emphasizes team-working skills, sustainability and ethical professional communication.

Learning outcomes

By the end of the course you are expected to demonstrate the ability to:

- speak effectively and concisely in academic and professional contexts
- participate actively and responsibly in team-building exercises
- utilize problem-solving and critical thinking skills in a collaborative sustainability project
- prepare and give an informative presentation, using appropriate vocabulary and style
- Identify effective interviewing skills, recognize the stages of effective negotiations and meetings, and identify the phases of project management and practice these.

Official course record: 902165Y

902164Y | English Communication for Information Processing, Reading for Academic Purposes

2 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Karen Niskanen

Content

Vocabulary studies will focus on field-specific and academic vocabulary, as used in formal scientific writing. The information and content extracted from texts will be summarized, analyzed and discussed, developing working life skills including teamwork and interpersonal skills.

Learning outcomes

By the end of the course you are expected to demonstrate the ability to:

- use reading strategies effectively for critical reading
- utilize your knowledge of word formation, text structure and cohesion markers to understand the content of field-related and academic texts
- extract information, summarize, analyze and discuss content of scientific and professional texts in oral and written form
- use appropriate formality and academic/scientific vocabulary of your own field in writing (course assignments include e.g. CV and cover letter)
- develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, lifelong-learning, and providing and receiving critical feedback.

Official course record: 902164Y

902180Y | English Communication through Transnational Online Projects

2-5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Eva Braidwood, Susan Mc Ansh

Content

The core component of the course consists of collaboration in a team of international students from our partner universities, typically in weekly online meetings.

The aim of the course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. In addition to oral discussion and presentation activities, students write short texts, such as a brief self-introduction, meeting minutes, slides for a pitch deck, and peer feedback. In particular, the module focuses on helping students develop

- a sustainability mindset;
- the ability to formulate an actionable problem and design a responsible solution;
- communication skills in English, especially in taking into account the needs of others and the cultural context, adjusting their own expression according to the situation;
- teamwork skills required for collaborating in a transnational and multidisciplinary design project;
- competence in identifying and using appropriate digital technologies for online collaboration.

Learning outcomes

Upon completion of the course, the participants will have demonstrated an ability to

- take an active role in multidisciplinary and multicultural teams, collaborating productively with people from different cultural backgrounds and different disciplinary fields.
- contribute valuable ideas, respectfully comment on others' ideas, and negotiate team solutions in project work
- identify a sustainability challenge, define an actionable problem from this challenge and design a proposal to solve the problem in a responsible and equitable manner.
- communicate clearly in English in an appropriate fashion for the audience
- report on teamwork and individual processes and products in English according to the given instructions.

Official course record: 902180Y

YK00BC32 | English for Architecture

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Eva Braidwood

Content

Contents:

In this course, students will focus on developing oral and written English language skills, which will enable them to follow the developments in the field of architecture, and participate in professional discussions in a multicultural environment with a sufficient level of proficiency.

During the classroom sessions, you will become familiar with the professional aspects of describing and critiquing architectural design. Using authentic building reviews and classical source texts on architecture, you will develop your field-related competences and professional and academic communication skills in English. You will participate in simulated professional events including a project presentation, building-design presentation, discussions of architectural solutions, and case studies and writing about your own design (simulating an architectural competition entry).

Learning outcomes

Course information: This course is compulsory for 1st year students of architecture.

Learning outcomes:

On successful completion of the course, students will be able to

- demonstrate appropriate use of professional English vocabulary relevant to architects (present effectively their own work, and review architectural design, both in writing and oral presentations),
- use appropriately and ethically in their coursework and their profession,
- explain concepts and features relevant to sustainable solutions in architectural design,
- apply efficient analytical and synthesising skills when discussing and reviewing architectural solutions,
- demonstrate appropriate knowledge of the cultural and geographical differences in vernacular architecture,
- demonstrate competence in teamwork skills necessary for working in a multicultural, and multidisciplinary environment.

[Official course record: YK00BC32](#)

902100Y | English for Biochemists

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Kari-Pekka Kallunki

Content

The aim of this course is to develop reading and listening comprehension skills and oral/aural fluency of participants, and their familiarity with discipline-specific vocabulary. Core skills practiced on this course are the following:

EfB 1a: reading in order to understand biochemistry texts, textbooks and research articles; applying different reading strategies to extract global or detailed information according to the reading purpose; understanding word formation in order to expand vocabulary, both general scientific and field-specific; understanding basic grammatical structures of scientific English as well as text structure and cohesion markers for improved comprehension.

EfB 1b: practicing oral/aural skills relevant to studying at university level, taking part in the scientific community using professional vocabulary and demonstrating field-related knowledge (discussions, debating, etc.)

Learning outcomes

By the end of the course students will have demonstrated an ability to:

- communicate effectively and precisely about professional matters,
- take effective notes from textbooks and lectures and summarise field-related texts,
- present field-related subjects and use appropriate field-related vocabulary,
- defend a position in a debate.

[Official course record: 902100Y](#)

YK00AN86 | English for Education

3 ECTS | Language studies, English | Language and Communication Studies | Finnish, English

Person in charge: Sari Törmänen

Content

This course aims to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities will enable students to collaborate and explore field-related topics through the medium of English. The course will consist of a compulsory classroom or online lessons component, as well as compulsory self-study packages to be completed independently.

The course activities include, but are not limited to:

- texts and short videos related to education and teaching
- formal and semi-formal reading, writing and vocabulary practice
- oral presentation practice
- communicative activities

Learning outcomes

Tämä kurssi opetetaan englanniksi, joten opintojaksokuvaus on vain englanniksi.

Objectives:

- to develop students' English language skills needed for effective communication on different topics related to education and teaching
- to practice comprehending and producing oral presentations and written texts using formal or semi-formal English
- to use digital tools to support language learning.

Learning outcomes - by the end of the course, students are expected to be able to:

- interpret, discuss and write about topics related to the field of education, utilising formal or semi-formal styles for both academic assignments and professional discussions
- search for information on a chosen educational theme, as well as analyse and explain the ideas
- better communicate with parents and colleagues from foreign backgrounds.

Official course record: [YK00AN86](#)

YK00AO90 | English for Psychology

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Magda Karjalainen

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English. The course will consist of a semester-long compulsory classroom component, as well as elective self-study packages to be completed independently.

The course activities include, but are not limited to:

- texts and short videos related to the field of psychology
- formal and semi-formal reading, writing and vocabulary practice
- oral presentation practice
- communicative activities

Learning outcomes

Learning outcomes - by the end of the course students are expected to be able:

- to summarize, interpret and discuss formal or semi-formal texts on topics related to the field of psychology
- to write assignments on topics related to the field of psychology
- to search for information on a chosen psychology-related theme as well as analyse and explain the ideas
- to communicate with clients and colleagues of diverse backgrounds in professional, sensitive and accessible ways

[Official course record: YK00AO90](#)

YK00BC33 | English for Urban Design

1-3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Eva Braidwood

Content

The course will introduce to students field related professional literature and research methods relevant to create a simulated urban design development project. Students will design a survey related to topical themes in urban development, analyse master plans, use professional criteria to assess urban neighbourhood and will create a critique and a proposal for the development of a chosen Finnish district in the form of an academic poster. This multi-modal presentation is the capstone project of the course.

Learning outcomes

The English for Urban Design course is compulsory for students of architecture in their second year of studies. The course focuses on developing students' field-related English language and communication skills (reviewing urban neighbourhood development practices, developing tools for participatory urban planning, critiquing the built environment using multi-modal tools) with special attention to ecological solutions and principles of sustainability.

Students with L or E result in the English matriculation exam can apply for partial exemption and thus will be required to complete a 1-credit version of the course.

LEARNING OUTCOMES

By the end of the course, students will be able to

- demonstrate appropriate use of field-specific vocabulary required for professional communication in English,
- use English confidently in field-specific academic and professional texts and presentations,
- demonstrate appropriate knowledge of culturally and geographically different expectations of urban development practices,
- apply analytical and synthesizing skills when reviewing field-related literature,
- analyse and present arguments related to sustainable solutions in urban design,
- work efficiently in cooperation with team members and contribute effectively to creating simulated urban development projects.

[Official course record: YK00BC33](#)

682431A | English Grammar

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

A functional approach to the description and analysis of syntactic, semantic and pragmatic structures of English

Learning outcomes

Upon completion of the course, the students will have

- developed an understanding of the interconnection between grammatical structure and linguistic meaning,
- adopted appropriate terms and concepts to apply in their own analyses of grammar and language
- and reflected on how they may use such tools in their future work as language teachers or as other language professionals.

Moreover, the students will have developed their generic skills in analytical and critical thinking as well as in self-development.

Official course record: 682431A

AY682431A | English Grammar (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

A functional approach to the description and analysis of syntactic, semantic and pragmatic structures of English

Learning outcomes

Upon completion of the course, the students will have

- developed an understanding of the interconnection between grammatical structure and linguistic meaning,
- adopted appropriate terms and concepts to apply in their own analyses of grammar and language
- and reflected on how they may use such tools in their future work as language teachers or as other language professionals.

Official course record: AY682431A

682355S | English in Finland

5 ECTS | English | Advanced Studies | English

Person in charge: Pentti Haddington

Content

The course explores the many ways in which English is present in Finland. It involves the reading of scholarly studies and the completion of small studies. These will help students to familiarise themselves with how English is used in Finland, as well as to focus on specific themes related to the course theme. These concern, for example, how English is present in Finnish interactions, education, literature, music, films, TV, media, sports, social media, hobbies, or video or online games.

Learning outcomes

This course examines the role and uses of English in Finland from various perspectives in language studies. After completing the course, students will be able to demonstrate familiarity with the ways in which English, as a global language, is present in Finland—for example, in interaction, culture, education, the linguistic landscape, public signage, the internet, and social media. They will be able to recognise and explain how English is visible and represented in Finnish media, how people incorporate English into their own speech, how English enters everyday life in Finland, and how it is used in various discursive and social contexts. Students will also be able to explain how English influences culture(s), Finnish and other languages spoken in Finland, and how English and Finnish (as well as other local languages) coexist and function side by side.

After completing the course, students will also have gained experience in the following generic skills:

- critical and independent evaluation of literature
- creative use of methods for exploring study materials
- analysis of study materials and the creation of new knowledge
- self-reflection on one's role, responsibilities and professional development as an English-language expert in Finland
- development of group-working skills in project planning, collaborative work and project reporting
- reflection on Finland as a multicultural and multilingual nation and on the role of the English language and Anglophone cultures within it
- evaluation of public debates concerning the role of English in Finland
- participation in group work and development of written and oral argumentation and presentation skills

Official course record: 6823555

HP00AH34 | Entrance Exam for Sámi Language as a Minor Subject

0 ECTS | Saami Language | | Sami

Person in charge: Kaarina Vuolab-Lohi

No description supplied in the collected record.

Official course record: HP00AH34

HE00AF93 | Entrance Exam in English as a Minor Subject

0 ECTS | English | General Studies | English

Content

The entrance examination is a written exam and consists of two or three different writing tasks of varying length (approx. 300–500 words). The examination is in English. The maximum number of points in the written examination is 40. The entrance examination is based on reading materials delivered in the beginning of the exam. The materials may include short scientific texts, fiction, newspaper or magazine articles, or visual materials. The materials may pertain to language studies, language learning, and the cultures and literature of the Anglophone world.

Learning outcomes

The aim of the entrance examination is to test the applicant's ability to grasp the content presented in the reading materials and accordingly apply it in the writing tasks. To be considered for admission, the applicant must score at least 50% of the available points in each of the written tasks. If the applicant does not write an answer to any of the tasks, other tasks will not be evaluated even if they contain answers. The assessment of the written tasks will focus on the following issues:

- content – the relevance and accuracy of the answers
- language – the grasp of vocabulary and grammatical precision, the ability to write clearly, fluently and flawlessly
- structure and organization – the logical presentation and overall coherence of the argumentation

Official course record: HE00AF93

694970Y | Entrance Exam in Finnish Language as a Minor Subject

0 ECTS | Finnish Language | General Studies | Finnish

No description supplied in the collected record.

Official course record: [694970Y](#)

HR00AG02 | Entrance Exam, Swedish Language as a Minor Subject

0 ECTS | Swedish Language | General Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Entrance examination for Swedish Language as a minor subject.

Official course record: [HR00AG02](#)

693840A | Erasmus Studies of the French Language

2-20 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Optional studies of the French language abroad in the ERASMUS programme (or other exchange programmes).

Learning outcomes

The student completes studies related to the French language and/or culture in an Erasmus exchange.

Official course record: [693840A](#)

HE00AU80 | Ergodic Media

5 ECTS | English | Advanced Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

Studying ergodic media on this course is about the dynamic relation between a media user and the media being used. User choices are facilitated by a range of different media types in varying degrees and by variable means. A digital game is an obvious example, but there are others, such as tabletop role-playing games, that can be intensely ergodic even there is little apparent change in the media item itself. On this course, students are invited to approach the topic of ergodicity from multiple perspectives but also to select a focused topic of their own in order to put the analytical tools into practical use. The course will provide participants with the fundamentals for advanced studies of media types that facilitate a high degree of user agency, such as games and digital media applications.

Learning outcomes

Upon completion of the course, the student will be able to:

- * recognize media items that have ergodic qualities
- * analyze media items in order to account for how ergodic features facilitate user interactions
- * display a functional understanding of the variability of user interactions across different media
- * study ergodicity through a media-specific perspective and with an understanding of the interdisciplinary nature of the subject field

Students strengthen their well being and self development skills by learning to work independently with complex analytical tasks, manage the uncertainties that arise when studying highly variable user-media interactions, and navigate the challenges of defining their own focused topic of inquiry. They deepen their international and multicultural competencies as they examine ergodic media across culturally diverse contexts, reflect on their responses to globally circulating media forms, and develop discipline specific terminology used in international discussions of games, digital media, and interactive systems. In addition, students enhance their multidisciplinary and interdisciplinary abilities by drawing on methods and perspectives from fields such as media studies, game studies, narratology, cognitive science, and interaction design, recognizing the relevance of these approaches for understanding ergodicity and applying them to address complex questions about user agency. Finally, they advance their communication, interaction, and digital skills by articulating analyses clearly across multiple modalities, working with a range of media examples, and utilizing digital tools and platforms to explore, document, and present their findings on interactive media.

Official course record: [HE00AU80](#)

694954S | Final Examination of Advanced Studies

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content

Literature chosen from the contemporary focus areas of the programme

Learning outcomes

Students will be able to compare the knowledge acquired during the text, variation, grammar, and research modules.

Official course record: [694954S](#)

HY00AU40 | Finland in a Changing World

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

This course offers an introduction to the main outlines of Finland's economic history from the nineteenth century to the present day. It consists of lectures, small group assignments, a group project, engagement with research literature, and a final exam. A student may also choose to complete the course completely independently by taking an exam based on research literature.

Learning outcomes

Upon completing the course, students will be able to describe the economic history of Finland within its broader historical context. They will have developed research-based critical and creative thinking skills, as well as their abilities in collaboration and communication.

Official course record: [HY00AU40](#)

900106Y | Finnish Communication for Health Sciences

3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

Content

Working life skills, distance communication, convincing and goal-oriented communication, grammar and style of correct professional text, choosing and using sources, references, demonstrative skills, feedback, customer contacts.

Learning outcomes

Upon completion of the course, the student will be able to:

- use and interpret scientific sources
- analyze one's communication skills and reflect them to the needs of multi-professional working life
- set and achieve goals in individual and group communicative live and on-line situations
- apply learned skills when planning communication
- give, receive and utilize feedback.

[Official course record: 900106Y](#)

YK00AP34 | Finnish Communication for Physics

3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Sanna Järvinen

Content

Kirjallinen ja suullinen asiantuntijaviestintä; kirjoittaminen ja kirjoitusprosessi; kieli, tyyli ja kielenhuolto; yhteiskirjoittaminen

Learning outcomes

Opintojaksolla tavoitteena on kehittää opiskelussa ja työelämässä tarvittavia viestintä-, vuorovaikutus- ja yhteistyötaitoja sekä oman asiantuntijuuden tunnistamista.

Opintojakson jälkeen opiskelija osaa

- * valita eri akateemisiin ja ammatillisiin tilanteisiin sopivan ja tarkoituksenmukaisen viestintätavan
- * tunnistaa ja käyttää kieltä tavoitteen ja tilanteen mukaisesti tiedon välityksessä ja vaikuttamisessa asiantuntijana
- * soveltaa kirjoittamisen käytänteitä
- * tarkastella kriittisesti ja rakentavasti omaa ja muiden viestintää yksilö- ja ryhmäviestintätilanteissa ja antaa palautetta siitä.

[Official course record: YK00AP34](#)

694944A | Finnish Dialects and Contemporary Spoken Finnish

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Niina Kunnas

Content

Finnish dialect areas and features of Finnish dialects, historical background of Finnish dialects, Meänkieli, Kven, spoken Finnish and slangs

Learning outcomes

Students will recognise the regional dialects of Finnish and their characteristic features. In addition, students will be able to analyse variations in contemporary spoken Finnish. Students know what Meänkieli and Kven are. Students know different slangs and their characteristics.

Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements), 2) Well-being and self-development skills (effective time management, self-leadership, and the capacity to take responsibility for one's actions and overall well-being), 3) Communication, interaction, and digital skills (encompassing listening and conversational skills, as well as collaboration and teamwork abilities).

[Official course record: 694944A](#)

695003P | Finnish Society

5 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Sisko Bruni

Content

Functioning in Finnish society and simple Finnish

Learning outcomes

Upon completing the course, students will be able to display an understanding of the social knowledge and skills immigrants need in order to survive in Finnish society. Students are able to teach these things to immigrants using simple Finnish.

[Official course record: 695003P](#)

693858P | French Cultural Studies and Vocabulary

5 ECTS | French Language | Basic Studies | French

Person in charge: Xavier Martin

Content

Getting to know France (France métropolitaine et France de l'Outre-mer) and learning about cultural life. Vocabulary exercises. Design and implementation of presentations.

Learning outcomes

The students accumulate knowledge about current France in versatile ways. They know the geography of France also in the overseas regions, the climatic differences and the demographic structure. The students get to know the French educational and legal systems and culture. The students' vocabulary grows and becomes more active, and they learn to give oral presentations.

[Official course record: 693858P](#)

HR00AG46 | French Cultural Studies and Vocabulary

5 ECTS | French Language | Basic Studies | French

Person in charge: Heli Heinonen-Aho, Xavier Martin

Content

Study of the French provinces, French cultural life and institutions. Broadening of the vocabulary and recognising its nuances.

Learning outcomes

Students will have a general knowledge of the provinces of France, and French cultural life and institutions. The students will have also broadened their essential vocabulary, and they will be able to use it.

Official course record: [HR00AG46](#)

HR00AP40 | French Grammar 1A

2 ECTS | French Language | Basic Studies | French

Person in charge: Xavier Martin

Content

The focus is on aspects that are considered problematic, for example, verb structures, tenses, grammatical moods, and pronouns.

Learning outcomes

Students will know the basic structures of French, and understand the basic grammatical terms.

Official course record: [HR00AP40](#)

HR00AY91 | French Grammar 1B

3 ECTS | French Language | Basic Studies | French

Person in charge: Maritta Riekk

Content

The main focus is on aspects that are considered problematic, for example, verb structures, tenses, grammatical moods, and pronouns.

Learning outcomes

Students will know the basic structures of French, and understand the basic grammatical terms.

Official course record: [HR00AY91](#)

682425S | From Milton to Arnold - the Classical Epic in English

5 ECTS | English | Advanced Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

This course will introduce students to the tradition of English-language Classical epic through an overview of the origins of the Classical epic in the Greek and Roman antiquity and the close study of representative texts from the 16th to the 20th century. Students will explore the conventions and innovations that have taken place in the Classical epic tradition and develop their own interpretations of English language texts in this tradition.

Learning outcomes

Upon completion the student should be able to

- display general knowledge of developments in English-language epic from the 16th to the 20th century
- recognize the core features of the genre of Classical epic and their manifestations in the works of poets and prose authors of different periods
- offer persuasive individual interpretations of particular works in the epic tradition that rely on an understanding of generic composition and internal textual evidence linked to socio-historical context and/or particular theoretical perspectives

Students strengthen their well being and self development skills by learning to manage the sustained reading load and intellectual demands of engaging with long, historically distant epic texts, developing strategies for independent study and reflective academic practice over an extended period of reading and writing. They deepen their international and multicultural competencies as they explore the Classical epic's origins in Greek and Roman antiquity and trace its transformations across diverse anglophone cultural and historical contexts, gaining familiarity with linguistic variation across centuries and developing the discipline specific language required to participate in international literary scholarship. In addition, students enhance their multidisciplinary and interdisciplinary abilities by drawing on approaches from classical studies, literary history, narratology, cultural studies, and historical criticism, recognizing the relevance of these viewpoints for understanding genre formation and applying them to complex questions about textual meaning, socio historical context, and literary tradition.

Official course record: [6824255](#)

HE00AQ68 | Genre in Communication

5 ECTS | English | Advanced Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

This course offers a critical revaluation of some of the past and present theories of genre and practices of genre analysis. Students are invited to apply a critically revised view of genre as a communicative resource to a topic of their own choice in order to investigate the potential of such a remodeled approach.

Learning outcomes

Upon completion of the course, the student will be able to:

- approach a media item – in the form of written text, film, television or something else – from the point of view of genre analysis
- recognize, study and analyze the ways in which media items communicate via a genre or multiple genres
- is able to assess the communicative purposes and functions of genre elements

Students enhance their multidisciplinary and interdisciplinary abilities by drawing on insights from linguistics, discourse studies, literary theory, and communication research to investigate how genres function as communicative resources. In addition, they advance their communication, interaction, and digital skills by presenting clear, well supported analyses and by using genre analytical tools and digital resources effectively in their written and oral work.

Official course record: [HE00AQ68](#)

694942A | Genres of Text and Writing

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Maija Saviniemi

Content

application text, argumentative text, news text, text on the home page, mini-thesis, editing the magazine Täppä

Learning outcomes

You will deepen the knowledge you have acquired in the Text Linguistics course and learn to apply it in practice in a mini-thesis. In addition, you will learn to write texts belonging to different text types and to evaluate texts written by others in terms of content, structure, and readability.

You will also practice the following generic skills (workplace skills):

Analytical, critical and creative thinking skills

You will analyze information, justify your opinions, and conceptualize and define entities. You will learn to distinguish between essential and non-essential information, recognize power relations, and reflect on what you have learned.

You will practice applying the content covered to everyday life and working life.

You will develop multiliteracies and a critical approach to examining texts.

Well-being and self-development skills

You will practice self-management by taking responsibility for your own actions on the course and paying attention to realistic time management between work, study, and leisure time.

You will pay attention to your well-being by developing your self-compassion and your ability to tolerate controlled discomfort.

You will reflect on the course content in relation to your professional identity and learn to recognize your strengths and weaknesses.

Communication, interaction and digital skills

You will practice clear and concise expression in speech and writing.

You will develop your listening and discussion skills as well as your cooperation and teamwork skills.

You will deepen your media and digital skills.

Official course record: [694942A](#)

903054Y | German Business Talk and Correspondence

3-4 ECTS | Language studies, German | Language and Communication Studies | German, Finnish

Person in charge: Veronika Ranzenhofer

Content

The course includes oral and written exercises such as receiving German-speaking guests, giving a company presentation, writing business letters (a contact letter, a call for offers, an offer, an order, a reclamation claim and a response to a reclamation claim) telephone conversations, the German-speaking countries and their cultures.

Learning outcomes

The students will be

- familiar with some essential differences between the business cultures of Finland and German-speaking countries.
- experienced in performance situations and be able to get their message across in a manner that is mindful of the customs and practices of German-speaking countries.
- able to give a company presentation.
- able to write the most common business letters.
- able to receive German-speaking business guests.

Official course record: [903054Y](#)

HG00AQ79 | German Grammar

5 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Satu Selkälä, Anniina Havela

Content

Structures of German grammar, tense, genus verbi, congruence, gender and case of nouns, adjective inflection, modes of verbs, use of pronouns, junctions and compound sentences.

Learning outcomes

Students are able to analyse and explain central grammatical structures and apply them in practice. They can conjugate verbs in different tenses, distinguish between separable and inseparable verbs and use them appropriately and form the passive voice in different tenses. They know the rules of congruence. They know the forms and use of case forms as well as the formation and use of adjective declension. They can form and use verbs in different modes, use junctions appropriately in compound sentences and know the different functions and use of pronouns.

[Official course record: HG00AQ79](#)

HG00BB98 | German Language and Culture I

5 ECTS | German Language and Culture | General Studies | Finnish, German

Person in charge: Sabine Grasz

Content

The course introduces students to the basics of the German language and provides basic information about the German-speaking region in Europe and its culture.

Key themes and interaction skills: talking about yourself and your everyday environment, interaction in everyday situations, basic German vocabulary, key academic vocabulary, basic structures, politeness, pronunciation, and letter-sound correspondences.

Learning outcomes

After completing the course, students will be familiar with the basics of German-speaking European culture, customs, and interaction. They will be able to cope with simple everyday interaction in German, understand clear German speech on familiar topics, and provide basic information about themselves, their studies, and their future language expertise in German. They will be able to grasp the main points of German-language texts on familiar topics and write simple, short texts. Students will master the letter-sound correspondence in German.

The student is able to utilize their multilingual vocabulary in developing their language skills.

The student has developed their academic and German language study skills and adopted a positive, active, and proactive attitude towards growing into the role of an academic expert in German.

European Framework of Reference (CEFR) proficiency level A1.1.

[Official course record: HG00BB98](#)

HG00BB99 | German Language and Culture II

5 ECTS | German Language and Culture | General Studies | Finnish, German

Person in charge: Sabine Grasz

Content

The course expands students' knowledge of German-speaking Europe and their German language skills.

Key themes: expanding basic vocabulary and structures, strengthening pronunciation. The course expands vocabulary and interaction skills, particularly in topics related to studying, everyday student life, and discourse skills in working life. Communication situations are practiced to prepare students for functioning in a German-speaking higher education community.

Learning outcomes

After completing the course, students will have expanded their knowledge of German-speaking Europe, its traditions, and culture. They will have expanded their vocabulary and knowledge of structures and will be able to cope with various everyday and study-related interaction situations in German. They will be able to function in everyday social situations in German, both orally and in writing. They will be able to read simple texts related to their studies from various media and find the information they need in short factual texts. They can write simple texts. They have become familiar with the basic structures of academic expert communication.

Students have expanded their knowledge of the German-speaking higher education world and learned to identify key information about it from simple authentic sources.

The student understands how to develop as a learner of German. They have developed the use of their multilingual resources in their learning and learned to reflect on their significance in supporting language learning. Their identity towards growing into an academic expert in German has been strengthened.

European Framework of Reference (CEFR) proficiency level A1.2-A2.1.

Official course record: [HG00BB99](#)

HG00BC00 | German Language and Culture III

5 ECTS | German Language and Culture | General Studies | Finnish, German

Person in charge: Sabine Grasz

Content

The course deepens students' knowledge of German-speaking European culture, e.g., history, politics, current social issues, and introduces them to the variations of the German language. It expands on German language structures, vocabulary, and areas of written and oral expression. It reviews and deepens the content of the previous courses, German Language and Culture I and II.

Learning outcomes

After completing the course, students will have expanded their knowledge of German-speaking European culture. They will be familiar with linguistic variation in German-speaking areas and understand the multi-layered nature of the culture. They will be able to describe the diversity of the German language and discuss German theory at a level corresponding to their language skills.

Students will be able to read general German-language texts and slightly more demanding texts when the subject matter is familiar. They understand normal-paced German speech on familiar topics and are able to participate in conversations. They are able to describe phenomena, events, experiences, feelings, plans, and opinions more confidently in German.

Students are able to take responsibility for their own German language learning. They have strengthened their identity as a future expert in German language and culture.

European Framework of Reference (CEFR) proficiency level A2.2-B1.

Official course record: [HG00BC00](#)

HG00BC07 | German Language and Discourse Skills at Work

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

No description supplied in the collected record.

Official course record: [HG00BC07](#)

HG00BC01 | German Language Tutorial

5 ECTS | German Language and Culture | General Studies | Finnish, German

Person in charge: Sabine Grasz

Content

The course consists of oral and written practical language exercises, grammar exercises, and exercises that develop text skills. The exercises are tailored to suit the varying skill levels of the students.

Learning outcomes

After completing the course, students will have strengthened their German language skills in all areas: oral and written expression, text skills, vocabulary, and command of grammatical structures.

[Official course record: HG00BC01](#)

693466P | German Speaking Countries

5 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Sabine Grasz

Content

An overview of the German-speaking countries (and regions).
Basic features of the history of Germany, Austria and Switzerland. Social and political topics from the German-speaking countries.
Current topics from various media in the German-speaking countries.

Learning outcomes

Upon completing the course, students have general knowledge of German-speaking countries. They are familiar with the most important stages in history and have an overview of social and political systems today and in the past. They are familiar with important aspects of everyday and high culture in German-speaking countries and can critically examine cultural characteristics and stereotypes, comparing the cultures of German-speaking countries with those in Finland. They are familiar with the most important German-language media and are able to search for information about German-speaking countries themselves and discuss and evaluate this information critically. Students expand and consolidate their vocabulary in various subject areas (history, society, politics, geography, economy, culture).
Students can give an oral presentation in German on a topic of their choice relating to German-speaking countries.

[Official course record: 693466P](#)

HG00AQ82 | German Syntax

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Satu Selkälä, Anniina Havela

Content

Sentence structures of the German language. Syntactic categories, syntactic functions, valence, word order, complex sentences.

Learning outcomes

Students can explain the structural characteristics of the German language. They can analyse and classify syntactic categories and syntactic functions in complex sentences.

[Official course record: HG00AQ82](#)

HS00AG81 | Getting to Know Working Life - Orientation to Work-life in Finnish

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Sisko Brunni

Content

Analyzing your own language skills. Familiarization with the Finnish-language communication culture and language of the work community in your field (common language, colloquial language, basic terminology, communication methods and situations).

Learning outcomes

After completing the course, the student recognizes

- the strengths and weaknesses of their own language repertoire
- identify what kind of language use and practice situations are available during the working life period
- knows how to plan which areas of language skills, in which situations and in which ways he can develop during the internship and how to use the language mentor's support offered at the workplace.

[Official course record: HS00AG81](#)

HS00AG82 | Getting to know working life - Practical training

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Sisko Brunni,

Content

Work contents and tasks, as well as learning tasks related to the study unit and the work placement report, are agreed with the work life internship instructor.

Learning outcomes

After completing the course, the student

- knows how to work in a Finnish-speaking work community
- recognizes different language use situations in working life and knows how to use them when practicing communication in Finnish, e.g. in academic communication situations.

[Official course record: HS00AG82](#)

HY00BC30 | Governance, Society and Sustainability in the Arctic

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

This course explores the Arctic as a place where people live, make decisions, and debate the future of sustainability. It looks at the Arctic not only as a region governed by states, but also as a space where new forms of governance are emerging and negotiated. The course understands Arctic governance as a dynamic process shaped by political institutions, societies, and different ideas about sustainability. Moving beyond state-centered approaches, the course examines how governance is shaped by Indigenous Peoples, local communities, international organizations, youth, industry, and civil society, as well as by language and narratives. Through case studies, discourse analysis, simulations, and creative activities, students critically engage with power relations, diverse knowledge systems, sustainability visions, and competing visions of futures, that define contemporary Arctic governance.

This course optimally complements the “People and Environment in the European Arctic” course but can be taken independently.

Learning outcomes

Upon completion of the course, students will be able to:

1. Understand the Arctic as a socially constructed, politically governed, and environmentally dynamic region;
2. Identify key governance structures and actors in the Arctic across local, national, regional, and global scales;
3. Compare state-based and Indigenous governance approaches;
4. Critically assess sustainability discourses and competing governance logics in the Arctic;
5. Assess contemporary geopolitical and economic dynamics shaping the Arctic;
6. Apply governance concepts to real-world Arctic policy challenges

Official course record: [HY00BC30](#)

683684S | Graduseminaari

0 ECTS | Inari Saami | Advanced Studies | Finnish, Sami

Person in charge: Marja-Liisa Olthuis

Content

Writing a research plan and a seminar paper, guidance seminars and scientific discussion. The student acts as an opponent for other seminar papers. The graduate seminar is conducted together with the Master's thesis.

Learning outcomes

The student is able to arrange, present and evaluate scientific data and conduct scientific research independently.

Official course record: [683684S](#)

HG00BC04 | Grafische Literatur - Erzählen im Comic (Åbo Akademi)

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

No description supplied in the collected record.

Official course record: [HG00BC04](#)

HR00AZ05 | Grammar

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Expanding grammar terms and basic grammar with versatile exercises. Analyzing sentence structures.

Learning outcomes

Students develop a broad understanding of French grammar. Grammar terms will become familiar. Students are able to analyze sentences. Students understand how to construct different types of sentences.

Official course record: [HR00AZ05](#)

HR00AY93 | Grammar and Translation Finnish-French

5 ECTS | French Language | Basic Studies | French, Finnish

Person in charge: Xavier Martin

Content

Versatile translation exercises from Finnish to French.

Learning outcomes

The student learns the basic structures of the French language and understands the importance of language structures for correctness, comprehensibility and style. The student notices language-specific differences in expressing things. The student develops the skills to translate Finnish texts into French. The student's vocabulary expands and becomes more active.

Official course record: [HR00AY93](#)

HR00AY92 | Grammar and Translation French-Finnish

5 ECTS | French Language | Basic Studies | French, Finnish

Person in charge: Maritta Riekkö

Content

Various translation exercises from French to Finnish. Analysis of texts and familiarization with linguistic and cultural differences.

Learning outcomes

The student develops the ability to translate French texts into fluent Finnish. The student's vocabulary expands and becomes more active. The student learns the basic structures of the French language and understands the importance of language structures for correctness, comprehensibility and style. The student notices language-specific differences in expressing things. The student becomes familiar with various dictionaries and technical aids in translation, while developing critical reading skills.

Official course record: [HR00AY92](#)

AY00BD09 | Gáiddusoahpahusa didaktihkka ja metodat - Didactics and Methods of Distance Teaching (OPEN UNI)

2-5 ECTS | Saami Language | Other Studies | Northern Sami

Person in charge: Maren-Elle Länsman

Content

Kurssas vuodjut gáiddusoahpahusa plánemii, ordnemii ja ovdanbuktii gáiddusoahpahussii heivvolaš oahpahusmetodaidd. Kurssas oahppat mo duddjot oadjebas oahppanbirrasa gáiddusin. Oassálastit besset iskat ja oahpásnuvvat iešguđetlágan digitálalaš oahpponeavvuide ja spealuide, maid sáhtta geavahit oahppama doarjjan. Kurssas giedahallat maidái dan, mo giela iešguđet oassesurggiid (dego ipmirdeapmi, hupmama ja čállima ja giela ráhkadusaid) oahpahit gáiddusin.

The course provides an introduction to planning and organizing remote teaching and presents teaching methods suitable for remote instruction. Students learn how to create a safe learning environment remotely. Participants will explore various digital learning tools and games that can be used to support learning. The course also addresses how different aspects of language (such as comprehension, production, and linguistic structures) can be taught in a remote setting.

Learning outcomes

Kurssa maŋŋa studeanta máhtta

- Máhtta plánet gáiddusoahpahusa ja válljet heivvolaš digitálalaš oahpponeavvuid oahppama doarjjan
- Dovdá vuigiid hukset oadjebas birrasa gáiddusin, doarjut ohppiid motivašuvnna ja aktiveret ohppiid gáiddusbirrasis
- Oahppá geavahit iežas oahpahussii heivvolaš digitála oahpponeavvuid ja atnit spealuid ávkin oahpahusas
- Oahppá mo giela iešguđet oassesurggiid (omd. ipmirdeami, hupmama ja čállima ja giela ráhkadusaid) sáhtta oahpahit gáiddusin

After completing the course, the student...

- Can plan and design remote teaching and select appropriate digital learning tools to support learning
- Understands ways to create a safe learning environment, support learners' motivation, and activate learners in a remote setting
- Knows how to use suitable digital learning tools in their teaching and to make use of games as part of teaching
- Understands how different aspects of language (e.g., comprehension, production, and linguistic structures) can be taught remotely

Official course record: AY00BD09

695258A | Historical Linguistics

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Different areas of language change (phonological, morphological, and syntactic change, change in meaning, grammaticalisation, language contact etc.)

Learning outcomes

Upon completion of this course, students will be able to analyse linguistic change and apply new on linguistic data. The students will be able to enumerate the terminology central to the field and identify the central figures in historical linguistics.

Official course record: 695258A

HR00AZ03 | History of France and the French Language

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Maritta Riekk, Xavier Martin

Content

Introduction to the political development of France from monarchy to republic. Focus on literary works of the 17th–20th centuries. Introduction to the similarities between Latin and French, especially in the development of vocabulary.

Learning outcomes

Students are familiar with the most important periods in French history from the French Revolution to the present day.

The students understand how the French language has developed from Late Latin to Old French and further into modern French. They identify similarities and differences in the development of other languages they have studied.

Official course record: HR00AZ03

695253P | History of Linguistics

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Historical development of linguistics

Learning outcomes

Upon completion of this course, students will be able to summarize the development of linguistics as a science. They will also be able to identify the central traditions and persons in the field.

[Official course record: 695253P](#)

693730A | History of Swedish Language and Society

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

Study of linguistic development from Proto-Norse to Modern Swedish from the perspective of social and cultural history

Learning outcomes

Upon completing the course, students will have become familiar with the historical background of the Nordic languages (with emphasis on Swedish) as well as the political, societal, and social factors that have had an impact on the development of the Swedish language. They can also describe the relationships between the Nordic languages.

Students are aware of the interdisciplinary nature of language studies.

[Official course record: 693730A](#)

HP00AV09 | Inari Saami Literature

5 ECTS | Inari Saami | Intermediate Studies | Sami, Finnish

Person in charge: Marja-Liisa Olthuis

Content [Finnish source]

Opiskelija tutustuu kirjallisuustieteen terminologiaan ja inarinsaamen kirjallisuuteen ja sen historiaan sekä keskeiseen käännöskirjallisuuteen

Learning outcomes [Finnish source]

Opiskelija tuntee kirjallisuudentutkimuksen keskeisen terminologian ja osaa analysoida ja tulkita tekstejä kirjallisuuden käsitteitä hyödyntäen. Opiskelija osaa kuvailla inarinsaamen kirjallisuuden lajien kehityksen ja historian. Opiskelija osaa nimetä keskeisen käännöskirjallisuuden ja arvioida sen merkitystä inarinsaamen kirjallisuudelle ja kirjallisen kulttuurin kehitykselle.

[Official course record: HP00AV09](#)

683681P | Inari Saami Phonology and Morphology I

5 ECTS | Inari Saami | Basic Studies | Finnish, Sami

Person in charge: Petter Morottaja

Content

- * Key terminology related to phonology and morphology
- * An overview of speech sounds and phonetic terminology related to articulation
- * The length system (quantity) and orthography (standard and dictionary orthography)
- * Parts of speech, inflectional classes, and inflectional forms in Inari Saami
- * Consonant gradation and changes in vowel length and quality
- * Exercises in text analysis
- * Inflection exercises, specifically nominative, genitive-accusative singular, locative singular, illative singular, and comitative singular, indicative present and preterite (past tense), negative forms, and the past participle.

Learning outcomes

Upon completion of the course, the student:

- * will be familiar with the key terminology related to phonology and morphology
- * will be able to identify the parts of speech, inflectional classes, and the most important inflectional forms of Inari Saami words
- * is familiar with the sound changes occurring in Inari Saami and can apply this knowledge when forming common inflectional patterns
- * knows the phonemes of Inari Saami and understands the length system and how it is modeled in current orthography
- * can critically evaluate Inari Saami sources and linguistic tools from a morphological perspective
- * is able to describe their own expertise, promote group learning and development, and recognize the need for lifelong learning

Official course record: [683681P](#)

683664A | Inari Saami Phonology and Morphology II

5 ECTS | Inari Saami | Intermediate Studies | Sami

Person in charge: Petter Morottaja

Content

Grade alternation (three-degree model), arch vowel model, text analysis exercises, conjugation class recognition of verbs and nouns, conjugation exercises, in which main focus at the comprehension of indicative conjugation of verbs and basic case conjugation of nouns as a whole; recognition of possessive forms of nouns and infinite forms and other modes (conditional, potential and imperative) of verbs.

Learning outcomes

Upon completion of the course, students will be able to:

- * understand how the indicative forms of verbs and the case forms of nouns are conjugated with regard to qualitative and quantitative stem sound changes and endings, and can conjugate those forms for the most common verbs and nouns
- * describe the deeper processes underlying grade alternation and vowel quality and quantity changes (three-degree model, arch vowel model)
- * recognize the verb forms of the other modal classes and possessive noun forms and generally understand the formation and usage of these forms
- * know how to use morphological technical tools to produce word forms and critically examine the results given by the tools
- * read Inari Saami word written with FUT transcription
- * discuss on the topics related to phonology and morphology in Inari Saami
- * identify the stress factors related to expert work and utilize self-compassion to support well-being

Official course record: [683664A](#)

683673S | Inari Saami Phonology and Morphology III

5 ECTS | Inari Saami | Advanced Studies | Sami

Person in charge: Petter Morottaja

Content

Analyzing and conjugating exercises (especially quantity of the speech sounds, quantity and quality changes of sound alternations, marginal inflection forms eg. imperative and potential modes and possessive forms of nouns), revising and more advanced look on Inari Saami derivatives and derivative endings, transcribing and reading transcriptions by FUT, familiarizing with reading scientific articles.

Learning outcomes

Upon completing the course, the student will be able to:

- * examine the morphological inflection and word formation rules of Inari Saami words analytically and critically, even for rare words and forms, and will be able to apply their skills when using the language
- * independently check and examine their own and others' language from a morphological perspective
- * name the typical variation related to inflection and derivation rules
- * name key scientific literature related to Inari Saami phonology and morphology, search for key content in articles, and examine Inari Saami morphology from the perspective of new research knowledge
- * be able to read and transcribe Inari Saami texts using FUT transcription
- * promote self-management skills and maintain their own competence in a goal-oriented manner
- * utilize and critically evaluate digital solutions and artificial intelligence technologies appropriately, safely and responsibly in research on Inari Saami morphology and to identify their impacts on research, working life and society

Official course record: 683673S

HP00BD89 | Inari Saami Special Fields' Vocabulary

0 ECTS | Inari Saami | Advanced Studies |

Person in charge: Petter Morottaja

Content [Finnish source]

omavalintaiseen erikoisalan sanastoon perehtymisestä materiaali- ja kirjoitusharjoituksin.

Learning outcomes [Finnish source]

Opiskelija tuntee laajasti valitsemansa erikoisalan sanastoa inarinsaameksi.

Official course record: HP00BD89

683665A | Inari Saami Syntax

5 ECTS | Inari Saami | Intermediate Studies | Sami, Finnish

Person in charge: Petter Morottaja

Content

Sentence constituents and exercises pertaining to them by help of texts, using sentence analysis to observe the morphosyntactic similarities and differences between Finnish and Inari Saami; analysis of semantic roles.

Learning outcomes

Upon completion of the course, students will be able to:

- * describe the most important syntactic differences between Inari Saami and Finnish and can apply their knowledge in producing a text
- * understand how a sentence is built on the basis of a finite verb and know the concepts related to dependency grammar (verb valency, complement, attribute, rection, subordination and parallelism)
- * describe the concept of a clause and the concepts that are most closely related to it (preposition, main word, attribute, congruence and semi-congruence) and can choose the appropriate word forms for Inari Saami clauses
- * list the main sentence constituents and identify them in Inari Saami sentences
- * illustrate the main sentence types and their structures in Inari Saami and identify their names
- * describe what the semantic features of verbs are (verb aspect, divisibility and indivisibility, definiteness and indefiniteness) and can reflect on how they can be marked in Inari Saami.

Official course record: 683665A

683668A | Inari Saami Word Formation

5 ECTS | Inari Saami | Intermediate Studies | Sami, Finnish

Person in charge: Petter Morottaja

Content

Techniques of word formation: formation of compound words, derivation and borrowing. Theory of linguistic derivation: the interrelationship between word root and affixes, the productivity of affixes. Formation of neologisms.

Learning outcomes

Upon completion of the course, students will be acquainted with the basic principles of word formation and their application to practice. Students will have acquired a command of the basic principles of derivation and will be familiar with the central productive patterns or affixes.

Official course record: 683668A

683682A | Inarinsaamen kielen tutkimuksen perusteet

5 ECTS | Inari Saami | Intermediate Studies | Finnish, Sami

Person in charge: Mervi Sistonen

Content [Finnish source]

Opintojakson aikana perehdytään tärkeimpiin inarinsaamen kielen tutkijoihin ja heidän työhönsä, tutustutaan inarinsaamen kielen käyttöön tieteen ja tutkimuksen kielenä sekä kiinnitetään huomiota inarinsaamenkieliseen tutkimusterminologiaan.

Kurssilla esitellään inarinsaamen eri tutkimusaloihin (esim. fonetiikkaan, fonologiaan, morfologiaan, syntaksiin, sanastoon, sosiolingvistiikkaan ja kielenelvyttämiseen) liittyvää aiempaa tutkimusta. Lisäksi kurssilla käydään läpi tieteellisen kirjoittamisen ja tutkimuksen perusteita. Opetusta havainnollistetaan inarinsaamen kielestä poimittujen esimerkkien avulla.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija tuntee inarinsaamen kielen tutkimuksen historian sekä tieteellisen kirjoittamisen työtavat. Opiskelija tuntee inarinsaamen tutkimukseen liittyvän perustermnologian sekä aineiston hankintaan ja analyysiin liittyvät menetelmät. Opiskelija osaa tarkastella metodeja, lähteitä ja tutkimustuloksia. Opiskelija tunnistaa ja osaa kuvata analyttisen, kriittisen ja luovan ajattelun merkityksen tieteellisessä, ammatillisessa ja eettisessä toiminnassa. Opiskelija osaa suhtautua avoimesti muiden alojen edustajien näkökulmiin ja tunnistaa mahdollisia tieteidenvälisiä näkökulmia, jotka voisivat edistää oman alan kehittämistä ja yhteistyötä.

683683S | Inarinsaamen kirjallinen käyttö III

10 ECTS | Inari Saami | Advanced Studies | Finnish

Person in charge: Marja-Liisa Olthuis

Content

Writing and translation tasks related to different types of texts. Reading Inari Saami literature.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa kirjoittaa sujuvaa inarinsaamea ja kehittää kielitaitoaan edelleen.

Opiskelija osaa tarkastella ja huoltaa omia tekstejään itsenäisesti.

Opiskelija osaa tuottaa erityyppisiä teksti- ja tyylilajeja.

Opiskelija osaa ratkaista oman alansa eettisiä kysymyksiä perustellusti ja perustella toimintansa eettisesti.

Opiskelija osaa arvioida yksilöiden ja ryhmien toimintaa, kuten tavoitteiden saavuttamista, ryhmädynamiikkaa, viestintää ja työilmapiiriä, osaa antaa rakentavaa palautetta, ohjausta ja kehitysehdotuksia muille.

Opiskelija tuntee prosessikäntämisen menetelmät ja osaa käyttää niitä sekä itsenäisesti että työryhmän jäsenenä.

Official course record: 683683S

683407P | Inflection

5 ECTS | Saami Language | Basic Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Inflection in North Saami concerning verbs, nouns and genitives, as well as the related morphophonological variation; spelling and inflection exercises; analysing and commenting on texts with the focus on inflection

Learning outcomes

After completing the course, students will have a command of the word inflection in North Saami and the related phonological variation. In addition, students will be familiar with the fundamental terminology concerning inflection, and they will be able to recognise, produce and analyse different forms of inflection. Students will also be able to use central source literature.

Official course record: 683407P

HP00AK85 | Inflection of Skolt Saami I

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

The basic terminology of morphology: morpheme, allomorphy, classification of morphemes and analyzing the meaning of morphemes; recapitulation of nominal inflection in all cases; recapitulation of verbal inflection in indicative, conditional and second person imperative, as well as the most important infinite forms; comparison of adjectives.

Learning outcomes

The student masters the central scientific terms and theories related to describing word inflection and can apply them to describing and analyzing Skolt Saami morphology. The student can inflect the words of all Skolt Saami inflectional classes to the most common forms.

[Official course record: HP00AK85](#)

HP00AK87 | Inflection of Skolt Saami II

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

The inflectional classes of nouns and verbs, as well as their inflection, including exceptional cases. The imperative, conditional, potential and infinite forms of verbs, the possessive declination of nouns and the attributive forms of adjectives.

Learning outcomes

The student masters the more peripheral inflectional categories of Skolt Saami, in addition the central inflectional forms. The student can determine the inflectional class of nouns and verbs, as well as apply this skill also to inflection of neologisms.

[Official course record: HP00AK87](#)

AY905035Y | Intensive Course in Spanish Language and Culture

2 ECTS | Language studies, Spanish | Language and Communication Studies | Spanish, Castilian, Finnish

Person in charge: Veronika Ranzenhofer

Content

The course contains discussion and writing exercises, listening and reading comprehension exercises. Topics of the course include e.g., studying and student culture at a Spanish-speaking university, talking about one's own studies, about Finland and Finnish culture, Spanish-speaking countries, their culture, customs and behavior, cultural differences, everyday situations (going to the bank, offices etc.). Basic grammar revision exercises, if necessary.

Learning outcomes

After successful completion of the course, the students

- * are able to manage in situations they might face during exchange studies in a Spanish-speaking university.
- * are familiar with differences and similarities between Finnish and Spanish universities.
- * can talk about themselves, hobbies, and studies in Spanish.
- * can tell about Finland and its history, current events, school system and culture.
- * are able to recognize some differences and similarities between Finnish and Spanish-speaking cultures.

[Official course record: AY905035Y](#)

682400S | Interaction and Multimodality

5 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen

Content

The key analytical field drawn upon is conversation analysis. Students are encouraged to engage in field research, collect suitable video data for studying social interaction, transcribe short segments of data, formulate a research question, do small-scale analyses and present their findings in a final paper. The practical research skills include collecting, managing, editing and transcribing video data.

Learning outcomes

Upon completion of the course, the student will be able to identify and describe how embodied conduct such as gestures and gaze are involved in the construction of social actions in different types of situations. The student will also be able to apply the acquired analytical tools and practical research skills for the analysis of social-interactional phenomena involving language, embodied conduct and the material environment.

Generic skills

The core generic skills developed during the course are skills in analytical and critical thinking, in responsibility and ethics, and in communication and interaction. The analytical and critical skills are practiced by applying the conversation analytic research methodology to study social interaction in face-to-face settings chosen by the student groups. The collection, management and analysis of video data involve practice in responsible and ethical conduct in research involving human participants while group work supports skills in communication and interaction. In general, the working methods on the course advance the student's digital skills, and international and multicultural competences are developed via practicing discipline-specific language skills in English.

Official course record: 682400S

682449S | Interaction and New Digital Technologies

5 ECTS | English | Advanced Studies | English

Person in charge: Pentti Haddington

Content

New digital tools and applications make possible real-time human-human, human-robot or human-AI interaction and provide a broad range of possibilities for collaboration. They are not only becoming more common, but they are also developing rapidly. Examples of such technologies are artificial intelligence (e.g., large language models, robots, voice user interfaces, chatbots), immersive virtual reality, social media and video conferencing tools. This course explores how people talk and interact in, around or with such digital technologies. In the course, the students will plan and implement a small-scale group project in which they identify and describe a phenomenon that is specific to interaction in one of the above digital settings. Students will publish their findings in the form of a blog.

Learning outcomes

Upon completion of the course, the student will be able to:

- give examples of digital settings in which humans interact with each other or some digital technology in real-time,
- give examples of and explain how humans interact with, around or within different digital environments,
- explain how the ways in which language use and interaction adapt to and are modified to reflect the digital setting, and
- plan and design a small-scale project in which they explore how people use language and interact in a selected digital environment; for example, they may identify and study how language use and interaction adapt to and are modified to reflect the digital setting.

In addition, during the course, the student will gain experience and develop the following generic skills:

- the critical analysis and reflection of language use, communication and interaction in various digital environments
- reflection of personal actions and interactions in different digital environments
- develop group-working skills in project planning, group work and project reporting
- recognises the impact of various digital tools on communication and interaction and can discuss its connection with human competence, social sustainability and responsibility
- understands the significance of the rapid development of digital communicative tools for interaction and can communicate them to lay people and/or experts and professionals in other fields
- uses and assesses digital tools (e.g., AI) critically and ethically

Official course record: 6824495

HE00AZ43 | Interaction Studies

5 ECTS | English | Advanced Studies | English

Person in charge: Pentti Haddington

Content

In this course, the student focuses on one of the following areas of language and social interaction: (a) multimodal conversation analysis, (b) video-mediated interaction, (c) extended reality interaction (immersive virtual reality, augmented reality or mixed reality), or (d) interaction in professional work environments.

Learning outcomes

Upon completion of the course, the student will be able to:

- explain the principles of multimodal conversation analysis, which studies multimodal interaction in naturally-occurring situations, or to explain features of interaction in a specific interactional setting (e.g., video-mediated, extended reality [including virtual reality, augmented reality or mixed reality] or professional work settings),
- give concrete examples and describe the features of phenomena related to language use and interaction studied with the above approaches or in the above settings, and
- on the basis of the set readings, identify a phenomenon of their interest that they may be interested in studying themselves.

In addition, during the course, the student will gain experience in and develop the following generic skills:

- critical and independent evaluation of literature
- understanding of how a research approach in language studies can be used to explore societally significant questions and phenomena (e.g., in relation to working life and digitalisation)
- independent planning of a study project

Official course record: HE00AZ43

682399S | Interactional Linguistics

5 ECTS | English | Advanced Studies | English

Person in charge: Mirka Rauniomaa

Content

The course builds on the students' knowledge of grammatical phenomena and terminology that they have acquired in their previous studies on the English language. At the same time, the course introduces new tools for analysing grammar from a functional perspective and focuses on language use in real-life social interaction. This includes the close analysis of audio and video recordings and transcripts thereof.

Learning outcomes

Upon completion of the course, the students

- have a strengthened understanding of basic grammatical phenomena and command of appropriate grammatical terminology;
- are able to identify and analyse such grammatical phenomena as they occur in real-life social interaction;
- are able to discuss potential grammatical differences between spoken and written English; and
- are able to describe how grammar is shaped by and used in social interaction for particular functional purposes (i.e., for carrying out social actions).

Moreover, the students will have developed their analytical and critical thinking skills; multidisciplinary and interdisciplinary skills; international and multicultural skills as well as skills in communication, interaction and project-based work.

Official course record: 6823995

HR00AQ88 | Intercultural Communication

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

You deepen your understanding of non-verbal communication, intercultural encounters, intercultural competence, and cultural clashes in various communicative contexts, and gain familiarity with different cultural dimensions.

Learning outcomes

You can define the concept of culture in a versatile way. In addition, you can analyze and interpret cultural dimensions and stereotypes. You increase your understanding of why there are differences between cultures.

You are aware of cultural diversity and cultural differences and respect them

Official course record: HR00AQ88

903041Y | Intercultural Communication / Tandem - German - Finnish

2-4 ECTS | Language studies, German | Language and Communication Studies | German, Finnish

Person in charge: Veronika Ranzenhofer

Content

The basic idea of tandem courses is to provide two language learners who speak different native languages the opportunity to learn about each other's language and culture in an interactive way. Besides learning each other's language, the two learners get an insight into each other's cultures and customs and receive information about the practicalities of everyday life. At the beginning of the course, the partners will choose topics that are of interest to both. The course will continue with informal meetings with the partner.

Learning outcomes

Upon completion of the course, students

- will be more confident in authentic communication situations with native Finnish or German speakers
- will have improved their oral communication skills in Finnish or German
- understand basic characteristics of the culture and society related to their target language.

[Official course record: 903041Y](#)

682439S | Intermedial Experience of Horror I

5 ECTS | English | Advanced Studies | English

Person in charge: Jarkko Toikkanen

Content

The course focuses on horror in literature from Romanticism to Modernism and beyond, connecting it with today's understanding of the notion both in culture and theory. Specifically, the course deals with horror as an intermedial experience that, in literature, is deeply involved with the words read and images aroused. Students will learn the relevant theories, engage in discussions of literature, and apply their learning in practical analysis. (The course has a follow-up that involves horror in media other than literature.)

Learning outcomes

Upon completion of the course, the outcomes are as follows:

Learning to read literary texts through the concept of intermedial experience – Awareness of the phenomenon and tradition of horror in culture and theory – Competence in using methods of intermedial analysis in the study of experience

Taking the course consolidates generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing. The students also learn to identify orientations in their own field of study and compare them with perspectives in other fields in a critical dialogue. They can promote multidisciplinary cooperation while keeping up with independent goals.

[Official course record: 682439S](#)

682440S | Intermedial Experience of Horror II

5 ECTS | English | Advanced Studies | English

Person in charge: Jarkko Toikkanen

Content

The course focuses on horror in contemporary media texts, based on a historical awareness of the phenomenon that connects the tradition with today's understanding of the notion both in culture and theory. Specifically, the course deals with horror as an intermedial experience that, in case studies, is deeply involved with the media encountered and images aroused. Students will learn the relevant theories, engage in discussions of media and medium-specificity, and apply their learning in practical analysis. (The course is a follow-up to another course involving horror in literature from Romanticism to Modernism and beyond.)

Learning outcomes

Upon completion of the course, the outcomes are as follows:

- Learning to read media texts through the concept of intermedial experience
- Awareness of the phenomenon and tradition of horror in culture and theory
- Competence in using methods of intermedial analysis in the study of experience

Taking the course consolidates generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing. The students also learn to identify orientations in their own field of study and compare them with perspectives in other fields in a critical dialogue. They can promote multidisciplinary cooperation while keeping up with independent goals.

[Official course record: 6824405](#)

HE00AI86 | Intermediality and Close Reading

5 ECTS | English | Intermediate Studies | English

Person in charge: Jarkko Toikkanen

Content

Close reading is a practical method of reading literature in a way that starts out from the details (words, images, voices, figures of speech) of the text being read, and expands towards an overall interpretation of the themes, ideas, and contextual factors involved. The course will introduce the tradition and development of close reading in the history of literary criticism, and connect it with theories in the field of intermediality research. Students will read literary texts and works in other media through this analytical combination, engage in discussions, and apply their learning in practice. Using tools of intermedial analysis will highlight how competence in this topical field can produce proficient close readings of literary texts and other media products. The course offers a solid foundation for further studies in intermediality research.

Learning outcomes

Upon completion of the course, the outcomes are as follows:

- learning to read analytically with tools of intermedial analysis
- awareness of the tradition and practice of close reading
- competence in carrying out a team project assignment

Taking the course builds on generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing. The students also learn to identify orientations in their own field of study and compare them with perspectives in other fields in a critical dialogue.

[Official course record: HE00AI86](#)

904026Y | Intermediate Course in French 1

5 ECTS | Language studies, French | Language and Communication Studies | French, Finnish, English

Person in charge: Maritta Riekk

Content

The topics covered by the course include, e.g., accepting and declining a proposal, giving advice, expressing opinions, talking about weather, talking about one's life, plans, leisure time, plans for future, and holidays.

Grammatical structures include, e.g., auxiliary and modal verbs (pouvoir, vouloir, savoir), personal pronouns in different forms, the use of passé composé and the simple past as well as the formation of future tenses.

Learning outcomes

The students can

- express their opinions and feelings using simple language,
- describe people, happenings and everyday life,
- manage short dialogues and talk about future and past events,
- describe their own experiences,
- understand normal-speed speech when the topic is familiar,
- recognize cultural differences and similarities between their own cultures and French-speaking cultures.

Official course record: 904026Y

904027Y | Intermediate Course in French 2

5 ECTS | Language studies, French | Language and Communication Studies | French, English

Person in charge: Maritta Riekk

Content

The topics of the course include, e.g., the French way of life, health matters and working life. The grammatical structures include, e.g., relative pronouns, conditional 1 and the comparison of adjectives.

Learning outcomes

The students can

- make polite requests and describe their goals and dreams,
- express their needs and wishes,
- make comparisons between different living environments,
- manage in simple work and study situations,
- give advice and suggest solutions to problems,
- understand simple text,
- understand normal-speed speech even if the topic is not familiar,
- justify their opinions and briefly explain them as well as create text about familiar topics,
- recognize differences and similarities between their own culture and French-speaking cultures

Official course record: 904027Y

904037Y | Intermediate Course in French 3

5 ECTS | Language studies, French | Language and Communication Studies | French, English

Person in charge: Maritta Riekk

Content

Topics: Media, travelling, studies and working life as well as environment and pollution.

Structures: Conjunctions, conditional, verb + preposition, passive voice, the place of pronouns, subjunctive.

Learning outcomes

The students

- manage in various work and study situations
- can participate in negotiations
- can express intentions and responsibilities
- are able to compare different education systems
- can present their own perspectives and express their opinions
- are able to express their own values and justify their opinions
- can participate in discussions on topics covered in the course
- will gain more knowledge about cultural differences

Official course record: 904037Y

695251P | Intermediate Course in General Linguistics

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Morphosyntax and selected linguistic fields

Learning outcomes

Upon completion of this course, students will be able to classify different linguistic structures, especially from a typological point of view.

[Official course record: 695251P](#)

903065Y | Intermediate Course in German 1

4-5 ECTS | Language studies, German | Language and Communication Studies | German

Person in charge: Oliver Jarde

Content

Discussion exercises, grammar exercises and listening and reading comprehension exercises. Topics covered by the course include family, daily routines, free time, studies, working life and German-speaking countries and their cultures.

Learning outcomes

The aim of the course is to develop the student's language skills in different areas. Upon completion of the course unit the student should

- be able to communicate in situations where familiar everyday topics are discussed
- should be able to understand relatively simple texts
- express his/her opinions and manage in short dialogues
- be able to recognize some differences and similarities between Finnish and German-speaking cultures
- should be able to communicate in various everyday situations while taking into account the distinctive cultural features of the German-speaking country in question.

[Official course record: 903065Y](#)

903066Y | Intermediate Course in German 2

4-5 ECTS | Language studies, German | Language and Communication Studies | German

Person in charge: Oliver Jarde

Content

Grammar exercises, reading and listening comprehension exercises and writing exercises relating to work and study-related situations, small talk, politeness and German-speaking countries.

Learning outcomes

The aim of the course is to develop the student's language skills in different areas: improve the student's oral and written capabilities, develop his/her listening comprehension and broaden his/her vocabulary. Upon completion of the course the student should

- be able to manage in everyday communication situations and express and justify his/her opinions
- be able to understand texts about familiar topics and themes interesting to him/her written in standard language
- be able to see similarities in differences between the German culture and his/her own and
- act upon accordingly and communicate accordingly in daily life situations.

903067Y | Intermediate Course in German 3

3-5 ECTS | Language studies, German | Language and Communication Studies | German

Person in charge: Oliver Jarde

Content

The course covers themes relating to German-speaking countries and student and professional life with the help of various discussion exercises.

Learning outcomes

Upon completion of the course the student should

- be able to manage in typical professional and special-field specific communication situations in an interactive manner
- be able to actively participate in discussions about current events and special field-specific topics
- express his/her views on different matters and present the pros and cons of different options
- be experienced in giving short oral presentations about topics related to his/her special field
- understand the culture-specific nature of Finnish and German customs and practices and be able to compare them with each other.

Official course record: 903067Y

903068Y | Intermediate Course in German 4

3-5 ECTS | Language studies, German | Language and Communication Studies | German

Person in charge: Oliver Jarde

Content

The course covers themes relating to German-speaking countries and professional and student life with the help of various discussion exercises and text and video material. The course also focuses on intercultural communication and current events and phenomena in German-speaking countries.

Learning outcomes

The student should

- be able to actively participate in discussions about familiar topics and explain his/her views on the different matters as well as discuss the pros and cons of different options
- should understand the culture-specific nature of German and Finnish customs and practices (or customs and practices of his/her provenance) and be able to compare them with each other
- be able to give short presentations concerning his or her own studies and
- be able to understand the central meaning of more advanced texts.

Official course record: 903068Y

903040Y | Intermediate Course in German for Economic Students

4-5 ECTS | Language studies, German | Language and Communication Studies | Finnish, German

Person in charge: Kaisu Jarde

Content

The course includes various listening, reading, writing and discussion exercises.

The topics of the course include, e.g., talking about interests and hobbies, discussing daily plans, suggesting something, and agreeing on or declining suggestions. The main focus is on everyday life, including studies and work. Cultural differences are also discussed regularly during the course.

The course introduces structures of grammar and vocabulary, such as verb conjugation of the present and past tense, use of articles and cases, reflexive and governing verbs; comparative and superlative forms; adjective inflection; prepositions; the main types of clauses will be presented as well as the use of connectors and conjunctions.

Learning outcomes

The students will be

- able to understand the main points when clear, standard language is used and the focus is on familiar topics associated with work, studies, leisure time etc.
- able to deal with most situations typically encountered when travelling in the language region.
- able to express themselves simply and coherently regarding familiar topics and areas of personal interest.
- able to report on experiences and events, describe dreams, hopes and goals as well as make short statements to justify or explain their own views and plans.
- aware of cultural differences and politeness in German-speaking countries

In order to complete further courses in German (YK00AV04 Deutsch im Unternehmen) it is recommended to pass this course at least with grade 3.

Official course record: 903040Y

AY905008Y | Intermediate Course in Italian 1/A (OPEN UNI)

5 ECTS | Language studies, Italian | Language and Communication Studies | Finnish

Person in charge: Elina Palola

Content

Already familiar with the basics of Italian and want to develop your skills further? In this course you will deepen your knowledge of grammar and expand your vocabulary, especially in the areas of leisure, family and housing. Thanks to e-learning, you can choose where to attend classes and no specific technological skills are required. So don't hesitate to join in! Benvenuti!

The course continues the introduction to the Italian language by learning more Italian language structures and practising practical situations, while getting to know the Italian culture through different texts, listening, video tapes. The lessons include exercises in structure and listening, as well as conversation and pronunciation exercises in pairs/small groups.

The course will cover the following Italian language structures: use of passato prossimo with object pronouns and reflexive verbs, future tense, adverbs, comparison of adjectives and the imperfect. Topics include talking about the past, plans for the future, hobbies, family and home.

Learning outcomes

To stimulate interest and activate existing language skills.

After completion of the course, the student

- can tell about themselves
- produce texts in general language
- has become familiar with Italian conversation habits and culture, life and history of Italians
- has increased their vocabulary and active language skills on topics of interest to them

Official course record: AY905008Y

905044Y | Intermediate Course in Japanese 1

5 ECTS | Language studies, Japanese | Language and Communication Studies | Japanese, Finnish

Person in charge: Takako Karppinen

Content

The student will learn the use of upper-beginner/intermediate level grammar with various kinds of exercises. Making example sentences and pair/group conversation are used to effectively learn important grammar. The student will read different types of authentic Japanese texts and becomes familiar with Japanese culture and customs.

Learning outcomes

Upon completion of the course, the student is able to use upper-beginner/intermediate level Japanese in various situations. The student is familiar with different styles of spoken and written Japanese. The student has learnt communication and mediation skills as well as Japanese customs and culture.

[Official course record: 905044Y](#)

AY00BD79 | Intermediate Course in Japanese 1 (OPEN UNI)

5 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student will learn the use of upper-beginner/intermediate level grammar with various kinds of exercises. Making example sentences and pair/group conversation are used to effectively learn important grammar. The student will read different types of authentic Japanese texts and becomes familiar with Japanese culture and customs.

Learning outcomes

Upon completion of the course, the student is able to use upper-beginner/intermediate level Japanese in various situations. The student is familiar with different styles of spoken and written Japanese. The student has learnt communication and mediation skills as well as Japanese customs and culture.

[Official course record: AY00BD79](#)

905045Y | Intermediate Course in Japanese 2

5 ECTS | Language studies, Japanese | Language and Communication Studies | Japanese, Finnish

Person in charge: Takako Karppinen

Content

The student will learn to use upper-beginner/intermediate level grammar. The student will participate in various kinds of exercises such as pair/group conversation, listening, making example sentences, text comprehension and textbook exercises. The student will read different types of authentic Japanese texts and become familiar with Japanese culture and customs.

Learning outcomes

Upon completion of the course, the student will be able to use upper-beginner/intermediate level Japanese in various situations. The student will be familiar with different styles of spoken and written Japanese, communication and mediation skills as well as Japanese customs and culture.

[Official course record: 905045Y](#)

904069Y | Intermediate Course in Russian, part 2

5 ECTS | Language studies, Russian | Language and Communication Studies | Russian

Person in charge: Ari Hepo-aho

Content

Customer service, holidaymaking and sports, being ill, vocabulary in media, culture, environment and environmental protection, animals and plants, politics and voluntary work, expressing opinions and suspicions

Learning outcomes

Upon completion of the course the student should have improved his communication skills.

[Official course record: 904069Y](#)

AY905028Y | Intermediate Course in Spanish 1 (OPEN UNI)

5 ECTS | Language studies, Spanish | Language and Communication Studies | Finnish

Person in charge: Veronika Ranzenhofer

Content

The course deepens basic vocabulary, especially in following areas: housing, family, studies, tourism and working life. Revision of past tenses (pretérito imperfecto and pretérito indefinido) and introduction of new grammatical structures, for example, past perfect, conditional and subjunctive present.

Learning outcomes

The aim of the course is to develop the student's language skills in different areas. After completing the course, the student

- * can communicate in situations that require a simple exchange of information of familiar, everyday issues.
- * understands easy texts, can express opinions and copes well with short conversations.
- * understands the cultural, historical and linguistic diversity of Spanish-speaking countries.

[Official course record: AY905028Y](#)

YK00BB30 | Intermediate Course in Spanish 1 - Español intermedio 1

5 ECTS | Language studies, Spanish | Language and Communication Studies | Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

During the course, students practice spoken and written communication in a versatile way, expand their vocabulary, and strengthen their command of key grammatical structures. The course deepens basic vocabulary related in particular to housing, work and studying, well-being, sustainability, and the cultures of Spanish-speaking countries.

The course also covers further core grammatical structures in Spanish (e.g. the use of the preterite and imperfect, and pronoun and preposition constructions). New topics include, for example, the pluperfect, the present subjunctive, the future tense, and the conditional.

Learning outcomes

Upon successful completion of the course, students will be able to

- * understand the main points of clear standard Spanish on familiar topics in spoken and written texts
- * participate in conversations and handle routine situations (e.g., travel, services, daily life) with increasing fluency
- * narrate and describe events in the past (combining past tenses)
- * express feelings and reactions
- * understand the cultural, historical and linguistic diversity of Spanish-speaking countries.

Official course record: [YK00BB30](#)

AY905029Y | Intermediate Course in Spanish 2 (OPEN UNI)

5 ECTS | Language studies, Spanish | Language and Communication Studies | Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

The course includes grammar exercises, reading and listening comprehension exercises as well as oral and written exercises on the following topics, among others: the environment and its protection, plans for the future, food and film culture.

In terms of structures, students deepen their command of the *ser* and *estar* verbs and the passive, as well as the use of the relative pronouns. New topics include, for example, the forms of the subjunctive past and how to use them.

Learning outcomes

The aim of the course is to develop and improve oral and written skills, to develop listening comprehension and to expand vocabulary. After completing the course, the students

- * can communicate in everyday situations taking into account the cultural characteristics of the target country
- * understand general texts on familiar topics.
- * can produce coherent texts on familiar topics.
- * recognize the cultural differences and similarities between Finland and Spanish-speaking countries.

Official course record: [AY905029Y](#)

AY00AR58 | Intermediate Course in Spanish 3 (OPEN UNI)

5 ECTS | Language studies, Spanish | Language and Communication Studies | Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

The course includes grammar exercises, reading and listening comprehension exercises as well as oral and written exercises. Students will expand their vocabulary and active language skills on topics of interest to them. Revision and deepening of the structures of the language with a focus on tenses of the subjunctive and past tenses of the indicative.

Learning outcomes

The course aims to develop and improve oral skills, develop listening comprehension and expand vocabulary. After completing the course, the students

- * will be able to cope with everyday conversational situations.
- * understand general texts on familiar topics and to some extent in their field of work.
- * master the basic structures of the language and produce comprehensible and fluent texts.
- * can express themselves and their opinions and views.
- * have a deeper knowledge of Spanish culture, lifestyle and history and acquire knowledge of current events.

Official course record: [AY00AR58](#)

694962S | Intermediate Estonian

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Maria Frick

Content [Finnish source]

Viron kielen kielitaito, Viron kulttuurin ja maantuntemuksen perusteet sekä viro-suomi-kontrastiivinen kieliooppi

Learning outcomes

After completing the course, students will be able to identify and analyze the key elements of Estonian grammar and culture from a contrastive Estonian-Finnish perspective. They will have achieved level B1 of the Common European Framework of Reference for Languages in all areas. Students will be able to use key Estonian vocabulary.

Generic skills: analytical, critical and creative thinking skills, international and multicultural skills sustainability, responsibility and ethics skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

Official course record: [694962S](#)

AY694950A | Intermediate Estonian (OPEN UNI)

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Maria Frick

No description supplied in the collected record.

Official course record: [AY694950A](#)

900015Y | Intermediate Finnish Course 1

5 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Arja Haapakoski

Content

During the course, students strengthen their communication skills in everyday situations and acquire a broader vocabulary along with a more thorough understanding of grammar. In addition, students practise understanding and producing spoken Finnish and reading newspaper articles.

The topics and communicative situations covered in the course include: asking for help, describing people and things, writing an email, talking about one's life story and educational and work background, filling in an application, describing the environment, expressing opinions, participating in a conversation, reading news and statistics, and telling stories.

The grammatical structures studied include: the imperfect tense, object forms, additional word and sentence types, and the perfect tense.

Learning outcomes

By the end of the course, students

- can communicate in ordinary everyday situations when the topics are familiar or relate to daily life
- can search for information and identify the key points in different types of texts
- can recognize the topic and some details of conversations around them
- can describe activities and personal experiences both orally and in writing
- understand some differences between spoken (colloquial) and written (standard) language
- know how to express different levels of politeness and can apply this in their own communication.

Official course record: 900015Y

900016Y | Intermediate Finnish Course 2

5 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Arja Haapakoski

Content

During the course, students develop the written and oral skills needed to manage informal situations that arise in everyday life, at work, and in their studies. The course content focuses on working-life themes such as internships, job applications, job interviews, and job advertisements. In class, the main emphasis is on oral pair and group exercises.

The topics and communicative situations covered in the course include: working life, hobbies and leisure; reading short newspaper articles and announcements in various media; responding appropriately in conversations; and common telephone phrases.

The grammatical structures studied in the course include: the perfect and pluperfect tenses, the use of verb tenses in general, plural noun inflection (partitive, genitive, and local cases), the passive form of verbs, and selected time expressions.

Learning outcomes

By the end of the course, the student's Finnish language skills are close to a functional basic proficiency level.

Students

- understand the main points of messages and spoken language that they encounter in work, study, and leisure contexts
- are able to produce coherent and meaningful texts on familiar topics and topics of personal interest
- can describe and talk about experiences
- have increased knowledge of Finnish working life and job-hunting practices
- are able to write a CV and a job application in Finnish and prepare for a job interview

The purpose of exploring these themes and practising language use is to support students' active participation in both working life and leisure activities.

Official course record: 900016Y

YK00AI94 | Intermediate Finnish Course 3

5 ECTS | Language studies, Finnish for Foreigners | | Finnish

Person in charge: Arja Haapakoski

Content

During the course, students acquire the knowledge and skills needed to communicate also in more formal situations and learn to understand formal and official texts. Students further develop their Finnish skills for everyday life, study, and work purposes. In addition, they study in more detail the differences between spoken and written language.

The topics and communicative situations covered during the course include matters related to Finnish society and giving a presentation on a topic within one's own field or of personal interest.

The grammatical structures studied during the course include, for example, further use of the conditional, comparison of adjectives, and infinitive forms of verbs (-ma- and -minen).

Learning outcomes

By the end of the course, students can communicate in a wide range of situations in Finnish. Students are able to:

- understand clear, standard Finnish about familiar topics commonly encountered at work, in studies, and during leisure time
- understand the main points of messages and conversations in colloquial Finnish
- produce simple, coherent, and logically structured texts on various topics
- describe experiences and events, express dreams, hopes, and ambitions, and explain and justify their opinions more effectively than before
- communicate about topics related to e.g. leisure time, well-being, the environment, and environmental protection.

Official course record: YK00AI94

695275A | Intermediate Morphology

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Morphological theories. Themes of offered classes alternate, topics for individual closed-book exams and papers are determined in consultation with the student according to their interests.

Learning outcomes

Upon completion of this course, students will be able to assess critically different morphological theories and apply them to novel linguistic data.

[Official course record: 695275A](#)

695274A | Intermediate Phonology

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Phonological theories. Themes of offered classes alternate, topics for individual closed-book exams and papers are determined in consultation with the student according to their interests.

Learning outcomes

Upon completion of this course, students will be able to assess different phonological theories critically. They will be able to utilize different theoretical models to describe phonological phenomena (syllables, stress, tone etc.).

[Official course record: 695274A](#)

695277A | Intermediate Semantics and Pragmatics

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Different areas in semantics and pragmatics. Themes of offered classes alternate, topics for individual closed-book exams and papers are determined in consultation with the student according to their interests.

Learning outcomes

Upon completion of this course, students will be familiar with various approaches of semantics and pragmatics, and be able to apply them to analysis of linguistic meaning and language use.

[Official course record: 695277A](#)

695276A | Intermediate Syntax

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Syntactic theories. Themes of offered classes alternate, topics for individual closed-book exams and papers are determined in consultation with the student according to their interests.

Learning outcomes

Upon completion of this course, students will be able apply various syntactic theories to data analysis and assess them critically.

[Official course record: 695276A](#)

HE00AU84 | Introduction to Anglophone Cultures

5 ECTS | English | Basic Studies | English

Person in charge: Steven Coats

Content

Aspects of the linguistic and societal/cultural history of English speakers in Britain, North America, Australasia, and further afield. Topics may include language history and language variation, colonial history, contemporary organization of government and politics, economy and economic history, and religion/religious history, among others.

Learning outcomes

The Introduction to Anglophone Studies course presents students with selected aspects of the linguistic, cultural, and social history of the principal English-speaking societies. Upon completion of the course, students will have demonstrated knowledge of the fundamentals of language, culture, government, and society which serve as the foundation for any substantial further analysis.

[Official course record: HE00AU84](#)

694943A | Introduction to Estonian

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Maria Frick

Content

Fundamentals of Estonian grammar, basics of Estonian culture, familiarisation with the country, and the main differences between Finnish and Estonian grammar

Learning outcomes

Upon completing the course, students will be able to define the basics of Estonian grammar from a contrastive Estonian-Finnish perspective. Students will be able to use and apply basic knowledge of the Estonian language and Estonia, as well as of the culture of Estonia. Students will be able to use the central vocabulary of Estonian.

Generic skills: analytical, critical and creative thinking skills, international and multicultural skills sustainability, responsibility and ethics skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

[Official course record: 694943A](#)

AY694943A | Introduction to Estonian (OPEN UNI)

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Maria Frick

Content

Fundamentals of Estonian grammar, basics of Estonian culture, familiarisation with the country, and the main differences between Finnish and Estonian grammar

Learning outcomes

Upon completing the course, students will be able to define the basics of Estonian grammar from a contrastive Estonian-Finnish perspective. Students will be able to use and apply basic knowledge of the Estonian language and Estonia, as well as of the culture of Estonia. Students will be able to use the central vocabulary of Estonian.

[Official course record: AY694943A](#)

695000P | Introduction to Finnish as a Second and Foreign Language

5 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Sisko Brunni

Content

Introduction to teaching and learning of Finnish as a Second and Foreign Language

Learning outcomes

Upon completing the course, students will be able to use the basic concepts from the field of Finnish as a Second and Foreign Language. They will be able to display knowledge of people who study Finnish and of the goals of teaching, and will be able to describe the teaching of Finnish on different levels of education.

[Official course record: 695000P](#)

694959Y | Introduction to General Linguistics and Phonetics

5 ECTS | Finnish Language | General Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic linguistic concepts and analysis. The focus is on phonetics, phonology, morphology, and syntax.

Learning outcomes

Upon completion of this unit, students will be able to analyze the structure of language scientifically and systematically. They will be able to apply the analytical tools of phonetics, phonology, morphology, syntax and semantics in novel linguistic data and define the basic terminology in linguistics and phonetics.

[Official course record: 694959Y](#)

AY694959Y | Introduction to General Linguistics and Phonetics (OPEN UNI)

5 ECTS | Finnish Language | General Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic linguistic concepts and analysis. The focus is on phonetics, phonology, morphology, and syntax.

Learning outcomes

Upon completion of this unit, students will be able to analyze the structure of language scientifically and systematically. They will be able to apply the analytical tools of phonetics, phonology, morphology, syntax and semantics in novel linguistic data and define the basic terminology in linguistics and phonetics.

[Official course record: AY694959Y](#)

682377P | Introduction to Literature in English

5 ECTS | English | Basic Studies | English

Person in charge: Hanne Juntunen

Content

This course will offer students a broad overview of literature in English by presenting and analyzing a range of literary texts from different periods and nations. The course covers prose and poetry, and focuses on the development of close reading and interpretive skills.

Learning outcomes

Upon completion the student should be able to:

- Display general knowledge of some broad periods in the history of English-language literature and an understanding of selected representative texts
- Understand and be able to use a range of central literary concepts and terms
- Offer personal readings of individual literary texts based on close reading and textual evidence

Taking the course develops generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing.

Official course record: 682377P

683504P | Introduction to Saami Culture

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

Introduction to regional, linguistic and cultural variations of Saami culture from perspectives provided by different disciplines and research traditions; introduction to the history, organisations and modern themes in the research on Saami

Learning outcomes

Upon completion of the course, students will be able to describe regional variations and main cultural characteristics of Saami culture. In addition, students will be able to describe the diversity of Saami culture. Students will be able to define the fundamentals and the central fields of the research on Saami.

Official course record: 683504P

HM00AS75 | Introduction to Saami Culture and Society

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Tiina Magga

Content

The course will lead the student to basic knowledge of Sámi culture and society. The course covers the special features of Sámi language and cultural areas, history, traditional knowledge and contemporary culture. The course provides diverse and up-to-date information on Sámi culture and society. The course helps to understand the diversity of Sámi from ethically, culturally and politically sustainable perspectives.

Learning outcomes

After completing the course, the student:

- is able to describe the regional and cultural characteristics of Sámi culture and society.
- understand the stages, actors and environments of the formation of Sámi society
- understands the diversity of Sámi culture and relations with other Indigenous communities and Nordic societies.

Official course record: HM00AS75

683517S | Introduction to Saami language history and the Saami languages

5 ECTS | Saami Language | Advanced Studies | Finnish, Sami

Person in charge: Ante Aikio

Content [Finnish source]

Perustiedot saamen kielten puhuma-alueista ja historiasta sekä tutustuminen eri saamen kielten kieliopillisiin ja sanastollisiin erityispiirteisiin; kielihistorian peruskäsitteiden ja menetelmien tuntemus.

Learning outcomes [Finnish source]

Opiskelija tuntee saamen kielten äänne-, muoto- ja lauseopin sekä sanaston historian pääpiirteet. Hän tuntee kielihistorian tutkimuksen peruskäsitteet ja tutkimusmenetelmät. Hän tuntee koltan-, inarin-, pohjois-, luulajan- ja eteläsaamen kieliopilliset ja sanastolliset pääpiirteet ja ymmärtää sanakirjan avulla yksinkertaisia tekstejä. Hän osaa myös kuvata saamen kielten erityispiirteitä suhteessa suomen kieleen.

Official course record: 6835175

AY682446P | Introduction to studying English at the University of Oulu (OPEN UNI)

2 ECTS | English | Basic Studies | English

Person in charge: Maarit Siromaa

Content

The course familiarizes students with the general principles and practicalities of study, and the five key areas of study in the English degree programme at the University of Oulu: literature, culture, language learning and teaching, language studies and professional language work.

Learning outcomes

Upon completing the course, students are able to recognize and describe the five key areas of study in the subject of English at the University of Oulu:

- Culture
- Language studies
- Language learning and teaching
- Literature
- Professional language work

Students have developed an understanding of how those key areas that form the basis of teaching within the unit, and know the general principles and practicalities of studying in the unit.

Official course record: AY682446P

693644P | Introduction to Translation Studies

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of the four basic aspects of translation and introduction to different fields in translation studies

Learning outcomes

Upon completing the course, students will be able to display an understanding of the role of translation and individual translations in society. Students will be able to discuss translation and translations against the background of grammatical, stylistic, semantic, and pragmatic issues. They will also have an overview of what kind of questions concern translation studies.

Students are aware of the interdisciplinary nature of translation studies.

Official course record: 693644P

YK00BC38 | Japanese B2 level writing and speaking

6 ECTS | Language studies, Japanese | Language and Communication Studies | Japanese, Finnish

Person in charge: Takako Karppinen

Content

Upon successful completion of the course, the student will be able to write an informative text of approximately 1,000 characters in Japanese at the B2 proficiency level without the assistance of a translator, dictionary, or similar tools. Additionally, the student will be able to engage in natural conversation in Japanese at the B2 level on a self-selected topic with a native Japanese speaker.

[Official course record: YK00BC38](#)

YK00BC39 | Japanese C1 level writing and speaking

8 ECTS | Language studies, Japanese | Language and Communication Studies | Japanese

Person in charge: Takako Karppinen

Content

Upon successful completion of the course, the student will be able to write an informative text of approximately 1,500 characters in Japanese at the C1 proficiency level without the assistance of a translator, dictionary, or similar tools. Additionally, the student will be able to engage in natural conversation in Japanese at the C1 level on a self-selected topic with a native Japanese speaker. The topic must be sufficiently broad in scope.

[Official course record: YK00BC39](#)

905057Y | Japanese KANA Course

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The course consists of exercises where the student learns to read and write hiragana and katakana characters. The student will also learn to use the characters to read and write Japanese text.

Learning outcomes

Upon completion of the course, the student will be able to read and write hiragana (46) and katakana (46) characters and write short texts using the characters.

[Official course record: 905057Y](#)

AY00AL57 | Japanese KANA Course (OPEN UNI)

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The course consists of exercises where the student learns to read and write hiragana and katakana characters. The student will also learn to use the characters to read and write Japanese text.

Learning outcomes

Upon completion of the course the student should be able to read and write hiragana (46) and katakana (46) characters and write short texts using the characters.

905049Y | Japanese KANJI Course 1

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student learns 108 basic kanji characters. The student also learns to use characters to read and write Japanese text. There is a final exam at the end of the course.

Learning outcomes

Upon completing the course, the student has learned 108 basic kanji characters and is able to understand and write text containing these characters.

Official course record: 905049Y

AY00BD64 | Japanese KANJI Course 1 (OPEN UNI)

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student learns 108 basic kanji characters. The student also learns to use characters to read and write Japanese text. There is a final exam at the end of the course.

Learning outcomes

Upon completing the course, the student has learned 108 basic kanji characters and is able to understand and write text containing these characters.

Official course record: AY00BD64

YK00BB31 | Japanese KANJI Course 2

2 ECTS | Language studies, Japanese | Other Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student learns 142 new kanji characters. The student also learns to use characters to read and write Japanese text.

Learning outcomes

Upon completion of the course, the student will be able to read and write Japanese text containing approximately 250 different kanji characters.

Official course record: YK00BB31

AY00BD65 | Japanese KANJI Course 2 (OPEN UNI)

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student learns 142 new kanji characters. The student also learns to use characters to read and write Japanese text.

Learning outcomes

Upon completion of the course, the student will be able to read and write Japanese text containing approximately 250 different kanji characters.

Official course record: [AY00BD65](#)

905056Y | Japanese KANJI Course 3

2 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The student learns 146 new kanji characters, and learns to use these characters to read and write Japanese text.

Learning outcomes

Upon completion of the course, the student will be able to read and write Japanese text containing approximately 400 different kanji characters.

Official course record: [905056Y](#)

HS00AG01 | Karelian Language and Culture

5 ECTS | Finnish Language | Other Studies | Finnish

Person in charge: Niina Kunnas

Content

The course introduces the student to the closest relative language of Finnish to Karelian and its history, Karelian culture and society. The course also deals with Karelian as a minority language in both Finland and Russia and examines the revitalization of the language.

Learning outcomes

The student knows the basics of the Karelian language and is able to distinguish between different Karelian varieties.

The student knows the basics of the history of Karelia and the Karelian language and Karelian culture.

The student knows the status of Karelian as a minority language both in Finland and in Russia.

Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements), 2) Well-being and self-development skills (effective time management, self-leadership, and the capacity to take responsibility for one's actions and overall well-being), 3) Communication, interaction and digital skills (encompassing listening and conversational skills, ethically responsible communication and critical awareness of power dynamics and one's own position, collaboration and teamwork abilities, artificial intelligence competencies).

Official course record: [HS00AG01](#)

695019P | Kieliopin opettaminen

5 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Sisko Brunni

Content

Finnish grammar from S2 perspective

Learning outcomes

After completing the course, students will be able to approach issues related to Finnish grammar from the perspective of S2 teaching. He/she masters the main grammatical areas related to S2 teaching and is able to handle them functionally in his/her teaching, taking into account the learners' abilities and proficiency level.

[Official course record: 695019P](#)

HR00AZ09 | Knowledge of French-Speaking World

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Maritta Riekk, Xavier Martin

Content

The students choose French-speaking countries from different parts of the world to research and get to know the history, language policies and culture of the countries. The students report their research in the form of a presentation.

Learning outcomes

Students are familiar with the history and language policies of different French-speaking countries. The cultures of different countries become familiar. The students notice differences in French culture and the cultures of other French-speaking countries. The students learn to search for information from different sources and to evaluate the information they find.

[Official course record: HR00AZ09](#)

HS00AG76 | Knowledge of Language Structures 1

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Anne Koskela

Content

A versatile and practical approach to the structure of the Finnish language from the perspective of a learner of Finnish as a second language. Reading texts and analysing their grammatical structures. Expanding vocabulary. Practical oral and written exercises.

Learning outcomes

The aim of the course is to deepen the student's knowledge of Finnish language structures and to increase the ability to apply the use of structures.

By the end of the course, students

- know Finnish phonetic structure and the variation of verb and noun forms
- are able to classify words into different types of inflection
- know the basic principles of word derivation
- are able to apply their knowledge of the language in oral and written communication
- can discuss the Finnish language and compare the characteristics of the Finnish language with their own mother tongue and other languages they have mastered.

[Official course record: HS00AG76](#)

HS00AG71 | Knowledge of Language Structures 2

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Anne Koskela

Content

A versatile and practical approach to sentence structures and semantics of the Finnish language from the perspective of a learner of Finnish as a second language. Reading texts and analysing their sentence structures. Expanding vocabulary and phraseology. Practical oral and written exercises.

Learning outcomes

The aim of the course is to increase the students' knowledge of Finnish sentence structures and semantic features and to deepen their knowledge of the Finnish language.

By the end of the course, students can

- analyse written and spoken text
- apply knowledge of sentence structure to their own language use
- can discuss Finnish language and compare the features of Finnish with their mother tongue and other languages they have mastered.

Official course record: [HS00AG71](#)

YK00AH19 | Kom igång! - course for students whose level of competence requires improvement

0-4 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content

The purpose of this course is to revise Swedish grammar and increase vocabulary knowledge through oral and written assignments.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2 in the Swedish language. University of Oulu does not offer beginner courses in Swedish.

Official course record: [YK00AH19](#)

695271P | Language and Culture

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

The role of language in culture, language death and genesis.

Learning outcomes

Upon completion of this course, students will be able to assess critically the relationship between language and surrounding culture.

Official course record: [695271P](#)

682362S | Language and Language Editing

5 ECTS | English | Advanced Studies | English

Person in charge: Andrew Pattison

Content

In this course, the emphasis will be on revision of authentic texts, as well as on discussion of the editor's role in the revision process. The course involves working with real-world editors and clients in a professional setting.

Learning outcomes

Upon completion of the course, the student should:

- display an understanding of the various aspects of language editing (proofreading, copy editing, language consulting)
- have an understanding of the duties, responsibilities and purview of the language editor with respect to the revision of academic or professional manuscripts
- be able to approach manuscripts as cultural artefacts of unique discourse/research communities
- show a familiarity with the tools and resources available to the professional language editor.

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Sustainability, Responsibility and Ethics

[Official course record: 6823625](#)

682353A | Language and Learning

5 ECTS | English | Intermediate Studies | English

Person in charge: Lydia Kokkola

Content

This is an elective course worth 5 credits. The course provides an introduction to language learning with an emphasis on the learning of foreign languages in educational environments. Towards the end of the course, there will be lectures explaining how research is conducted in the field, which are designed to support students who would like to write their BA degree essay in this area.

Learning outcomes

After having completed the course the student should be able to:

- name and define the key concepts and, where relevant, their abbreviations in the area of language learning
- analyse how the application of different theories of second language acquisition influence teaching
- locate and evaluate research papers on a pre-determined topic.
- critically evaluate both tertiary and original research papers orally and in writing.
- produce texts showing evidence of critical thinking, a good command of English and knowledge of the course texts
- give evidence of having knowledge of the multifaceted English-speaking world
- show the ability to support the learning of others as well as themselves
- demonstrate the ability to critically evaluate information and draw conclusions
- Understand why research findings can be interpreted in more than one way
- Develop skills needed for continuous learning

[Official course record: 682353A](#)

693647P | Language and Society

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

Study of literature related to translation studies, analyses of translations

Learning outcomes

Upon completing the course, you will be able to view translation as a process of language and culture transfer. You will also be able to use literature related to translation studies in order to evaluate your own translations as well as those of others.

You can evaluate knowledge within your field of study and apply it in different situations.

Official course record: [693647P](#)

694961A | Language Consulting

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Maija Saviniemi

Content

familiarization with text correction and feedback, editing entire texts, preparing teaching materials, giving feedback in practice, writing scientific abstracts and popular science articles

Learning outcomes

You will be able to apply what you have learned about writing and language planning in such a way that you can plan language planning teaching materials, check and correct texts and give expert feedback face to face. In addition, you will write a popular article and a summary based on a scientific text.

In addition, you will practice the following generic skills:

Analytical, critical and creative thinking skills

You will analyze information, justify your opinions, and conceptualize and define entities. You will learn to distinguish between essential and non-essential information, recognize power relations, and reflect on what you have learned.

You will practice applying the content covered to everyday life and working life.

You will develop multiliteracies and a critical approach to examining texts.

Well-being and self-development skills

You will practice self-management by taking responsibility for your own actions on the course and paying attention to realistic time management between work, study, and leisure time.

You will pay attention to your well-being by developing your self-compassion and your ability to tolerate controlled discomfort.

You will reflect on the course content in relation to your professional identity and learn to recognize your strengths and weaknesses.

Communication, interaction and digital skills

You practice clear and concise expression, both verbally and in writing.

You develop your listening and discussion skills as well as your cooperation and teamwork skills.

You deepen your media and digital skills.

Official course record: [694961A](#)

693472A | Language Didactics

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sabine Grasz

Content

Overview of the most important methods and theories of foreign language teaching. More detailed treatment of selected areas: e.g. German for children/young people, learning strategies, foreign language skills, multilingualism, digital media/AI in foreign language teaching. Presentation of various research topics for candidate theses and pro-graduate theses and the most common research methods that can be used.

Learning outcomes

Students are familiar with the most important methods and theories of foreign language teaching. They are able to analyse lessons and teaching material on the basis of theoretical knowledge. They know different methods for researching teaching and learning processes and have an overview of research opportunities in the field of language didactics. Students can give an oral presentation on a language teaching topic and write a written report.

[Official course record: 693472A](#)

683527A | Language Endangerment and Language Revitalisation

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Minna Rasmus

Content

Social, societal and cultural state of the Saami languages; central concepts and theories of language endangerment, language replacement, language preservation, language revitalisation, as well as bi and multilingualism

Learning outcomes

After completing the course, students will be able to display profound knowledge of the fundamentals of the social, societal and cultural state of the Saami languages, as well as of research concerning these. In addition students will have familiarised themselves with the sociolinguistic research on minority languages and endangered languages. Students will also know central concepts and theories concerning the research on language endangerment, language replacement, language preservation, language revitalisation, as well as bi and multilingualism.

[Official course record: 683527A](#)

694952S | Language History

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Heini Karjalainen

Content

Development of Finnish, methodology of historical-comparative linguistics

Learning outcomes

The student is able to apply the methodology of historical-comparative linguistics especially to the Finnic languages. They also know the historical background of the Finnish language. The student is able to make analytical conclusions and apply creative methods based on relatively limited data.

[Official course record: 694952S](#)

HR00AU87 | Language History and Dialectology

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Paula Rossi

Content

Review of linguistic historical research, analysis tasks, specialization according to agreement. The course also touches on the contacts between Swedish and other languages and cultures during different times. During the course, the regional variants and linguistic variation of Swedish are studied, among other things, with the help of sociolinguistic and dialectological research.

Learning outcomes

Students can discuss scientific articles on language history in a variety of ways. They can analyze and interpret older texts and read old handwriting.

Students can explain the historical background of dialects and the current dialect situation in Sweden and Swedish-Finland.

Students can understand the main points of longer texts.

[Official course record: HR00AU87](#)

HP00AQ30 | Language History and Introduction to Other Saami Languages

5 ECTS | Saami Language, Inari Saami | Advanced Studies | Sami

Person in charge: Petter Morottaja

Content [Finnish source]

Vaihtelevat toteutuksen mukaan

Learning outcomes [Finnish source]

Vaihtelevat toteutuksen mukaan

[Official course record: HP00AQ30](#)

HR00AQ89 | Language Pedagogy

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

The course deals with issues related to language learning, teaching and being a language teacher.

Learning outcomes

Students become familiar with key studies of language acquisition, language development and issues related to language teaching.

You can follow up on your own linguistic and professional development and reflect on it.

[Official course record: HR00AQ89](#)

AY00AZ84 | Language Pedagogy (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

The course deals with issues related to language learning, teaching and being a language teacher.

Learning outcomes

Students become familiar with key studies of language acquisition, language development and issues related to language teaching.

683529S | Language Planning

5 ECTS | Saami Language | Advanced Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Reading, writing, correction, commenting on, and analysing different kinds of texts with the focus on language, structure and style

Learning outcomes

Students will familiarise themselves with various methods of and views on language planning. Students will also be able to correct mistakes in texts as well as improve the structure and style of texts. In addition, students will be able to recognise the effects that majority languages of state have on the Saami language and will be able to avoid these effects in their own texts.

Official course record: 683529S

694937P | Language Planning

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Heini Karjalainen

Content

Basics of language planning, usage of manuals

Learning outcomes

The student is able to correct texts independently with the help of language manuals.
The student is able to make analytical conclusions and examine materials critically based on relatively limited data.

Official course record: 694937P

AY694937P | Language Planning (OPEN UNI)

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Heini Karjalainen

Content

Basics of language planning, usage of manuals

Learning outcomes

The student is able to correct texts independently with the help of language manuals.
The student is able to make analytical conclusions and examine materials critically based on relatively limited data.

Official course record: AY694937P

682409S | Language Practice

5 ECTS | English | Advanced Studies | English

Person in charge: Lydia Kokkola

Content

Extended residence in an English-speaking country or environment. The residence can comprise of several smaller periods, but during the time the student has a study right for English.

Learning outcomes

Upon completion the student should be able to display an understanding of linguistic, cultural and societal aspects of an English-speaking country or environment. They should also be able to reflect on their own learning.

Official course record: [6824095](#)

693841A | Language Practice

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Validation of acquired knowledge during language stays and employment in French-speaking countries.

Learning outcomes

The studies can be counted as part of work placement or language training in a French-speaking country.

Official course record: [693841A](#)

693688P | Language Skills I

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Elisa Risto

Content

On this course you get to practice your oral and written skills in Swedish. On this course you will learn to write texts in different genres, to discuss different kinds of themes and to give small oral presentations. You also learn how to use correct citation style and how to respond constructively to other people's texts.

Learning outcomes

Upon completing the course, you will be able to produce written texts in different genres and use correct citation style. You can discuss different topics and plan and give small oral presentations. You have increased your abilities to express yourself using both correct and idiomatic Swedish. You will be able to give feedback on other students' texts.

You can work in a team, listen actively to others, give feedback and solve problems in a constructive manner. You can monitor and reflect on your own linguistic and professional development.

Official course record: [693688P](#)

HG00AQ80 | Language skills I

5 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Sabine Grasz, Anniina Havela

Content

The course consists of two parts.

Part 1: Exercises on German vocabulary, oral communication and writing various texts in German, e.g. description, report, argumentation, summary.

Part 2 deals with the special features of the spoken German language. The focus is on German phonetics in contrast to Finnish in theory and practice. Specifically, the focus is on familiarizing students with the German phoneme inventory, German pronunciation rules, German orthography, articulation processes in the production of German vowels, diphthongs and consonants, as well as practising German sounds, word and sentence accents and basic types of German sentence intonation. In addition, listening comprehension of German spoken texts from different regions of the German-speaking world is practiced.

Learning outcomes

Students are able to analyse the content and structure of everyday texts and easy academic texts and write them themselves. Students will familiarise themselves with and use the key vocabulary associated with the types of text covered in the course. Students will be able to discuss various topics and give a presentation in German. They can speak freely in different areas (formal & informal) and in different social forms (pair & group discussions), present facts in an understandable way and use the appropriate register.

Students know the basic features of German phonetics and the most important differences between German and Finnish pronunciation. They are familiar with the standardised pronunciation of German sounds and can largely use them themselves and correctly place accents at word and sentence level. Furthermore, students use appropriate sentence intonation and can interpret it receptively.

Official course record: [HG00AQ80](#)

693728P | Language Skills II

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Elisa Risto

Content

You get to deepen your oral and written knowledge of Swedish. You learn to write texts in different genres, discuss different kinds of topics and to give different kinds of oral presentations. You also learn to look for relevant information and get to repeat correct citation style. By correcting your own texts, you have the opportunity to improve your written language skills.

Learning outcomes

On this course, you increase your genre awareness in written and oral communication. You can write texts and give oral presentations according to the content, purpose, recipient and medium of the communication. You can use correct citation style and look for relevant information. You learn how to correct your own texts.

You can work in a team, listen actively to others and solve problems in a constructive manner. You can monitor and reflect on your own linguistic and professional development.

Official course record: [693728P](#)

HG00AQ81 | Language skills II

5 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Sabine Grasz

Content

Exercises on German vocabulary, oral communication and writing different texts in German.

Learning outcomes

Students are able to analyse the content and structure of everyday texts and easy academic texts and write them themselves. Students will familiarise themselves with and use the key vocabulary associated with the types of text covered in the course. Students will be able to discuss various topics and give a presentation in German. They can speak freely in different areas (formal & informal) and in different social forms (pair & group discussions), present facts in an understandable way and use the appropriate register.

Official course record: [HG00AQ81](#)

HG00BB93 | Language Skills III

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sabine Grasz

Content

The course consists of two parts.

Part 1: Written translation of texts from Finnish into German. Translation problems and their solutions are discussed in groups. The course also covers and uses common translation tools and some basic concepts of translation theory.

Part 2: Getting to know the most important media in German-speaking countries, analysis of various (written and spoken) texts in the German-language media. Vocabulary expansion in various subject areas.

Learning outcomes

Students can translate general, subject-specific and literary texts from Finnish into German. They are familiar with the phases of the translation process (preliminary text analysis, research, consideration of the target audience) and can implement them when creating translations. They are familiar with the most common (digital) tools used in translation and can use them when translating.

Students are familiar with the most important media (print media, social and digital media, and television/radio) in German-speaking countries. They can follow, understand and interpret current discussions on various topics (politics, society, culture, etc.) in different media. They can search for, critically evaluate and process current information in the media.

Official course record: [HG00BB93](#)

693461Y | Language Training (German)

5 ECTS | German Language and Culture | General Studies | German

Person in charge: Satu Selkälä, Sabine Grasz, Anniina Havela

Content

Language practice consists of either an exchange period in a German-speaking university, a one month's summer course at higher-education-level, at least two month's stay or at least two month's working period in a German-speaking country after the matriculation examinations.

Learning outcomes

Students are able to study or work in a German-speaking environment. They can communicate clearly in a foreign language, both orally and in writing. They recognise cultural diversity and the problems of stereotypes in relation to different languages, nationalities and ethnic groups, and recognise stereotypical ways of thinking. Students are able to interact openly with people from different cultural backgrounds in international and multinational situations.

Official course record: [693461Y](#)

693642S | Language Training (Swedish)

3-5 ECTS | Swedish Language | General Studies | Swedish

Person in charge: Paula Rossi

Content

Completion of a Nordic language course or a minimum of one month's stay in a Nordic country

Learning outcomes

During language training, students will familiarise themselves with Swedish as it is spoken in Sweden or in Finland (or Danish, Norwegian or Icelandic) and gain practical skills.

Students can communicate clearly in Swedish, both verbally and in writing.

Official course record: [693642S](#)

HS00AG77 | Language Training 1 Finnish Society and Work Communities

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Anne Koskela

Content

- Introduction to Finnish society: social structure, rule of law, welfare and equality, power, influence and decision-making.
- Working communities in Finland: employer's and employee's responsibilities, well-being of the working community.
- Review of the basic level of the Finnish language (A2-B1) and assessment of one's own skill level and planning for the development of language skills.

Learning outcomes

In the course, the students deepen their knowledge of social issues related to Finnish working life and develop their Finnish language skills.

By the end of the course, students

- can discuss social phenomena and principles related to Finnish working life at a general level
- recognize their own strengths as a user of the Finnish language
- can draw up a realistic plan for developing communication skills in Finnish (e.g. set their own goals and choose study materials for independent study).

Official course record: [HS00AG77](#)

HS00AG78 | Language Training 2 Culture and Communication in Finnish

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Anne Koskela

Content

Formal and informal situations in the workplace (standard language / colloquial language). Culture of discussion and communication in various situations and practising them. Typical features of spoken language.

Learning outcomes

In the course, the students develop their Finnish language skills to support their working life. The starting point is own expertise and a development plan.

By the end of the course, students

- are familiar with Finnish communication culture and practices in working life and are able to discuss them
- know the most common informal communication situations in the workplace and are able to participate in them
- recognize the features of spoken language.

Official course record: [HS00AG78](#)

HS00AG79 | Language Training 3 Professional expertise and communication in Finnish

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Anne Koskela

Content

Expert communication in Finnish. Communication and interaction situations of expertise in one's field, e.g. meetings and negotiations, guiding/teaching/training, communicating with a customer, reading an article and discussing it. Collecting the vocabulary of one's own field.

Learning outcomes

In the course, the students develop their Finnish language skills to support their working life.

By the end of the course, students are able to

- use Finnish in various professional and academic communication situations
- read scientific and professional texts and report on what they have read
- build and maintain a meaningful teaching/training situation.

Official course record: [HS00AG79](#)

HS00AG80 | Language Training 4 Communication in Job Search

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Anne Koskela

Content

Identifying one's skills and strengths and telling about them. Job search communication (job advertisement, application, CV, video CV, job interview). Acting in different communication situations at work (e.g. conversation with supervisor and colleagues).

Learning outcomes

During the course, students learn about job search communication and further develop their Finnish language skills to support their working life and expertise.

By the end of the course, students are able to

- talk about their own skills, professional strengths and development areas
- identify job search processes and communication situations
- do the necessary documents for a job search
- apply what they have learned at different stages of the job search.

Official course record: [HS00AG80](#)

694938P | Language Variation and Change

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Niina Kunnas

Content

Uralic languages, basics of language history, basics of Finnish dialectology, development of Finnish standard language

Learning outcomes

Students will be able to display knowledge of the position of Finnish among the Uralic languages, the main characteristics of the areal variation of Finnish and the main features of the development of standard Finnish. Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements), 2) Well-being and self-development skills (effective time management, self-leadership, and the capacity to take responsibility for one's actions and overall well-being), 3) Communication, interaction, and digital skills (encompassing listening and conversational skills, as well as collaboration and teamwork abilities).

[Official course record: 694938P](#)

AY694938P | Language Variation and Change (OPEN UNI)

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Niina Kunnas

Content

Uralic languages, basics of language history, basics of Finnish dialectology, development of Finnish standard language

Learning outcomes

Students will be able to display knowledge of the position of Finnish among the Uralic languages, the main characteristics of the areal variation of Finnish and the main features of the development of standard Finnish. Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements), 2) Well-being and self-development skills (effective time management, self-leadership, and the capacity to take responsibility for one's actions and overall well-being).

[Official course record: AY694938P](#)

682386A | Language Variation and Sociolinguistics

5 ECTS | English | Intermediate Studies | English

Person in charge: Steven Coats

Content

The course will provide an introduction to the study of language variation from the perspective of the speech community. Topics will include the history of inquiry into language variation, social and cultural factors influencing language use, and the correlation of linguistic and non-linguistic variables.

Learning outcomes

Students will gain familiarity with the evolution of the systematic study of linguistic variation and be introduced to key terms and concepts in the field of sociolinguistics. Students successfully completing the course should be able to demonstrate knowledge of important terminology, research paradigms, and the historical development of the field.

695257A | Languages of the World and Linguistic Typology

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Classification of languages, linguistic universals, and linguistic typology

Learning outcomes

Upon completion of this course, students will be able to analyse different structural types among the languages of the world and classify them typologically. Students will also be able to name the most important languages and language families.

Official course record: 695257A

900105Y | Launch your career through communication

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Kaija-Mari Kananen

Content [Finnish source]

Suuntaa uralle viestinnän keinoin -opintojaksolla kehität asiantuntijaviestinnän taitoja, joita tarvitset niin opintojen aikana kuin työelämässä. Opintojakso auttaa sinua tunnistamaan ja sanoittamaan oman osaamisesi, viestimään siitä vakuuttavasti ja rakentamaan asiantuntijarooliasi. Lisäksi tutustut asiantuntijaviestinnän keskeisiin toimintatapoihin.

Keskeiset sisällöt:

- asiantuntijan viestintä- ja vuorovaikutustaidot ja -osaaminen
- oman osaamisen kartoitus ja arviointi sekä oman viestintä- ja vuorovaikutusosaamisen tavoitteellinen kehittäminen
- oman asiantuntijuuden ja osaamisen esille tuominen sekä todentaminen
- asiantuntijarooli
- asiantuntijatekstit, kuten asiantuntijapuheenvuoro, arvostelu, raportti.

Learning outcomes

This course is offered only in Finnish.

Official course record: 900105Y

695015A | Learner language and corpus technology in teaching

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Characteristics of learner language and benefits of electronic materials in teaching

Learning outcomes

Upon completing the course, students will be able to describe the characteristics of learner language. Students will be able to assess how the language of language learners is different from that of a native speaker and apply this information in teaching. Students will also be able to analyse and utilise electronic language materials and language archives.

Official course record: 695015A

682388A | Learning in Everyday Environments

5 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Keisanen

Content

The course provides a research-oriented approach to the analysis and understanding of learning in everyday contexts beyond school. Students are encouraged to plan and carry out a small-scale ethnographic research project in groups.

Learning outcomes

Upon completion of the course the students should be able to

- * display an understanding of the nature of learning and especially language learning in everyday environments
- * demonstrate basic knowledge and skills in ethnographic research methodology
- * carry out a small research project under guidance, including scheduling the tasks and executing the project as planned
- * follow good scientific practice and the guidelines on research ethics relevant for their project

Generic skills

The core generic skills developed during the course are skills in analytical and critical thinking, in responsibility and ethics, and in communication and interaction. These skills are practiced by working in small teams which apply the ethnographic research methodology to study social practices in a group or community chosen by the team. Based on the work done during the course, the student should be able to reflect on the nature of language learning in everyday environments. This supports skills in self-development. The working methods on the course advance the student's digital skills, and international and multicultural competences are developed via practicing discipline-specific language skills in English.

[Official course record: 682388A](#)

902129Y | Legal English for Business Purposes

1-4 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Eva Braidwood

Content

The aim of this course is to offer students an understanding of the legal and cultural background of contracts used in business transactions and working life. Participants will learn about legal texts and contracts necessary for business operations. They will find out about the differences between the legal systems of the world, and how their own country's legal system and their cooperating partner's legal background may affect their business interaction. Completing the course assignments will also enrich participants' understanding of different cultures.

In terms of language and communication skills, the coursework will enhance and activate students' skills in all modes of communication, i.e. reception, production, interaction, and mediation. In particular, the course is designed to support students in 1) reading and processing legal English texts, 2) understanding the differences between contracts used in different legal systems, 3) explaining/rephrasing common law contracts using plain English and their first language (mediation); 4) using appropriate terms and expressions when summarizing the contents of business-related legal documents produced in their first language (mediation); 5) using appropriate legal terms and phrases in business interactions in writing and oral presentations.

TOPICS studied: Completing these topics/projects, you will learn about contracts governed by common law. In addition, you will acquire the core legal vocabulary to understand complex sale agreements, employment, leasing, agency agreements, and non-disclosure agreements. The course offers the following projects, which are based on real-life needs in business operations:

Project 1) Common law or civil law: the context; Basic legal English vocabulary relevant to contracts.

Project 2) Contract of sale and Agreement to sell;

Project 3) Leasing and renting: premises, equipment;

Project 4) Keeping it confidential: dealing with partners (NDA);

Project 5) Employment contracts and/or Agency agreements.

TIME USE and CREDIT VALUE: each project requires around 15 hours' work. Those studying for 1 ECTS credit will have to complete an exam based on the topics of projects 1 and 2. Those completing more than 2 credits will choose from among the projects according to their future line of work (specialization). and their own needs and preferences.

Learning outcomes

By the end of the course, students will be able to

- demonstrate their understanding of the cultural differences between the main legal systems of the world,
- analyse and explain the differences between European and Anglo-American contracts,
- demonstrate their understanding of the structure and language of common law contracts,
- use appropriately English terms, concepts, and idiomatic expressions relevant to contracts,
- communicate clearly in plain English the information contents of relevant common law contracts (such as NDA, Sales agreement, employment and agency contracts, leasing agreements).

Official course record: 902129Y

901025A | Let's Talk !

2-4 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content

This course unit includes mainly communicative oral exercises. Topics covered by the course unit include e.g. culture, applying for a job, meeting procedures, argumentation, special field-specific discussion starters and small talk. Students have a say in the selection of topics.

Learning outcomes

By the end of the course students are expected to be able to lead a discussion in Swedish and discuss and justify his/her opinions in various communication situations (e.g. at work or when living in Sweden or other Nordic country).

[Official course record: 901025A](#)

YK00AG56 | Let`s talk medicine

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content

This course unit includes mainly communicative oral exercises. Topics covered by the course unit include e.g. culture, applying for a job, meeting procedures, argumentation, special field-specific discussion starters and small talk. Students have a say in the selection of topics.

Learning outcomes

By the end of the course students are expected to be able to lead a discussion in Swedish and discuss and justify his/her opinions in various communication situations (e.g. at work or when living in Sweden or other Nordic country).

[Official course record: YK00AG56](#)

683524A | Lexicon

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

Analysis of Saami texts and compilation of word list

Learning outcomes

Students will study Saami texts by focusing on aspects concerning the development of lexicon. Students will expand their own vocabularies regarding lexicology and phraseology.

[Official course record: 683524A](#)

694945A | Lexicon and Onomastics

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Heini Karjalainen

Content

History of Finnish lexicon, word formation and basics of onomastics and anthroponymy

Learning outcomes

The student is able to explain how the lexicon of Finnish has evolved. The student is able to display knowledge of the fundamentals of etymological research. In addition, the student is familiar with the word formation in Finnish and basic terms of onomastics. The student is also familiar with the basics of history of and contemporary trends in toponomastics and anthroponymy.

The student is able to independently draw analytical conclusions based on relatively limited data.

[Official course record: 694945A](#)

682448A | Literary approaches to Anglophone Children's Literature

5 ECTS | English | Intermediate Studies | English

Person in charge: Lydia Kokkola

Content

This course is an intermediate level course in Anglophone Children's Literature. Children's Literature is not a genre: it is defined in terms of its readership, which in the Anglophone context means anyone under 18 years. During the course, students will read at least four works of fiction from different genres. These will include at least one novel and two picture books. In addition, students will attend lectures introducing the main theoretical approaches to the study of Anglophone literature for children. In class, students will practice analysing texts.

Learning outcomes

After completing the course, the student will

- Demonstrate knowledge of fiction representing at least four genres within children's literature
- Understand the basic elements of picture forms
- Be able to describe the relationships between images and text in the formation of a narrative
- Demonstrate knowledge of work by key theorists in the field of children's literature
- Be able to find their own research texts
- Be able to analyze a work of fiction for children or youth.
- Demonstrate good written communication skills
- Understand how cultures develop
- Engage meaningfully with cultures through cultural artefacts

Official course record: [682448A](#)

693498P | Literatur- und Kulturgeschichte

5 ECTS | German Language and Culture | Basic Studies | German

Person in charge: Anniina Havela

Content

Overview of the movements and main representatives of German-language literary and cultural history. Baroque, Enlightenment, Sturm und Drang, Classicism, Romanticism, Vormärz, Realism, Naturalism, Expressionism, Impressionism, exile literature, contemporary literature. Discussion of representative texts and works of art.

Learning outcomes

Students are familiar with the central trends in literary and cultural history in the German-speaking world from the 17th century to the post-war period, can explain their historical contexts, and name important representatives and works. They are able to describe similarities and differences between styles and recognize characteristic stylistic features typical of the respective eras in exemplary text passages or image examples. Students are able to find, analyze, and critically evaluate information from various sources. For a description in German, please view the page in Finnish.

Official course record: [693498P](#)

HR00AZ04 | Literature 1

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Literature samples from the 16th century to the present day.

Learning outcomes

Students are familiar with the development of literature over the centuries. The genres of literature (poetry, theater and novel) become familiar. Students notice the change of the French language and mentalities and recognize different literary devices in the texts.

HR00AZ08 | Literature 2

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Literature samples from the 16th century to the present day.

Learning outcomes

Students are familiar with the development of literature over the centuries. The genres of literature (poetry, theater and novel) become familiar. Students notice the change of the French language and mentalities and recognize different literary devices in the texts.

Official course record: HR00AZ08

HG00BB95 | Literature and Film

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Anniina Havela

Content

The basic concepts of literary analysis and film analysis are covered using selected German-language literary texts and feature films.

The course covers the main literary genres of epic, lyric and drama with their specific characteristics.

Complete texts and excerpts from various German-language texts are read, both to carry out small analysis exercises and to get to know different authors.

German-language films and excerpts from films are analysed and interpreted.

Learning outcomes

Students are familiar with some basic concepts of literary analysis and film analysis. They are able to read and analyse German-language literary texts of varying lengths. They can analyse the plot, characters and audiovisual narrative forms in films.

For a description in German, please view the page in Finnish.

Official course record: HG00BB95

682436S | Master's Seminar and Thesis

30 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen

Content

Building on the skills course participants have acquired in the Bachelor's Seminar and Thesis course, students work with a view to deepening their ability to carry out independent research in a specific problem area relevant to their studies and the fields represented within the unit of English. The chosen topic will be developed into a master's thesis (55-60 pages, min. 20 000 words). The findings are reported in an appropriate academic register and a form appropriate to the discipline, including an abstract in English (and Finnish or Swedish). The topic may be a significantly expanded and developed version of the topic of the bachelor's thesis, or a completely new one, depending on the student's interests.

Practice will be gained in independent research, retrieval and presentation of scholarly materials, the use of libraries, good scientific practice and research ethics, critical evaluation of previous research and scholarly material, critical thinking and scholarly discussions, and the evaluation of research.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in scheduling their work and can prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows and follows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making. The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Generic skills

The core generic skills developed during the course are skills in analytical, critical and creative thinking. These skills are gained while making informed choices regarding the research design and completing the master's thesis. This also involves practice in responsible and ethical conduct, and in interdisciplinarity. International and multicultural competences are developed via practicing discipline-specific language skills in English. The seminar phase supports skills in communication and interaction. During the thesis project, the student should develop their self-management skills and build their professional identity, which are important skills in well-being and self-development.

[Official course record: 6824365](#)

693501S | Master's Seminar and Thesis

30 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sandra Reimann, Sabine Grasz

Content

Theories and methods of writing a Master's thesis in the field of Humanities.

Discussion of topics and research questions.

Theoretical foundations of the individual topics are discussed.

Writing the Master's thesis.

Presentation and discussion (incl. opposition) of the thesis (Length: approx. 50 pages)

The course also includes a text workshop (feedback on the text, correction discussions).

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making. The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

The student is able to complete advanced academic studies and generate knowledge independently. He/she understands how scientific knowledge is created and can apply research findings in his/her work as an expert and in decision-making.

[Official course record: 6935015](#)

683305S | Master's Thesis

30 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Marko Jouste

Content

An independent thesis based primarily on one's own research, in which material related to Sámi culture is discussed using a theoretical research model.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [683305S](#)

693725S | Master's Thesis

30 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Paula Rossi

Content

Supervision and seminars where students learn to discuss scientific problems and write a scientific thesis.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making. The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [693725S](#)

694965S | Master's Thesis (Finnish Language)

30 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content

A written master's thesis prepared by the student.

The preparation of the thesis includes the following stages:

- selecting and formulating the research topic under supervision
- familiarizing oneself with previous research
- becoming acquainted with research ethics principles
- preparing a research plan
- collecting source material
- analyzing and interpreting the data using disciplinary methods
- structuring and revising the thesis into written form with guidance (approximately 50 pages)
- participation in a seminar (14 hours)
- presenting one's own thesis and acting as an opponent for another student's work

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field and is able to use artificial intelligence in a permitted way.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

All the above-mentioned objectives also promote the development of generic skills.

Official course record: [694965S](#)

683519S | Master's Thesis (North Saami)

30 ECTS | Saami Language | Advanced Studies | Finnish, Sami

Person in charge: Ante Aikio

Content [Finnish source]

Dieđuid ohcan, girjeráju geavaheapmi, girjjálašvuoda čiekŋalis lohkan, dutkamuša plánen ja árvvoštallan, áššeollisvuodaid hábmen, dutkanmateriála háhkan ja giedahallan, dutkanmateriála ja bohtosiid ordnen, árvalusaid dahkan, diedalaš čállin, barggu teknikalaš beali dárkkodeapmi ja bagadallan- ja máhcahatságastallamat.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: 6835195

683518S | Master's Thesis Seminar

0 ECTS | Saami Language | Advanced Studies | Finnish, Sami

Person in charge: Ante Aikio

Content [Finnish source]

Dutkanplána ja seminárabarggu čállin, bagadallanseminárat ja diedalaš ságastallan. Studeanta maiddáid opponere earáid seminárabargguid.

Learning outcomes [Finnish source]

Studeanta máhtttá ordnet, buktit ovdan ja árvvoštallat dieddalaš dieduid ja dahkat dieddalaš dutkamusa iehčanasat.

Opiskelija kykenee pitkäjänteiseen, luovaan, vastuulliseen ja asiantuntijuutta rakentavaan projektityöskentelyyn itsenäisesti ja työyhteisön jäsenenä. Hän osaa oma-aloitteisesti suunnitella työtään ja ajankäyttöään sekä priorisoida tehtäviä.

Opiskelija pystyy itsenäisesti keräämään, käsittelemään ja analysoimaan laajahkoja aineistoja. Hän osaa arvioida erilaisia tietolähteitä ja tieteellisiä tekstejä kriittisesti, erottaa olennaisen epäolennaisesta ja hahmottaa kokonaisuuksia.

Opiskelija kykenee analyttiseen ja kriittiseen ajatteluun sekä vaativaan kysymyksenasetteluun ja ongelmanratkaisuun. Hän tuntee oman alansa teorioita ja menetelmiä sekä pystyy soveltamaan niitä käytännössä. Opiskelija tuntee alansa eettiset periaatteet.

Opiskelija hallitsee tieteellisen kirjoittamisen ja argumentoinnin perusteet. Hän pystyy tuottamaan selkeää ja sujuvaa tieteellistä tekstiä. Hän osaa laatia analyttisiä selvityksiä ja raportteja laajahkon aineiston pohjalta. Opiskelijalla on valmiudet tieteelliseen keskusteluun. Hän osaa toimia oman alansa edustajana monimuotoisissa ryhmissä sekä antaa ja vastaanottaa rakentavaa ja kriittistä palautetta. Hän osaa esiintyä asiantuntijaroolissa.

Opiskelijalla on valmiudet tieteellisiin jatko-opintoihin ja itsenäiseen tiedon tuottamiseen. Hän ymmärtää, miten tieteellinen tieto syntyy, ja pystyy soveltamaan tutkimustietoa asiantuntijatyössä ja päätöksenteossa.

Official course record: 6835185

683726S | Master's Thesis (Skolt Saami)

30 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Information search, working in library, reading literature, planning and assessing the research, understanding the big pictures, acquisition and dealing with data, ordering data and results, drawing conclusions, academic writing, technical refining of the work and instruction and feedback discussions.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials. The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: 683726S

683725S | Master's Thesis Seminar (Skolt Saami)

0 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Obtaining and seeking information; writing a research plan (10–15 pages), a seminar work presenting one's own research, its preliminary results and problematic (10 pages) and a 5-page essay on the history of one's own field (the main points in the history of the international, Finnish and Saami research in the field, the most important trends of research, projects, institutions and researchers); summarizing the most important literature in the field; methods of research, scientific discussion, scientific style and writing, responsible conduct of research. Seminars: book summary, research plan, history of research and seminar work. The student also participates in other seminar work and serves as an opponent for the works of others. Also master's thesis supervision seminars in addition to the obligatory seminars. The student assesses scientific knowledge in the field, shares his/her knowledge with others and participates in scientific discussion.

Learning outcomes

The student can

- assess the history, prior research, theories and methods of his/her branch.
- use the theoretical and methodical literature of his/her field and evaluate it critically from the perspective of his/her research.
- write a research plan and summarize the history of his/her field and the relevant literature.
- obtain, seek, order, present and analytically evaluate scientific knowledge and use the methods of linguistic research.
- write a seminar work about his/her research, in which he/she presents the preliminary results and problematic of his/her research.
- defend his/her work in scientific discussion.
- assess the sub-field that his/her thesis concerns and develop his/her competence in making research.
- serve as an opponent at other's presentations.

Official course record: 6837255

683650S | Maturity test (Inari Saami)

0 ECTS | Inari Saami | Advanced Studies | Finnish, Sami

Person in charge: Marja-Liisa Olthuis

Content

Summaries pertaining to Master's Thesis written in Inari Saami and Finnish. The Maturity Test will be reviewed by the inspector of the thesis.

Learning outcomes

Upon completion of the course, students will be able to present the most essential methodological premises, outcomes and conclusions of their theses professionally, concisely and selectively.

Official course record: 683650S

694916A | Maturity Test (for Bachelor's Degree/Finnish Language)

0 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Jari Sivonen

No description supplied in the collected record.

Official course record: 694916A

694925S | Maturity Test (for Master's Degree/Finnish Language)

0 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

No description supplied in the collected record.

[Official course record: 6949255](#)

683430A | Maturity Test for Bachelor's Degree (BA/North Saami)

0 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Ante Aikio

Content

Maturity Test is based on the student's Bachelor's Thesis. The length of the Maturity Test is four pages, approximately 500 words.

Learning outcomes

Maturity test is a coherent and analytical text that is assessed in terms of both language and content.

[Official course record: 683430A](#)

693415A | Maturity Test for Bachelor's Degree (German Language and Culture)

0 ECTS | German Language and Culture | Intermediate Studies | Finnish

Person in charge: Sabine Grasz

Content

Writing an essay based on the Bachelor's thesis

Learning outcomes

Students will be able to write an essay in their language of previous schooling on the topic of their Bachelor's thesis in which they show their ability to present the theoretical and methodological background as well as the main research questions and results related to the topic.

[Official course record: 693415A](#)

683620A | Maturity Test for Bachelor's Degree (Inari Saami)

0 ECTS | Inari Saami | Intermediate Studies | Finnish, Sami

Person in charge: Marja-Liisa Olthuis

Content

An essay pertaining to the Bachelor's thesis

Learning outcomes

Upon completion of the course, students will be able to write a contentually and linguistically finished essay pertaining to a set assignment, in which they will be able to present the theoretical and methodological background and the central results of their theses in an evaluative manner.

[Official course record: 683620A](#)

683390A | Maturity Test for Bachelor's Degree (Saami Culture)

0 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Marko Jouste

Content

Essay based on student's Bachelor's Thesis

Learning outcomes

After completing the course, students will be able to write an essay based on the given assignment. The essay must be refined in terms of language and content, and students must present the theoretical and methodological background, and central results of their Thesis in an evaluative way.

[Official course record: 683390A](#)

693621A | Maturity Test for Bachelor's Degree (Swedish Language)

0 ECTS | Swedish Language | Intermediate Studies | Finnish

Person in charge: Elisa Risto

Learning outcomes

You are able to write a language- and content-wise finished essay corresponding to the assignment given, in which you present the theoretical and methodological background and the primary results of your Bachelor's thesis.

[Official course record: 693621A](#)

683720A | Maturity Test for Bachelor's Degree (Skolt Saami)

0 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Essay based on the Bachelor's thesis

Learning outcomes

Upon completing the course, the student can write a paper that is well put together in terms of its language and content, wherein he/she presents the theoretical and methodological background and key results of the thesis from an evaluative standpoint. The length of the maturity essay is four pages, approximately 500 words.

[Official course record: 683720A](#)

682321A | Maturity Test for Candidate's Degree / English

0 ECTS | English | Intermediate Studies | Finnish

Person in charge: Tiina Keisanen

Content

A maturity test ('kypsyysnäyte') is a study unit required by the Government Decree on University Degrees, through which the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. The essay written for the maturity test is based on the topic of the thesis.

Learning outcomes

The student is able to present the methodological approach, results and conclusions of their thesis in an expert, condensed and focused manner.

[Official course record: 682321A](#)

693428S | Maturity Test for Master's Degree (German Language and Culture)

0 ECTS | German Language and Culture | Advanced Studies | Finnish

Person in charge: Sandra Reimann, Sabine Grasz

Content

A summary of Master's Thesis written in the student's native language.

Learning outcomes

Students will be able to write a summary of their Master's Thesis. They will be able to present the theoretical and methodological background, research question, results and conclusion of their thesis.

[Official course record: 693428S](#)

683431S | Maturity Test for Master's Degree (North Saami)

0 ECTS | Saami Language | Advanced Studies | Finnish

Person in charge: Ante Aikio

Content

Maturity Test is an abstract written for Master's Thesis in Saami or Finnish (or with the language of student's education). Both language and content of Maturity Test are assessed. Maturity Test is assessed by examiners of Master's Thesis.

[Official course record: 683431S](#)

683391S | Maturity Test for Master's degree (Saami Culture)

0 ECTS | Saami Culture | Advanced Studies | Finnish

Content

Writing an abstract for the Master's Thesis (Pro Gradu Thesis)

Learning outcomes

After completing the course, students will be able to present the central methodological and theoretical points of departure, results, and conclusions of their thesis in professional, concise and selective manner.

[Official course record: 683391S](#)

683727S | Maturity Test for Master's Degree (Skolt Saami)

0 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

The abstracts the student writes from his/her Master's thesis in Skolt Saami and Finnish. The maturity test is assessed by the thesis reviewer.

Learning outcomes

The student can present the central methodological starting points, results and conclusions of his/her thesis professionally, concisely and selectively.

[Official course record: 683727S](#)

693648S | Maturity Test for Master's Degree (Swedish language)

0 ECTS | Swedish Language | Advanced Studies | Finnish

Person in charge: Paula Rossi, Riitta Kosunen, Kirsi-Maria Lepistö

Content

A summary of the Master's thesis written in Swedish

Learning outcomes

Students will be able to present the primary theoretical background, results and conclusions of their thesis in a competent, concise, and discerning manner.

Students can think independently and analytically.

[Official course record: 693648S](#)

682322S | Maturity Test for Master's Degree / English

0 ECTS | English | Advanced Studies | Finnish

Person in charge: Tiina Keisanen

Content

A maturity test ('kypsyysnäyte') is a study unit required by the Government Decree on University Degrees, through which the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. The maturity test is based on the topic of the thesis.

Learning outcomes

The student is able to present the methodological approach, results and conclusions of their thesis in an expert, condensed and focused manner.

[Official course record: 682322S](#)

902155Y | Medical English

3 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Eva Braidwood

Content

The course focuses on three communicative areas: spoken and written production, reception and mediation skills.

To develop their field-related vocabulary and professional writing skills, students learn about the structure, rules and conventions of appropriate language use in professional communication. They will practice field-related and scientific writing and summarising scientific sources in the form of multimodal communication (poster presentation).

The initial part of the course focuses on medical terminology. Students learn the basics of medical terminology and develop their own strategies for mastering English medical terms. The course material is based on original professional and scientific texts, such as case reports and medical databases, which enables the participants to learn about effective doctor-patient and doctor-doctor communication and the relevant cultural aspects of politeness in collaborative communication.

Learning outcomes

The Medical English course provides to students of medicine and dentistry an introduction to the future professional communicative practices of their profession. Besides familiarising students with core medical terminology, they will study patient-centered communication and patient presentations, and will be practicing academic communication in a simulated conference.

Having completed the course successfully, students will be able to demonstrate that they:

- understand and can use basic medical terminology appropriately, and learn strategies for developing their own field-related vocabulary;
- understand and analyse medical case reports written in English to benefit their learning of medicine,
- demonstrate their ability to communicate effectively with patients (patient-centered interviewing) in English;
- and present cases to medical professionals using English;
- discuss and present topics of interest in medicine and clinical psychology, using appropriate digital tools for effective communication,
- identify the dimensions of sustainability (social, ecological, economic, cultural) in their profession and evaluate their own actions in relation to these,
- are able to work effectively in teams and meet challenges when working with people from different cultural backgrounds,
- can identify and apply key skills of analytical, critical and creative thinking when completing coursework.

[Official course record: 902155Y](#)

903007Y | Medical German Text Workshop

1.5-3 ECTS | Language studies, German | Language and Communication Studies | German

Person in charge: Veronika Ranzenhofer

Content

This self-study course develops students' ability to read and understand authentic German texts related to their own field of study. Students select relevant articles, analyze their content, and complete structured tasks that strengthen reading strategies, vocabulary acquisition, and written production. The course also develops students' ability to use AI tools transparently and responsibly as part of the reading-writing process.

Learning outcomes

Upon successful completion of the course, students are able to:

- * read and understand field-specific texts in German
- * summarize texts clearly in German and Finnish (English)
- * extract field-specific vocabulary and record it systematically
- * reflect on their learning strategies, vocabulary development, and AI use
- * use AI tools appropriately for feedback, clarification, and self-correction.

The working methods in this course help the student improve self-regulation and time management skills.

[Official course record: 903007Y](#)

693726S | Methods in Text Research

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Elisa Risto

Content

How can research material be collected in linguistic research? What ready-made materials can be used? How can the material be analyzed? Which analysis method is suitable for which material?

In this course, you will become familiar with different data collection and analysis methods in linguistic research. You will also become familiar with the methods in the form of tasks, as well as seek more information about and critically evaluate the methods.

Learning outcomes

You learn about different methods in linguistic research. You can independently search for more information about different methods and critically evaluate the suitability of a particular method for a particular research problem.

You are aware of the interdisciplinary nature of language studies. You can think independently and analytically.

Official course record: 693726S

682417S | Middle English: Literature, Language and History

5 ECTS | English | Advanced Studies | English

Person in charge: Andrew Pattison

Content

The course will focus on examining the literature, language and history of the Middle English period (ca. 1150-1500). Special emphasis will be on historical contextualization and the historical development of the English language.

Learning outcomes

Upon completion of the course, the student should:

- have an understanding of the most important developments in the English language during the ME period
- have the ability to appreciate the historical context within which ME texts were written
- be able to critically analyze literary texts from the ME period.

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Multidisciplinarity and Interdisciplinarity

Official course record: 682417S

695270P | Morphology

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic morphological concepts and analytical methods and application to linguistic data

Learning outcomes

Upon completion of the course, students will be able to analyse the morphological structures of languages and apply the concepts of morphological theory on novel linguistic data.

Official course record: 695270P

HS00AM00 | Multicultural Finland

2 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Maria Frick

Content

The course deals with multiculturalism in Finnish society and the basic concepts of multicultural studies (e.g. multiculturalism, racism, otherness, whiteness, colonialism).

The course also introduces the rights of the Saami people, multilingualism and language education.

Learning outcomes

After completing the course, students will be able to describe Finland as a multicultural society and to describe phenomena related to multiculturalism. They can interpret the causes and consequences of cultural inequality in society and are able to apply the knowledge they have acquired.

The course will be delivered as an online course and will be completed independently on Moodle. The course can be completed at a time that suits the student.

[Official course record: HS00AM00](#)

AY00AJ62 | Multicultural Finland (OPEN UNI)

2 ECTS | Finnish Language | | Finnish

Person in charge: Maria Frick

Content

The course deals with multiculturalism in Finnish society and the basic concepts of multicultural studies (e.g. multiculturalism, racism, otherness, whiteness, colonialism). The course also introduces the rights of the Sámi people, multilingualism and language education.

Learning outcomes

After completing the course, students will be able to describe Finland as a multicultural society and to describe phenomena related to multiculturalism. They can interpret the causes and consequences of cultural inequality in society and are able to apply the knowledge they have acquired.

The course will be delivered as an online course and will be completed independently on Moodle. The course can be completed at a time that suits the student.

[Official course record: AY00AJ62](#)

HG00AJ44 | Multilingualism, Language Contacts and Culture Contacts

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

Content

Theoretical and analytical examination of the topics of transnational migration, language policies, language rights, multilingualism, language contact and cultural contact. The main focus is on Finnish-German language contacts, but other languages and regions can also be considered. In addition to the theoretical treatment of the topics, short empirical studies will be carried out on these topics.

Learning outcomes

Students will gain an overview of the linguistic effects of transnational migration, particularly from a contemporary, but also from a historical perspective. They will be able to analyse and interpret phenomena such as individual and societal multilingualism, language policies, language rights, language discourses, language ideologies, language contacts and cultural contacts in the context of their socio-cultural conditions. They can independently plan, carry out and present project work/empirical studies on these topics.

900085Y | Network Communication

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Liimatta

Content

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Learning outcomes

This course is offered only in Finnish.

Official course record: 900085Y

683508A | New Forms of the Saami Cultural Heritage

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

Examining the changes in and new forms of the traditions of the Saami; examining the transfer of traditional knowledge and skills, as well as the utilisation, significance and meanings of cultural heritage in the future and today

Learning outcomes

After completing the course, students will be able to describe and analyse the immaterial and material cultural heritage of the Saami people. In addition, students will be able to explain, interpret and analyse the processes involved in the change and transfer of cultural heritage, as well as the significance and meanings that cultural heritage has today.

Official course record: 683508A

HE00AQ65 | Non-Academic Writing

5 ECTS | English | Intermediate Studies | English

Person in charge: Lydia Kokkola

Content

During the course, students will begin by working on 'textual interventions' (Rob Pope) to develop an understanding of the conventions of a range of non-academic genres. This writing will take place in class, and will be accompanied by training in studying techniques such as mind-mapping, the pomodor technique and storyboarding. Students will be expected to share work in progress with their peers, and provide feedback on one another's work. The final assessment is based on a portfolio in which students develop four of the drafts.

Learning outcomes

Upon completion the student should be able to:

- * Recognise conventions for writing in at least five non-academic genres (e.g. job applications, fiction, instructions)
- * Produce a portfolio of writing incorporating at least four non-academic genres
- * Increase the range of good study practices (e.g. the use of visualization, the pomodor technique)
- * Evaluate their own and others' writing
- * Contribute to the learning of their peers
- * Contribute to the learning of their peers
- * analyse textual composition and its audience
- * recognise cultural differences in communication practices

[Official course record: HE00AQ65](#)

HY00BC29 | Nordic Prehistory and Mythology

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

This course studies the prehistory of the Nordic countries, including material culture related to belief and mythology. The course also investigates Finnish and Scandinavian mythology in material and non-material culture, their use in art, social life and politics both in the past and the present.

Learning outcomes

Upon completion of the course, student will have a better idea of the prehistory and the mythological heritage of Scandinavia and Finland.

[Official course record: HY00BC29](#)

682404S | North American History

5 ECTS | English | Advanced Studies | English

Person in charge: Andrew Pattison

Content

In this course the focus will be on examining key focal areas in North American history, as well as on reading and discussing relevant scholarly and literary works.

Learning outcomes

Upon completion of the course, the student should:

- display a familiarity with a number of key themes in North American history (e.g. ecological history, migration, race and ethnicity, cultural interaction)
- have an understanding of the historical roots of several issues topical in modern North America
- be able to explain how misconceptions about history influence commonplace opinions in North America

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Multidisciplinarity and Interdisciplinarity

[Official course record: 682404S](#)

683516P | North Saami Syntax

5 ECTS | Saami Language | Basic Studies | Sami

Person in charge: Ante Aikio

Content [Finnish source]

Davvisámegiela cealkkaráhkadusa prinsihpat, deháleamos cealkkaoahpalaš doahpagat ja tearpmat ja daid geavaheapmi. Cealkkaoahpalaš analysahárjehusat.

Learning outcomes [Finnish source]

Studeanta oahppá govvidit ja čilget sámegiela cealkkaoahpa vuđoleappot ja earáláhkai go skuvlaoahppogirjiin. Studeanta máhttá analyseret cealkagiid ja daid osiid ráhkadusa. Son máhttá maidái guorahallat cealkkaoahpa váldogielaide váikkuhusaid dáfus ja dovda davvisámegiela cealkkaoahpa sajádaga eará gielaide joavkkus.

Official course record: 683516P

HP00AM60 | Ohjattu kirjoitusprojekti (inarinsaame)

5 ECTS | Inari Saami | Advanced Studies |

Person in charge: Marja-Liisa Olthuis

Learning outcomes [Finnish source]

Opiskelija osaa kirjoittaa kielellisesti vaativaa inarinsaamenkielistä tekstiä eri tyyllilajeilla kieliteknologisia apuohjelmia hyödyntäen.

Opiskelija osaa soveltaa analyttisen ja kriittisen ajattelun taitoja tieteenalalleen sopivalla tavalla ja vastaanottaa teksteihin liittyvää rakentavaa palautetta.

Opiskelija osaa soveltaa luovaa ajattelua ja ongelmanratkaisua uuden tiedon ja uusien menettelytapojen kehittämiseksi.

Official course record: HP00AM60

HP00AM61 | Ohjattu käännösprojekti (inarinsaame)

5 ECTS | Inari Saami | Advanced Studies |

Person in charge: Marja-Liisa Olthuis

Content

Planning and implementation of a translation project chosen by the student.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa tunnistaa käännettävän työn tarkoituksen ja osaa valita sopivan käännöstavan (sisältö-, tyyli- tai luettavuuspainotteinen). Opiskelija osaa tarkastella omaa käännöstään ja muiden käännöksiä kielen luontevuuden ja luettavuuden kannalta. Opiskelija tunnistaa kääntämiseen liittyviä vaativia kielipiillisiä ja sanastollisia haasteita ja osaa etsiä niille luontevia käännösratkaisuja.

Opiskelija osaa antaa rakentavaa palautetta, ohjausta ja kehitysehdotuksia muille sekä johtaa tiimiä.

Opiskelija hallitsee prosessikäntämisen sekä itsenäisesti että työryhmän jäsenenä.

Opiskelija osaa hyödyntää kieliteknologiaa ja käännösohjelmia kääntämisessä.

Official course record: HP00AM61

693514S | Optional Advanced Studies (Special Field) 1

1-10 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Anniina Havela

Content

Topics chosen by the student or courses from the Optional Special Field- list: (for example Multilingualism, Literature, Sociolinguistics, Pragmatics, Semantics.

Kulturelles Leben in den deutschsprachigen Ländern (1-10 P.)

- Home assignment
- Teacher: Sabine Grasz
- Literature by arrangement

Mehrsprachigkeit (1-10 P.)

- Home assignment or book exam
- Teacher: Sabine Grasz
- Literature by arrangement

Nonverbale Kommunikation (1-10 P.)

- Home assignment
- Teacher: Satu Selkälä
- Literature by arrangement

Phraseologie (1-10 P.)

- Home assignment/online course
- Teacher: Satu Selkälä
- Literature by arrangement/tasks in the online course

Literatur (1-10 P.)

- Home assignment or an exam
- Teacher: Anniina Havela
- Literature by arrangement

Pragmatik (1-10 P.)

- book exam
- Teacher: Sandra Reimann
- Literature: Kap. Pragmatik. In: Kessel, Katja/Reimann, Sandra: Basiswissen Deutsche Gegenwartssprache. 5. überarb. u. erw. Aufl. Tübingen 2017, 231-253.

one of the following:

- Ehrhardt, Claus/Heringer, Hans Jürgen: Pragmatik. Paderborn 2011.
- Brinker, Klaus/Sager, Sven F.: Linguistische Gesprächsanalyse. Eine Einführung. Berlin 2010.
- Further literature by arrangement.

Semantik (1-10 P.)

- Teacher: Sandra Reimann
- Literature: Wanzeck, Christiane: Lexikologie. Göttingen 2010. Further literature by arrangement.

Soziolinguistik (1-10 P.)

- Home assignment or book exam
- Teacher: Sabine Grasz
- Literature: Löffler, Heinrich: Germanistische Soziolinguistik. 5., neu bearb. Aufl. Berlin 2016. (Selection)

Learning outcomes

Students acquire in-depth knowledge in a scientific field of their choice. They are able to critically analyse the topic. They are familiar with central theories and previous research in this field and can critically assess these and use them for their own research projects.

693515S | Optional Advanced Studies (Special Field) 2

1-10 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Anniina Havela

Content

Topics chosen by the student or courses from the Optional Special Field- list: (for example Multilingualism, Literature, Sociolinguistics, Pragmatics, Semantics.

Kulturelles Leben in den deutschsprachigen Ländern (1-10 P.)

- Home assignment
- Teacher: Sabine Grasz
- Literature by arrangement

Mehrsprachigkeit (1-10 P.)

- Home assignment or book exam
- Teacher: Sabine Grasz
- Literature by arrangement

Nonverbale Kommunikation (1-10 P.)

- Home assignment
- Teacher: Satu Selkälä
- Literature by arrangement

Phraseologie (1-10 P.)

- Home assignment/online course
- Teacher: Satu Selkälä
- Literature by arrangement/tasks in the online course

Literatur (1-10 P.)

- Home assignment or book exam
- Teacher: Anniina Havela
- Literature by arrangement

Pragmatik (1-10 P.)

- book exam
- Teacher: Sandra Reimann
- Literature: Kap. Pragmatik. In: Kessel, Katja/Reimann, Sandra: Basiswissen Deutsche Gegenwartssprache. 5. überarb. u. erw. Aufl. Tübingen 2017, 231-253.

one of the following:

- Ehrhardt, Claus/Heringer, Hans Jürgen: Pragmatik. Paderborn 2011.
- Brinker, Klaus/Sager, Sven F.: Linguistische Gesprächsanalyse. Eine Einführung. Berlin 2010.
- Further literature by arrangement.

Semantik (1-10 P.)

- Teacher: Sandra Reimann
- Literature: Wanzeck, Christiane: Lexikologie. Göttingen 2010. Further literature by arrangement.

Soziolinguistik (1-10 P.)

- Home assignment or book exam
- Teacher: Sabine Grasz
- Literature: Löffler, Heinrich: Germanistische Soziolinguistik. 5., neu bearb. Aufl. Berlin 2016. (Selection)

Learning outcomes

Students acquire in-depth knowledge in a scientific field of their choice. They are able to critically analyse the topic. They are familiar with central theories and previous research in this field and can critically assess these and use them for their own research projects.

[Official course record: 693515S](#)

693736S | Optional Advanced Studies I

2-10 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Paula Rossi

Content

Specialization according to agreement.

Learning outcomes

Upon completing the course, students will have specialised in one of the fields of Nordistics, for instance by completing courses outside the general curriculum or in other subjects or at another university (e.g. courses in Nordic languages or literature in Iceland or in the Faeroe Islands).

[Official course record: 693736S](#)

693737S | Optional Advanced Studies II

2-10 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Paula Rossi

Content

Specialization according to agreement.

Learning outcomes

Upon completing the course, students will have specialised in one of the fields of Nordistics, for instance by completing courses outside the general curriculum or in other subjects or at another university (e.g. courses in Nordic languages or literature in Iceland or in the Faeroe Islands).

[Official course record: 693737S](#)

694955S | Optional Course 1

5 ECTS | Finnish Language | Advanced Studies | Finnish

Content

Varies from course to course

Learning outcomes

Students will deepen their knowledge and develop their skills learned on the compulsory courses.

[Official course record: 694955S](#)

694957S | Optional Course 2

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content

Varies from course to course

Learning outcomes

Students will deepen their knowledge and develop their skills learned on the compulsory courses.

Official course record: [6949575](#)

683450A | Optional courses

1-8 ECTS | Saami Language | Intermediate Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Learning outcomes

Students will deepen their knowledge on special fields related to their studies.

Official course record: [683450A](#)

693510A | Optional ERASMUS-Studies 1

1-10 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Satu Selkälä

Content

Students can have credits from their ERASMUS studies accredited under this unit if these credits cannot be approved under any other course code.

Official course record: [693510A](#)

693511A | Optional ERASMUS-Studies 2

1-10 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Satu Selkälä

Content

Students can have credits from their ERASMUS studies accredited under this unit if these credits cannot be approved under any other course code.

Official course record: [693511A](#)

693734A | Optional Special Field I

2-10 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

Completed courses outside the curriculum and other courses in other subjects or at other universities, e.g. courses in Nordic languages and literature in Denmark, Norway, or Sweden.

Learning outcomes

Upon completing the course, students will have specialised in one of the fields of Nordistics.

Official course record: [693734A](#)

693735A | Optional Special Field II

2-10 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

Completed courses outside the curriculum and other courses in other subjects or at other universities, e.g. courses in Nordic languages and literature in Denmark, Norway, or Sweden.

Learning outcomes

Upon completing the course, students will have specialised in one of the fields of Nordistics.

[Official course record: 693735A](#)

683392A | Optional studies or work practice

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Marko Jouste

Content

An introduction to the working life relevant to the study of Sámi culture and the knowledge and skills needed there.

Learning outcomes

Upon completion of the course, the student will be able to establish connections with working life or/and deepen his/her knowledge in accordance with his/her own study and career goals.

[Official course record: 683392A](#)

HR00AZ01 | Oral Communication 1

5 ECTS | French Language | Basic Studies | French

Person in charge: Xavier Martin

Content

During the course, pronunciation and conversation are practiced in a variety of ways. Through the exercises, students familiarize themselves with different speaking situations and develop their skills for maintaining speech communication skills.

Learning outcomes

The student is able to interact naturally in different situations. In addition to everyday speaking situations, the student gets familiar with giving speeches, interviews and presentations. During the course, pronunciation develops, especially in terms of word stress and natural speaking rhythm. The student recognizes and can produce different types of intonations. The student learns French speech culture. The student is able to evaluate their own oral language skills and identify possible areas for development.

[Official course record: HR00AZ01](#)

HR00AZ02 | Oral Communication 2

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Maritta Riekk, Xavier Martin

Content

Various speaking exercises in a variety of interaction situations. Basics of phonology and phonetics, production of different sounds and phonetic symbols.

Learning outcomes

The students are able to interact effortlessly in everyday situations. Communication in official and formal situations, e.g. at work or at the university, is also successful. The students are able to distinguish differences in conversational culture in different language areas. The students learn the basics of phonetics and phonology and their pronunciation of the French language develops.

[Official course record: HR00AZ02](#)

683403P | Oral Use of North Sami Language

5 ECTS | Saami as Foreign Language | Basic Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

Supervised conversation exercises built around various themes and short oral presentations on different subjects. Emphasis will be on themes related to Saami culture. Written assignments and texts will be used to support the oral exercises.

Learning outcomes

Upon completion of the course, students will be able to converse in North Saami using the basic vocabulary. Students will be able to apply the previously acquired grammatical and lexical skills to spoken language use. Additionally, vocabulary will be expanded.

[Official course record: 683403P](#)

HP00AK83 | Oral use of Skolt Saami

5 ECTS | Skolt Saami | Basic Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

Everyday Skolt Saami and the language of working life. Independent participation in the activity of the Skolt Saami language community, as possible; basics of the usage of ELAN program; making one's own recordings and/or listening to archive recordings; transcribing one's own and/or archive recordings.

Learning outcomes

The student can actively discuss matters related to everyday life, Saami life and Saami culture. The student recognizes the characteristics of different idiolects and can compare them with written language. The student masters the basics of transcribing and processing Skolt Saami audio recordings.

[Official course record: HP00AK83](#)

693707S | Organisation Culture and Organisation Communication

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

Study of the concepts and processes, channels and agents within internal and external communication.

Learning outcomes

You deepen your knowledge of organisational culture and communication.

You can evaluate knowledge within your field of study and apply it in different situations.

[Official course record: 693707S](#)

693454S | Organizational Culture and Communication

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Anniina Havela

Content

Presentation of key areas of organisational culture and communication, e.g. internal communication, brand communication, change and crisis communication, storytelling, sustainability communication. As part of the course, participation of German Language and Culture at the 'Hakijan päivä' study fair is organised.

Learning outcomes

Students can systematically and contrastively analyse organisations and their cultures. Based on various types of texts (e.g. press releases, sustainability reports, social media posts, website texts) or their own empirical surveys through questionnaires and observations, they are able to analyse and interpret organisational communication methods and explain them in their functional contexts. They can explain the dimensions of sustainability (social, ecological, economic, cultural) and the associated communication requirements. In addition, they are familiar with theoretical models of organisational culture and can describe how communication reflects, stabilises or changes cultural patterns in organisations and how organisational culture influences the way employees interact with each other. By combining theoretical foundations with practice-oriented tasks, students acquire the competence to evaluate communication phenomena in organisations in a scientifically sound and practical manner.

For a description in German, please view the page in Finnish.

[Official course record: 693454S](#)

HP00AQ31 | Other Complementary Course

5 ECTS | Saami Language, Inari Saami | Advanced Studies | Sami

Person in charge: Petter Morottaja

Content

Topics related to different areas of language; varies depending on implementation.

Learning outcomes

The student expands their knowledge in different areas of the language. The exact learning objectives vary depending on the implementation being carried out.

[Official course record: HP00AQ31](#)

695016A | Other optional course

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Theories and methods of S2 teaching

Learning outcomes

With the elective courses, students will deepen their knowledge of the field. Students will be able to apply this knowledge in teaching and research. In this course, students will be able to familiarise themselves, for example, with a theory or methodology that they are interested in, and learn to apply the knowledge in teaching and research. In this course, students will be able to develop their individual knowledge and skills, and use the acquired knowledge in teaching and research.

Official course record: 695016A

683422S | Other Saami Language

5 ECTS | Saami Language | Advanced Studies | Sami

Person in charge: Mervi Sistonen, Miika Lehtinen

Content

Learning the orthography of Inari or Skolt Saami, fundamentals of phonology and morphology, as well as sociolinguistic state of the language

Learning outcomes

Upon completion of the course, students will possess an extensive basic vocabulary and basic knowledge of Inari or Skolt Saami. Additionally, students will be able to engage in simple conversations. Students will also have a clear understanding of the sociolinguistic state of Inari or Skolt Saami.

Official course record: 683422S

683722S | Other Saami language

5 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Miika Lehtinen, Mervi Sistonen

Content

The basics of grammar and pronunciation and basic core vocabulary of Inari Saami, North Saami or one of the other Saami languages.

Learning outcomes

The student masters the basics of grammar and pronunciation and basic core vocabulary of Inari Saami, North Saami or one of the other Saami languages. The student can read simple texts, discuss easy topics and write short texts in the language.

Official course record: 683722S

902121Y | Other Studies in English (level B2)

2-8 ECTS | Language studies, English | Language and Communication Studies | English

No description supplied in the collected record.

Official course record: 902121Y

HY00AT31 | People and Environment in the European Arctic

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

The course explores the interactions between societies and their natural environments in the European Arctic. Topics to discuss include the salient features of such northern environments, the availability and utilization of natural resources, and the effects of global environmental changes (incl. climate change) on local northern livelihoods such as reindeer herding and tourism. Students will also get more familiar with Indigenous environmental knowledge, forest management, mining development, cruise tourism among other themes.

Learning outcomes

Upon completion of the course students will be familiarized with the natural environments of the European Arctic region and will gain a comprehensive overview of the way people live in such environments. They will be able to discuss about environmental conflicts taking into consideration global environmental issues such as climate change, follow the public discussions on environmental matters in the media and build their own reflections on group activities.

This course gives the basis for the "Governance, Society and Sustainability in the Arctic" course but can be taken independently.

Official course record: [HY00AT31](#)

AY694964P | Perspectives on the Finnish language (OPEN UNI)

2 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Niina Kunnas

Content

Language minorities of Finnish origin, variation of spoken language, fake news as a type of genre, interactional linguistics, Finnish as a second and foreign language

Learning outcomes

The student knows the characteristics of the variation of the spoken Finnish, the situation of linguistic minorities of Finnish origin, the main features of the development of the written Finnish language, the basics of interactional linguistics, the characteristics of one genre and the basics of the field of Finnish as a second and foreign language.

Official course record: [AY694964P](#)

695269P | Phonology

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic phonological concepts and analytical methods and application to linguistic data.

Learning outcomes

Upon completion of this course, students will be able to analyse the phonological structures of languages and apply the concepts of phonological theory on novel linguistic data.

Official course record: [695269P](#)

694939P | Phonology and Morphology

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Katja Västi

Content

The history and present state of Finnish phonology and morphology

Learning outcomes

Students will be able to explain the consonant and vowel variations of Finnish, as well as the main sound changes and their history. They will be able to categorise the main inflectional and derivational categories, and display knowledge of the history of morphology. In addition, students will be able to analyse linguistic material from a phonological and morphological point of view.

Official course record: 694939P

AY694939P | Phonology and Morphology (OPEN UNI)

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Katja Västi

Content

The history and present state of Finnish phonology and morphology

Learning outcomes

Students will be able to explain the consonant and vowel variations of Finnish, as well as the main sound changes and their history. They will be able to categorise the main inflectional and derivational categories, and display knowledge of the history of morphology. In addition, students will be able to analyse linguistic material from a phonological and morphological point of view.

Official course record: AY694939P

683515A | Phonology in North Sámi language

5 ECTS | Saami Language | Intermediate Studies | Sami

Person in charge: Ante Aikio,

Content [Finnish source]

Čiekŋun suopmaniid jietnadatvuogádagaide ja daid erohusaide logaldagaid ja hárjehusaid bokte. Deaddu suopmaniid gaskkal sáhhtá molsašuddat studeanttaid gielladuogáža mielde.

Learning outcomes [Finnish source]

Studeanta máhttá govvidit davvisámegiela nuorta- ja oarjesuopmaniid (Nuorta-Eanodat, Guovdageaidnu, Badje- ja Vuolle-Deatnu) fonologiija ja dovdá maiddái eará suopmaniid fonologiija dehálamos erenomáš sárgosiid. Son máhttá analyseret jietnadeami ja riektáčállima gaskavuođa iešguđet suopmanis, ja maiddái čoavdit dakkár riektáčállinváttisvuođaid, maid sivvan lea suopmana jietnadatoahppa. Studeanta maiddái dovdá jietnadatoahpa guovddáš doahpagiid ja tearpmaid ja hálddaša fonologalaš transkripsuvnna.

Official course record: 683515A

HP00AK86 | Phonology of Skolt Saami

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

The most important terminology of phonetics and phonology and the places and manners of articulation of the vowels and consonants; the phonetic inventory of Skolt Saami and the pronunciation of each phoneme; Skolt Saami morphophonology, i.e. grade alternation, vowel changes and palatalization; the basics of the Finno-Ugric transcription system and practical exercises of interpreting the transcription; the most important differences between and phonological and morphological features of the main dialects of Skolt Saami.

Learning outcomes

The student is familiar with the most important terminology and vocabulary in phonological research and can utilize it to describe the phonological system of Skolt Saami. The student knows the principles of the Finno-Ugric transcription system and can apply this knowledge in e.g. reading the dictionary Koltan- ja kuolanlapin sanakirja (Dictionary of Skolt and Kola Lappish) by T. I. Itkonen. The student masters the relationship between the standard written language and pronunciation, and can explain the most important phonological differences between the Suõ'nn'jel dialect, which serves as a basis for the standard written language, and the other dialects of Skolt Saami.

Official course record: [HP00AK86](#)

HE00AI84 | Practical English Phonetics and Phonology

5 ECTS | English | Intermediate Studies | English

Person in charge: Maarit Siromaa

Content

The course provides a practical introduction to the features of spoken contemporary English. It covers core concepts in phonetics and phonology, including the phoneme, syllable structure, the production of vowel and consonant sounds, glottal configurations, stress, rhythm, intonation, and features of connected speech. The course introduces phonemic transcription of English using the International Phonetic Alphabet (IPA) and offers tools for analyzing and developing pronunciation in communicative contexts, including for students preparing to teach English as a second or foreign language. Teaching and learning are supported through active student participation, including student-led teaching sessions and collaborative work on key topics, which foster interaction, communication, and reflective learning.

Learning outcomes

Upon completion of the course, the students will be able to develop an understanding of the basic principles of English phonetics and phonology and describe central features of spoken contemporary English. They will be able to identify and analyze key aspects of English pronunciation, including stress, rhythm, intonation, and features of connected speech, and apply this knowledge in practical communicative contexts. Further, students will be able to read and produce phonemic transcriptions using the International Phonetic Alphabet (IPA) and critically reflect on their own pronunciation and that of others, strengthening their analytical skills, self-development, and oral communication skills.

Official course record: [HE00AI84](#)

HP00AU90 | Practical Training (Skolt Saami)

5 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content [Finnish source]

Opiskelija työskentelee työssä, jossa tarvitaan koltansaamen taitoa. Opiskelija vastaa itse harjoittelupaikan etsimisestä. Harjoittelupaikka voi olla myös ulkomailla. Harjoittelun kesto on oltava vähintään 2 kk ja työaika vähintään 30 tuntia / viikko.

Learning outcomes [Finnish source]

Opiskelija on tutustunut koltansaamenkieliseen työelämään tai työhön, jossa tarvitaan koltansaamen taitoa. Hän tuntee koltansaamen alan työmahdollisuuksia ja osaa selostaa omia tulevaisuudensuunnitelmiaan työhön liittyen.

Opiskelija osaa toimia työpaikalla osana työyhteisöä.

Official course record: [HP00AU90](#)

693706S | Practice

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Paula Rossi

Content

Various types of work to be agreed upon

Learning outcomes

Upon completing the course, students will be able to work independently in different professions related to the discipline.

Students can monitor and reflect on your own linguistic and professional development.

[Official course record: 693706S](#)

683723S | Practicum of academic writing in Skolt Saami

5 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Learning about academic writing and other non-fiction writing; expanding and developing one's Skolt Saami vocabulary

Learning outcomes

The student has familiarized him/herself with academic writing and, as applicable, also with other writing of non-fiction texts in Skolt Saami. The student knows the properties of scientific texts and the conventions of academic writing, has familiarized him/herself with the challenges in expanding the domains of traditional Skolt Saami and can apply this knowledge to creating scientific texts in Skolt Saami. The student can actively increase his/her vocabulary and develop scientific terminology needed in Skolt Saami. The student has strengthened his/her skills in writing non-fiction texts and has sufficient linguistic capability to write a scientific thesis in Skolt Saami.

[Official course record: 683723S](#)

683685S | Pro gradu -tutkielma (Inari Saami)

30 ECTS | Inari Saami | Advanced Studies | Sami, Finnish

Person in charge: Marja-Liisa Olthuis

Content [Finnish source]

Tiedonhankintaa ja -hakua, kirjastotyöskentelyä, kirjallisuuteen ja tutkimusmenetelmiin perehtyvää lukemista ja referointia, asiakokonaisuuksien hahmottamista, aineiston hankintaa ja käsittelyä, aineiston ja tulosten järjestelyä, päätelmien tekemistä, tieteellistä keskustelua, ilmaisua ja kirjoittamista, työn teknistä hiomista, seminaari-istuntoja ja ohjaus- ja palautekeskusteluja.

Seminaarit: kirjareferointi, tutkimussuunnitelma, tutkimushistoria ja seminaarityö.

Opiskelija kykenee arvioimaan alan tutkimustietoa, jakamaan tietämystään muiden kanssa ja osallistumaan tieteelliseen keskusteluun. Opiskelija osaa opponoida muiden opiskelijoiden seminaaritöitä.

Opiskelija osaa soveltaa analyyttisen ja kriittisen ajattelun taitoja tieteenalaan sopivalla tavalla huomioiden alojen väliset rajapinnat ja uuden tiedon.

Opiskelija osaa soveltaa luovaa ajattelua ja ongelmanratkaisua uuden tiedon ja uusien menettelytapojen kehittämiseksi.

Opiskelija osaa analysoida argumentteja sekä argumentoida asianmukaisesti.

Opiskelija kykenee toimimaan rakentavasti epävarmuuden ja epämukavuuden tilanteissa sekä edistää yhteisöllisyyttä ja vuorovaikutusta työhyvinvoinnin tukemiseksi.

Opiskelija osaa ratkaista oman alansa eettisiä kysymyksiä perustellusti ja perustella toimintansa eettisesti huomioiden erilaiset tausta, valta-asemat, arvot ja ympäristöt.

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: 6836855

YK00AR64 | Professional Communication for Technology (BME)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Satu Rusko

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrating an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

[Official course record: YK00AR64](#)

902169Y | Professional Communication for Technology (CE)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Katrin Korkalainen

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrating an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

[Official course record: 902169Y](#)

902168Y | Professional Communication for Technology (CSE)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Satu Rusko

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrate an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [902168Y](#)

902167Y | Professional Communication for Technology (ECE)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Satu Rusko

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrate an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [902167Y](#)

902170Y | Professional Communication for Technology (IEM)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Susan Mc Ansh

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrate an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: 902170Y

902173Y | Professional Communication for Technology (ME)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Kari-Pekka Kallunki

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrating an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: 902173Y

902174Y | Professional Communication for Technology (PEE)

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Joshua Ward

Content

The aim of this course is to enhance and activate students' skills in all modes of communication, that is, reception, production, interaction and mediation. Course activities such as simulations and project work will enable students to collaborate and explore field-related topics through the medium of English and develop skills needed in multicultural academic and working life contexts, such as teamwork, problem solving, critical sustainability awareness, lifelong-learning, and providing and receiving constructive feedback.

Learning outcomes

Upon completion of the course, the student will be able to:

- effectively communicate and interact both orally and in writing in professional, and academic contexts while recognizing cultural diversities
- demonstrate a good range of vocabulary related to their own field and working life
- create and deliver effective presentations, applying appropriate linguistic and technical knowledge
- collaborate productively in teamwork, utilizing critical and creative thinking skills to identify and solve problems, and achieve shared goals
- demonstrate an awareness of sustainability, responsibility and ethics in a team project
- use digital tools to support their communication skills and language learning
- describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: 902174Y

YK00AV04 | Professional German

3-4 ECTS | Language studies, German | Language and Communication Studies |

Person in charge: Oliver Jarde, Veronika Ranzenhofer

Content

The course includes a variety of oral and written exercises to practice different communicative situations of working life. Topics covered are, for example, making appointments, receiving German-speaking guests, giving a company presentation, writing business letters and telephone conversations. Special attention is paid to the cultural specifics of German business communication.

Learning outcomes

Upon successful completion of the course, the students will be

- familiar with some essential differences between the business cultures of Finland and German-speaking countries
- familiar with different registers of the German language (everyday vs. formal language)
- able to apply their knowledge in practical business situations
- experienced in performance situations and able to get their message across in a manner that is mindful of the customs and practices of German-speaking countries
- able to give a company presentation.

Official course record: YK00AV04

HR00AQ85 | Project Work

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Riitta Kosunen

Content

Group or independent work under supervision

Learning outcomes

Upon completing this course, students will be able to plan, carry out and assess a translation project which is anchored in theory.

They work independently in an ethically responsible manner.

Official course record: [HR00AQ85](#)

682408S | Project-based Language Work

5 ECTS | English | Advanced Studies | English

Person in charge: Pentti Haddington

Content

Practical problem-based and project-based work in which students become familiar with project management. Students conduct a small-scale language work project for a client (e.g. language editing, translation, localisation, creating a user help manual or training stakeholders in the use of English language in international settings).

Learning outcomes

Upon completion of the course, the students will be able to

- display an understanding of what a language work project requires from a language professional,
- describe the features of working with stakeholders as part of a project involving language work,
- describe different steps and contents of project management,
- demonstrate the ability to make independent decisions as part of a language work project,
- demonstrate the ability to share responsibilities as part of teamwork and project management,
- demonstrate the ability in developing skills and competencies required in language work project and take steps in advancing them for their own part, and
- explain how English language is used in projects and in different areas of work-life.

Official course record: [682408S](#)

682443A | Psychoanalysis and Literature

5 ECTS | English | Intermediate Studies | English

Person in charge: Jarkko Toikkanen

Content

Psychoanalysis has always had a suspicious sense about it. From Sigmund Freud's founding work through to the linguistic complexities of Jacques Lacan and poststructuralist variations in Judith Butler's gender theory, among other things, critics have found much both to embrace and reject. The causes and consequences of this highly polarized attitude deserve close attention and ways of measuring their critical relevance.

Studying literature through the theoretical criticism and practical tools of psychoanalysis will highlight how competence in this field can produce proficient close readings of literary texts (William Blake, William Wordsworth, E. T. A. Hoffmann, Edgar Allan Poe, Henry James) with wide-ranging impact and influence in both historical and cultural contexts. Media materials other than literature will also be considered as case studies.

Learning outcomes

Upon completion of the course, the outcomes are as follows:

- Learning to close read literary texts through the psychoanalytical perspective
- Awareness of the history and relevance of the psychoanalytical tradition
- Competence in applying tools of psychoanalysis in interpretive practice

Taking the course builds on generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing. The students also learn to identify orientations in their own field of study and compare them with perspectives in other fields in a critical dialogue.

Official course record: 682443A

YK00AJ82 | Ready, Set, YKI! Prep course for national language test

3 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Heidi Niskanen

Content

Is your goal the language proficiency demanded for the Finnish citizenship? The aim of this course is to support that goal by developing language skills and also offering more information about the National language test.

During the course we will develop all areas of the language proficiency. The topics of the course will rise from actual themes of Finnish culture and life. The following topics will be especially considered:

- the practices of the National language test
- expressing opinions
- working life
- interacting in business and offices
- free time and hobbies
- education
- society.

Learning outcomes

After completing the course you will

- recognise better your language skills, its strengths and areas of development
- have more confidence in using Finnish more spontaneously and relaxed, and without tools
- recognise various genres and situational uses of language, their typical characteristics and how to apply them into your own outcome
- be able to act in Finnish in working life and in society
- continue developing your language proficiency in Finnish
- be able to pass the intermediate level National language test.

Official course record: YK00AJ82

HG00BC06 | Regional and historical variation in German (Tampere University)

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sabine Grasz

No description supplied in the collected record.

Official course record: HG00BC06

HR00AZ06 | Regional and Social Variations of French

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Maritta Riekkö

Content

Analysis of regional dialect maps and familiarization with dialects. Social variation of the language.

Learning outcomes

The student will identify regional dialects of French. In addition, the student will learn the meaning of different levels of the language.

Official course record: HR00AZ06

YK00AL61 | Research Communication in Business Sciences

2 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Magda Karjalainen

Content

- practices and features of scientific communication
- typical structures and styles of scientific language
- writing scientific texts
- critical reading
- scientific presentations
- observation and analysis of oral communication situations.

Learning outcomes

This course aims to develop communication, cooperation and textual skills needed in studies and working life. It also supports the formation of students' professional identity through focus on recognition and communication of their expertise. This course is integrated with the Bachelor thesis seminar working process.

After the course, students will be able to:

- identify the conventions of scientific communication and apply them in a research paper in their field
- summarise, interpret, analyse and produce scientific texts
- present themselves as experts in scientific and professional contexts
- identify their academic communication strengths as well as areas that need further development

Official course record: YK00AL61

900083A | Research Communication in Economics

2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Mikkola

Content [Finnish source]

Tieteellisen viestinnän käytänteet ja erityispiirteet, tieteen kieli ja tyyli, tieteellisen tekstin kirjoittaminen, kriittinen ja arvioiva lukeminen, tieteellinen esitys, puheviestintätilanteiden havainnointi ja analysointi.

Learning outcomes

This course is not offered in English. It is only Finnish-speaking students. Course description is only in Finnish.

Official course record: 900083A

682380A | Research in Language Studies

5 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Keisanen

Content

The overview of research approaches will focus on areas relevant for the study of language and language learning. Various methods for collecting and analyzing data will be dealt with. In the process of reviewing academic journals, participants will produce a summary of previous research on their chosen topic in language studies. The component on research ethics will deal with research integrity, good scientific practice and guidelines on research ethics via practical case studies.

Learning outcomes

Upon completion of the course the student should be able to:

- display an understanding of research approaches to the study of language and language learning,
- display an understanding of research ethics, and
- identify appropriate research strategies in the context of particular research paradigms

Generic skills

The core generic skills developed during the course are skills in ethics and in interdisciplinarity. These skills are gained via learning about research ethics in research involving human participants and about different research paradigms in the study of language and language learning. Upon completion of the course the student should be able to reflect on the different research approaches in relation to their personal academic development and to follow the developments in the fields of language studies and language learning. These areas strengthen the student's skills in analytical, critical and creative thinking and in well-being and self-development. International and multicultural competences are developed via practicing discipline-specific language skills in English.

In the contact version of the course, some of the work is completed in small teams by utilizing online learning platforms (e.g., Teams), which allows for the development of skills in collaboration and project work. The teams will present their findings via two oral presentations. In general, these working methods advance digital skills as well as skills in communication and interaction.

Official course record: 682380A

AY682380A | Research in Language Studies (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The overview of research approaches will focus on areas relevant for the study of language and language learning. Various methods for collecting and analyzing data will be dealt with. In the process of reviewing academic journals, participants will produce a summary of previous research on their chosen topic in language studies. The component on research ethics will deal with research integrity, good scientific practice and guidelines on research ethics via practical case studies.

Learning outcomes

Upon completion the student should be able to:

- display an understanding of research approaches to the study of language and language learning,
- display an understanding of research ethics, and
- identify appropriate research strategies in the context of particular research paradigms

Official course record: AY682380A

682435A | Research Methods in SLA studies

5 ECTS | English | Intermediate Studies | English

Person in charge: Lydia Kokkola

Content

This is an intermediate course worth 5 credits. The course provides an introduction to research methods and data elicitation techniques used in second language acquisition (SLA) research with an emphasis on methods that students could use in their BA theses. The main assignment is to design a study, and you are encouraged to design a project you could carry out for your BA thesis. Students will also learn to read the most common statistical descriptions and tests used in SLA research and be able to describe the findings using everyday language.

Learning outcomes

Upon completion of the course, the student will be able to:

- Demonstrate familiarity with a variety of SLA data collection techniques and analysis
- Understand how and why research findings can be interpreted in more than one way
- Understand how research methodologies impact upon what can be known
- Demonstrate comprehension of the main statistical descriptions and tests used in SLA research
- Design a research project using at least one of the methods outlined
- identify a problem and think systemically about possible solutions
- demonstrate good self-management skills including time management skills
- appreciate knowledge formation and approaches from different disciplines.

Official course record: [682435A](#)

682442S | Research Methods in SLA studies

5 ECTS | English | Advanced Studies | English

Person in charge: Lydia Kokkola

Content

This is an Advanced course worth 5 credits. The course provides an introduction to research methods and data elicitation techniques used in second language acquisition (SLA) research with an emphasis on methods that students could use in their MA theses. The main assignment is to design a study, and you are encouraged to design a project you could carry out for your MA thesis. Students will also learn to read the most common statistical descriptions and tests used in SLA research and be able to describe the findings using everyday language. You will also evaluate published research on a topic of your own interest.

Learning outcomes

Upon completion of the course, the student will be able to:

- Demonstrate familiarity with a variety of SLA data collection techniques and analysis
- Understand how and why research findings can be interpreted in more than one way
- Understand how research methodologies impact upon what can be known
- Demonstrate comprehension of the main statistical descriptions and tests used in SLA research
- Find and evaluate relevant research from journals
- Design a research project using at least one of the methods outlined
- identify a problem and think systemically about possible solutions
- demonstrate good self-management skills including time management skills
- appreciate knowledge formation and approaches from different disciplines.

Official course record: [682442S](#)

HM00AQ71 | Research Methods of Saami Studies

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Tiina Magga

Content

The course introduces students to interdisciplinary Sámi studies and the historically and socially evolving ways of producing knowledge. It also prepares students for thesis work and the related research process.

Learning outcomes

After completing the course, the student:

- Understands and can evaluate the foundations, critical questions, methods, and approaches to knowledge production in multidisciplinary Sámi research.
- Is familiar with the research process involved in writing a thesis.
- Can develop a research plan and other written components that support the research process."

[Official course record: HM00AQ71](#)

695006A | Research on Learning Finnish Language

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Maria Frick

Content

Central theories and methods in S2 research

Learning outcomes

Upon completing the course, students will be able to recognise the central theories and research traditions in the field and will be able to apply these in research.

Generic skills: analytical, critical and creative thinking skills, international and multicultural skills, sustainability, responsibility and ethics skills, multidisciplinary and interdisciplinary skills, communication, interaction and digital skills.

[Official course record: 695006A](#)

695009A | Research Seminar

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Bruni

Content

Planning and writing a thesis

Learning outcomes

Upon completing the course, students will be able to analyse, organise and interpret data concerning learning, teaching and assessment. They will be able to apply the research methods in the field and produce a scholarly seminar thesis.

[Official course record: 695009A](#)

682381A | Researching Literature and Culture

5 ECTS | English | Intermediate Studies | English

Person in charge: Jarkko Toikkanen, Hanne Juntunen

Content

This course will introduce students to a range of theoretical approaches to literary and cultural criticism, and give them opportunities to practice applying them to selected literary and cultural texts.

Learning outcomes

Upon completion the student should be able to:

- Demonstrate knowledge of a range of literary and cultural theories
- Apply these theories to a range of literary and cultural texts
- Understand the explanatory potential and limits of particular theories and approaches

Taking the course develops generic skills in critical thinking and analytical readiness, enables students to work in groups and recognize their own strengths, and allows them to communicate their ideas more clearly and effectively in speech and writing. The students also learn to identify orientations in their own field of study and compare them with perspectives in other fields.

Official course record: 682381A

AY682381A | Researching Literature and Culture (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

This course will introduce students to a range of theoretical approaches to literary and cultural criticism, and give them opportunities to practice applying them to selected literary and cultural texts.

Learning outcomes

Upon completion the student should be able to:

- Demonstrate knowledge of a range of literary and cultural theories
- Apply these theories to a range of literary and cultural texts
- Understand the explanatory potential and limits of particular theories and approaches

Official course record: AY682381A

HM00AS80 | Saami Cultural Environment

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

An introduction to the themes, rights and practices related to the Sámi cultural environment and the use of the environment.

Learning outcomes

After completing the course, the student:

- is able to describe and analyse the different dimensions of the Sámi cultural environment in connection with livelihoods and land use
- understands the speciality of the Sámi cultural environment and its connection to other traditional knowledge
- Identify legal, cultural and economic challenges related to the cultural environment

Official course record: HM00AS80

683489A | Saami Literature

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

Students will familiarise themselves with the fundamental concepts of literary research, as well as with Saami literature and its history.

Learning outcomes

Upon completion of the course, students will have a command of the fundamental terminology of literary research and will be able to analyse and interpret literature with the use of concepts. Students will know the development and history of the genres of Saami literature.

Official course record: 683489A

HM00AS79 | Saami Research as part of the Indigenous studies

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Tiina Magga

Content

The course introduces students to the theoretical and methodological starting points of Sámi and Indigenous studies. The course examines Indigenous peoples' own perspectives, knowledge systems and the principles of Indigenous self-determination, as well as their relations to Western science and the power structures of society.

Learning outcomes

After completing the course, the student

- is able to identify the traditions and contemporary debates of Indigenous research and Sámi studies
- is able to perceive the key ethical, epistemological and methodological premises of the discipline
- understands the concepts of indigenization and how Sámi research is part of Indigenous research

Official course record: HM00AS79

900092Y | Science Popularisation

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Mikkola

Content

Practises and distinctive features of scientific communication and popularised science, group-writing, academic reading strategies, observation and analysis of speech communication situations.

Learning outcomes

This course is not offered in English. It is only Finnish-speaking students.

Upon completion of the course the student should be conversant with the possibilities and problems related to the popularisation of science as well as with some of the techniques used to accomplish it. The student should be able to read popular scientific articles in a critical way.

Official course record: 900092Y

900084Y | Scientific Communication

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

Content [Finnish source]

Tieteellinen tyyli, viestintä ja kieli, kielenhuolto, tekoäly apuvälineenä, lähteet ja viittaaminen, opinnäytteen rakenne ja tutkimuskysymykset, kirjoitusprosessi, tieteestä kertominen, akateemiset viestintätilanteet.

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

[Official course record: 900084Y](#)

AY900084Y | Scientific Communication (OPEN UNI)

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

Content

Practises and distinctive features of scientific communication, style and language of science, academic writing, group-writing, critical and analytical reading strategies, observation and analysis of speech communication situations.

Learning outcomes

This course is for Finnish-speaking students only.

[Official course record: AY900084Y](#)

902154Y | Scientific Communication for Biochemists

5 ECTS | Language studies, English | Language and Communication Studies | English

Person in charge: Kari-Pekka Kallunki

Content

This course will cover presentation skills (2 ECTS credits) and scientific research writing (3 ECTS credits).

The course aims to help students acquire understanding of the conventions and expectations of the academic community of biochemists for scientific reporting, and develop presentation and writing skills for their future professional life.

Learning outcomes

By the end of the course, students will have demonstrated an ability to

- write a research article that follows the main discourse conventions of biochemistry,
- prepare and deliver an oral, scientific presentation supported by an effective slideshow,
- apply the rules of referencing,
- use a sufficient range of appropriate academic vocabulary relevant to their discipline,
- report their work orally or in writing with accuracy and in an appropriate academic style,
- structure their work for optimal clarity and impact,
- make good use of feedback from peers and teachers to improve their own scientific production.

[Official course record: 902154Y](#)

900061A | Scientific Communication for Production Engineering and Management

2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Mikkola

Content

Practises and distinctive features of scientific communication, writing as a process, critical and analytical reading strategies, style and language of science, essential questions of language planning.

Learning outcomes

The student should have mastered the basics of scientific communication. He/she should be able to view scientific writing as a process and prepare a scientific research report (among other scientific texts).

[Official course record: 900061A](#)

YK00AM46 | Scientific Communication for Speech Therapist

2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Outi Liimatta

Content [Finnish source]

Keskeiset sisällöt:

- tieteellisen viestinnän käytänteet ja erityispiirteet
- tieteellisen tekstin kirjoittaminen
- kriittinen ja arvioiva lukeminen
- tieteellinen esitys.

Learning outcomes

This course is offered only in Finnish.

[Official course record: YK00AM46](#)

900107Y | Scientific Finnish for Health Sciences

2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

Content

Writing and research processes, elaboration of own topic, structure of thesis, main chapters and their functions, sources and misconduct, researching as a profession, popularization.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the topic, scope and gap of research in the field of Health Sciences
- verbalize the research gap, scope and questions of one's thesis
- realize the structure and function of the introductory chapter of the thesis
- renew one's writing practices to conform with scientific process
- apply good scientific practices to one's thesis
- popularize the topic of a research.

[Official course record: 900107Y](#)

693713S | Second Language Acquisition

5 ECTS | Swedish Language | Advanced Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Study of different theoretical perspectives in second language acquisition

Learning outcomes

Upon completing the course, students will have an overview of the most central questions in second language acquisition and they will be able to relate these to language education.

You are aware of the interdisciplinary nature of language studies.

Official course record: [6937135](#)

900082Y | Second Official Language (Finnish), Oral Skills

1-3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

No description supplied in the collected record.

Official course record: [900082Y](#)

900081Y | Second Official Language (Finnish), Written Skills

1-2 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Jukka Käräjäoja

Content [Finnish source]

Osallistuminen kokeeseen ja mahdolliseen opetukseen.

Learning outcomes

This course is not offered in English. It is only for Swedish-speaking students. See course description in Finnish pages.

Official course record: [900081Y](#)

901031Y | Second Official Language (Swedish), Oral Skills

3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi, Anne Saarijärvi, Kaisu Hoikkala

No description supplied in the collected record.

Official course record: [901031Y](#)

901035Y | Second Official Language (Swedish), Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kemppainen, Kaisu Hoikkala

No description supplied in the collected record.

Official course record: [901035Y](#)

901039Y | Second Official Language (Swedish), Oral Skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

No description supplied in the collected record.

Official course record: [901039Y](#)

901041Y | Second Official Language (Swedish), Oral Skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi

Learning outcomes

See 901040Y Second Official Language (Swedish), Written Skills. The course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

[Official course record: 901041Y](#)

901045Y | Second Official Language (Swedish), Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kemppainen, Liisa Niemi,

Learning outcomes [Finnish source]

Ks. kuvaustiedot opintojaksosta Toinen kotimainen kieli, ruotsi, kirjallinen kielitaito (901044Y).

Kirjallinen ja suullinen osuus suoritetaan yhdessä; ilmoittautuminen vain kirjallisen kielitaidon opintojaksolle 901044Y.

[Official course record: 901045Y](#)

901047Y | Second Official Language (Swedish), Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Terhi Ruokanen-Jaakola

No description supplied in the collected record.

[Official course record: 901047Y](#)

901049Y | Second Official Language (Swedish), Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen (TOL), Rauno Varonen (TITE, ETT, LÄÄKTEK, DICE)

No description supplied in the collected record.

[Official course record: 901049Y](#)

901051Y | Second Official Language (Swedish), Oral Skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Terhi Ruokanen-Jaakola

No description supplied in the collected record.

[Official course record: 901051Y](#)

901061Y | Second Official Language (Swedish), Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Sini Pirskanen

No description supplied in the collected record.

[Official course record: 901061Y](#)

AY901031Y | Second Official Language (Swedish), Oral Skills (OPEN UNI)

3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi, Rauno Varonen

No description supplied in the collected record.

[Official course record: AY901031Y](#)

AY901035Y | Second Official Language (Swedish), Oral Skills (OPEN UNI)

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Rauno Varonen

No description supplied in the collected record.

[Official course record: AY901035Y](#)

AY901039Y | Second Official Language (Swedish), Oral Skills (OPEN UNI)

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

No description supplied in the collected record.

[Official course record: AY901039Y](#)

901030Y | Second Official Language (Swedish), Written Skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi

Content [Finnish source]

- * viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa
- * oppimistehtäviä, joilla pyritään edistämään ratkaisukeskeisen, yrittäjämäisen ajattelun (luovuus, innovatiivisuus) omaksumista. Oppimistehtävien tavoitteena on oppia soveltamaan uusia näkökulmia, oivalluksia ja ratkaisuvaihtoehtoja omaan toimintaan.
- * esiintymistaidon harjoittelua
- * tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia, pienryhmäkeskusteluja
- * kuuntelutehtäviä
- * opiskelijan omia ääni- ja videotiedostoja
- * ajankohtaisia oman alan tekstejä
- * akateemisen ja erityisalan sanaston, käsitteistön ja terminologian opiskelua
- * omaan alaan liittyviä kirjoitustehtäviä

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

901034Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kemppainen, Kaisa Hoikkala

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Tilannepohjaisia suullisia yksilö-, pari- ja ryhmäharjoituksia sekä pienryhmäkeskusteluja, ajankohtaisia alakohtaisia tekstejä, omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä esiintymistaidon harjoittelua.

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * osaa toimia oman alan ammatillisissa viestintätilanteissa vuorovaikutteisesti
- * ymmärtää ja käyttää oman alan erikoissanastoa
- * käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- * löytää ydinajatuksen yleistieteellisestä ja oman alan tekstistä ja pystyy välittämään tämän tiedon ruotsin kielellä kuulijoille / lukijoille
- * kirjoittaa lyhyehköjä oman alan tekstejä
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * pystyy keskustelemaan ajankohtaisista ja alakohtaisista asioista

Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: 901034Y

901038Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Esiintymistaidon harjoittelua. Tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia (esim. viestintä hoitotilanteissa) sekä pienryhmäkeskusteluja. Kuuntelutehtäviä. Opiskelijan omia ääni- ja videotiedostoja. Ajankohtaisia oman alan tekstejä harjoituksineen. Erityisalan sanaston ja terminologian opiskelua. Omaan alaan liittyviä kirjoitustehtäviä.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

Official course record: 901038Y

901040Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi

Content [Finnish source]

- * viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa
- * oppimistehtäviä, joilla pyritään edistämään ratkaisukeskeisen, yrittäjämäisen ajattelun (luovuus, innovatiivisuus) omaksumista. Oppimistehtävien tavoitteena on oppia soveltamaan uusia näkökulmia, oivalluksia ja ratkaisuvaihtoehtoja omaan toimintaan.
- * esiintymistaidon harjoittelua
- * tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia, pienryhmäkeskusteluja
- * kuuntelutehtäviä
- * opiskelijan omia ääni- ja videotiedostoja
- * ajankohtaisia oman alan tekstejä
- * akateemisen ja erityisalan sanaston, käsitteistön ja terminologian opiskelua
- * omaan alaan liittyviä kirjoitustehtäviä

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

Official course record: 901040Y

901044Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kemppainen, Liisa Niemi, Terhi Ruokanen-Jaakola

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia, esim. yritys- ja tuote-esittelyjä. Ajankohtaisia alakohtaisia tekstejä. Omaan alaan liittyviä kirjoitustehtäviä ja esiintymistaidon harjoittelua. Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * pystyy toimimaan oman alan tyypillisissä viestintätilanteissa vuorovaikutteisesti
- * ymmärtää ja osaa käyttää oman alansa erikoissanastoa
- * käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- * pystyy lukemaan ja ymmärtämään oman alan tekstejä, tekemään niistä johtopäätöksiä ja välittämään keskeisen tiedon kuulijalle / lukijalle
- * osaa kirjoittaa lyhyehköjä oman alan tekstejä
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa

Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: 901044Y

901046Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Terhi Ruokanen-Jaakola

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Opintojakso sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja ja esiintymistaidon harjoittelua. Lisäksi tehdään omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * pystyy toimimaan oman alan tyypillisissä viestintätilanteissa vuorovaikutteisesti
- * ymmärtää ja osaa käyttää arkkitehtuurin alan erikoissanastoa
- * käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- * käyttää perusrakenteita pääsääntöisesti oikeakielisesti puheessa ja kirjoituksessa
- * pystyy lukemaan ja ymmärtämään oman alansa tekstejä, tekemään niistä johtopäätöksiä ja välittämään keskeisen tiedon kuulijalle / lukijalle
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * osaa kirjoittaa lyhyehköjä oman alan tekstejä.

Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: 901046Y

901048Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen, Rauno Varonen

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Kurssi sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja sekä esiintymistaidon harjoittelua. Lisäksi kurssilla tehdään omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä itsenäisiä tehtäviä.

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija:

- * osaa toimia oman alan ammatillisissa viestintätilanteissa vuorovaikutteisesti
- * ymmärtää ja osaa käyttää oman alan erikoissanastoa
- * ymmärtää oman alansa tekstejä ja puhuttua kieltä ja pystyy tekemään niistä johtopäätöksiä
- * pystyy keskustelemaan ajankohtaisista alakohtaisista aiheista
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- * saa viestinsä perille ja tulee ymmärretyksi tavatessaan ruotsinkielisiä kollegoja
- * pystyy kehittämään kielitaitoaan itsenäisesti.

Opintojakson suoritettuaan opiskelijan osaaminen vastaa vähintään KORU-kriteereissä kuvattua taitotasoa B1.

Erityishuomio kohdistuu oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: 901048Y

901050Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Terhi Ruokanen-Jaakola

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Opintojakso sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja ja esiintymistaidon harjoittelua. Lisäksi tehdään omaan alaan liittyviä kirjoitus- ja videotehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in Swedish language. There are no beginners' courses in Swedish at the University of Oulu.

Official course record: 901050Y

901060Y | Second Official Language (Swedish), Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Sini Pirskanen

Content [Finnish source]

Opintojaksolla tehdään viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Opintojakso sisältää tilanne- ja alakohtaisia pari-/pienryhmäkeskusteluita verkossa, tiedonhankintaa, omaan alaan ja työelämään liittyviä video-, kuuntelu- ja kirjoitustehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * pystyy toimimaan vuorovaikutteisesti oman alan tyypillisissä viestintätilanteissa
- * pystyy keskustelemaan yleisistä ja omaa alaa koskevista aiheista
- * osaa suunnitella ja pitää omaan alaan liittyvän esityksen
- * ymmärtää ja osaa käyttää oman alansa erikoissanastoa
- * pystyy lukemaan ja ymmärtämään oman alan tekstejä ja tekemään niistä johtopäätöksiä
- * osaa kirjoittaa tyypillisiä työelämän tekstejä itsenäisesti ja yhdessä toisten kanssa
- * osaa etsiä tietoa ruotsiksi pystyy kehittämään kielitaitoaan itsenäisesti

Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatitaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: 901060Y

AY901030Y | Second Official Language (Swedish), Written Skills (OPEN UNI)

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Liisa Niemi

Content [Finnish source]

- * viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa
- * oppimistehtäviä, joilla pyritään edistämään ratkaisukeskeisen, yrittäjämäisen ajattelun (luovuus, innovatiivisuus) omaksumista. Oppimistehtävien tavoitteena on oppia soveltamaan uusia näkökulmia, oivalluksia ja ratkaisuvaihtoehtoja omaan toimintaan.
- * esiintymistaidon harjoittelua
- * tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia, pienryhmäkeskusteluja
- * kuuntelutehtäviä
- * opiskelijan omia ääni- ja videotiedostoja
- * ajankohtaisia oman alan tekstejä
- * akateemisen ja erityisalan sanaston, käsitteistön ja terminologian opiskelua
- * omaan alaan liittyviä kirjoitustehtäviä

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

Official course record: [AY901030Y](#)

AY901034Y | Second Official Language (Swedish), Written Skills (OPEN UNI)

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kempainen

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Tilannepohjaisia suullisia yksilö-, pari- ja ryhmäharjoituksia sekä pienryhmäkeskusteluja, ajankohtaisia alakohtaisia tekstejä, omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä esiintymistaidon harjoittelua.

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2 in the Swedish language. University of Oulu does not offer beginner courses in Swedish.

Official course record: [AY901034Y](#)

AY901038Y | Second Official Language (Swedish), Written Skills (OPEN UNI)

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Esiintymistaidon harjoittelua. Tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia (esim. viestintä hoitotilanteissa) sekä pienryhmäkeskusteluja. Kuuntelutehtäviä. Opiskelijan omia ääni- ja videotiedostoja. Ajankohtaisia oman alan tekstejä harjoituksineen. Erityisalan sanaston ja terminologian opiskelua. Omaan alaan liittyviä kirjoitustehtäviä.

Learning outcomes [Finnish source]

Opiskelija saavuttaa sellaisen ruotsin kielen taidon, jota tarvitaan oman alan työtehtävissä.

Kurssin suoritettuaan opiskelija

- osaa toimia työelämän tyypillisissä viestintätilanteissa vuorovaikutteisesti (esim. hoitotilanteet)
- käyttää perusrakenteita pääsääntöisesti oikeakielisesti puheessa ja kirjoituksessa
- käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- osaa käyttää oman alan erikoissanastoa
- pystyy lukemaan oman alansa tekstejä ja löytää niistä ydinajatuksia ja pystyy välittämään tämän tiedon ruotsin kielellä kollegoille tai maallikkoyhteisölle
- osaa keskustella ajankohtaisista ja alakohtaisista asioista
- ymmärtää oman alansa puhuttua ja kirjoitettua kieltä
- osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- osaa suunnitella ja pitää omaan alaan liittyviä esityksiä
- on hankkinut valmiuden kehittää omaa kielitaitoaan autenttisissa kielenkäyttötilanteissa.

Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia. Tilanpohjaisten yksilö-, pari- ja ryhmäharjoitusten kautta edistetään sosiaaliseen kanssakäymiseen ja ammatilliseen osaamisen liittyviä kielellisiä taitoja.

Official course record: AY901038Y

694946A | Semantics

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Jari Sivonen

Content

Basic concepts in semantics and main features of cognitive semantics

Learning outcomes

Students will be able to apply and assess theories and research methods of lexical and syntactic semantics utilised in contemporary Fennistics.

Generic Skills

After completing the course, the student has analytical, critical, and creative thinking skills (the ability to analyze information and identify what is essential) well-being and self-development skills time management, self-leadership, and the ability to take responsibility for one's actions and well-being communication, interaction, and digital skills (listening and conversational skills, collaboration and teamwork skills)

Official course record: 694946A

695264P | Semantics and Pragmatics

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Semantics (meaning) and pragmatics (context) in linguistics, basic theories and methods.

Learning outcomes

Upon completion of this course, students will be able to analyse linguistic meaning and language use in context.

Official course record: 695264P

683513S | Seminar

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Marko Jouste

Content

Students take part in seminar on Master's Thesis (Pro Gradu Thesis). Students must attend at least 4 in 5 of the seminar sessions.

Learning outcomes

After completing the course, students will be able to plan and implement practical research work, and they possess skills needed to present scholarly arguments orally and in writing.

Official course record: 683513S

683306S | Sivuaineen tutkielma (saamelainen kulttuuri)

30 ECTS | Saami Culture | Advanced Studies | Finnish

No description supplied in the collected record.

Official course record: 683306S

HP00AK91 | Skolt Saami literature and oral tradition

5 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Chud stories, fool stories, fables; Lää'rkaž the guide of the Chuds, stallo, tsar, devil; human-animal metamorphosis. The works of Kati-Claudia Fofonoff and the fairy tales and children's books published in Skolt Saami. The students read fiction and transcriptions of oral tradition, as well as listen to audio recordings, and write summaries and analyzes of them.

Learning outcomes

The student knows the fiction written in or translated to Skol Saami (poems, short stories), the leu'dd tradition and the traditional types of Skolt Saami folktales, as well as the figures and motifs in them, and can explain the most salient features of these. The student can analyze tales of Skolt Saami folklore and compare different versions of the same tale with one another. The student recognizes the most important features of Skolt Saami culture.

Official course record: HP00AK91

683694A | Skolt Saami word formation

5 ECTS | Skolt Saami | Intermediate Studies | Sami

Person in charge: Miika Lehtinen

Content

Essential nominal, verbal, and adverbial derivatives from the perspective of meaning and formation. Adapting loan words. Types of compound words.

Learning outcomes

The student has mastered the most important means of word formation in Skolt Saami, both in theory and in practice, and can apply this knowledge to creating neologisms and assessing existing ones.

Official course record: 683694A

693697A | Sociolinguistics

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Elisa Risto

Content

What functions does language have in society? How does language use vary between individuals? How has language changed over time? What kind of attitudes do people have towards different linguistic varieties? What does multilingualism mean? How are different languages in contact with each other?

In this course, you will become familiar with important areas of sociolinguistics, sociolinguistic theories, and sociolinguistic research.

Learning outcomes

You will have knowledge about, among other things, the different functions of language in society, linguistic variation and change, multilingualism, language and identity, and attitudes towards linguistic varieties. You will learn about sociolinguistic theories and research methods, as well as empirical sociolinguistic research.

You are aware of the interdisciplinary nature of language studies.

Official course record: 693697A

695278A | Sociolinguistics

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic themes in sociolinguistics.

Learning outcomes

Upon completion of this course, students will be able to analyze the social dimension of language and apply that knowledge in the analysis of linguistic variation. The student will also be able to assess the social aspects of bilingualism.

Official course record: 695278A

AY00AG33 | Sociolinguistics (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Elisa Risto

Content

Study of important trends in sociolinguistics. Discussions and written exercises.

Learning outcomes

Upon completing the course, students will be familiar with the variable role of language in society, linguistic variation and change, sociolinguistic theories and research methods. Students will also be familiar with empirical sociolinguistic research.

YK00BE37 | Spanish 6 (KiVANET)

3 ECTS | Language studies, Spanish | Language and Communication Studies | Spanish, Castilian

Person in charge: Veronika Ranzenhofer

Content

The course focuses on studying Spanish in the context of Latin America. Topics include Latin American society and the economy, tourism, the environment, sustainable development, and the South American free trade association Mercosur between Argentina, Brazil, Uruguay, and Paraguay.

The topics relate to the variants of Spanish used in South America, specifically in Argentina, and the following structures:

- *review of the past tense forms of the indicative
- *past tense forms of the subjunctive
- *conditional clauses (conditional in the main clause and past subjunctive in the subordinate clause)
- *the voseo phenomenon (the informal second-person plural form used in the Río de la Plata region, particularly in Argentina and Uruguay)

Learning outcomes

After completing this course students will:

- *be able to participate fluently in conversations and express themselves on topics related to society and the economy
- *be able to identify both the main message and the details in a conversation
- *be able to read and understand demanding texts on current topics, such as the economy, politics, social changes, etc.
- *be able to write an article on topics related to Latin American society and the economy
- *have deepened their knowledge of Latin American culture.

Official course record: YK00BE37

900027Y | Special Course in Finnish: Writing Skills

3 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Päivi Jokinen

Content

During the course students develop their writing skills in Finnish and are guided in the drafting of different text types and documents needed in studies and work. In the course students learn how to write informal and formal emails, an argument-essay / blog post, a summary, a job application or a report/newsletter.

Learning outcomes

By the end of the course students

- can write coherent and detailed descriptions and summaries about various matters
- are able to summarize text and justify their own statements of opinions
- know the steps of the writing process
- understand the significance of a text's function and target audience
- can also differentiate between formal and informal writing styles.

Official course record: 900027Y

HR00AQ86 | Special Field

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of theoretical and practical questions within a special field in translation studies

Learning outcomes

Upon completing the course, students will be familiar with the central questions within a special field of translation studies. The special fields are interpreting, non-fiction translation and literary translation.

Students can critically evaluate the main points in the exam literature and summarize the core content accurately in fluent Swedish.

Official course record: [HR00AQ86](#)

683396A | Special Issues in the Saami Past

5 ECTS | Saami Culture | Intermediate Studies | Finnish

Person in charge: Marko Jouste

Content

Introduction to special questions and themes in the research on the history of the Saami. These themes include the political history of the Saami people and the recent history of the Saami people in Finland.

Learning outcomes

Upon completion of the course, students will be able to

- describe and explain the main questions in the history of the Saami people
- analyze and evaluate critically the view these questions offer into the past of the Saami people.

Official course record: [683396A](#)

HP00AK88 | Special issues of Skolt Saami grammar

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Brief introduction to syntax; the case markings of subject and object and the sentence types in which Finnish and Skolt Saami subject and object coding differ; inflection of adjectives as predicatives and standing alone; word order, especially the order of verb and object; non-finite clauses and subordinate clauses; the differences between Finnish and Skolt Saami sentence structure, and especially avoiding the complex structures found in the Finnish literary language; the difference between spoken and written language and phenomena occurring in spoken language; expressions of place and time; less common uses of grammatical cases.

Learning outcomes

The student can pay special attention to the issues in Skolt Saami grammar which are most challenging especially for the Skolt Saami students who speak Finnish as their first language. The student can compare the grammars of Finnish and Skolt Saami and detect the Finnish influence in his/her own language as well as in the language produced by others. The student is also aware of differences between Skolt Saami and Finnish, and aspires to think, speak and write directly in Skolt Saami, instead of translating Finnish word for word. The student is able to critically evaluate knowledge in their own field and apply it to solving complex and unpredictable problems. The student is able to describe their own competence and develop their proficiency in the Skolt Saami language.

Official course record: [HP00AK88](#)

HM00AS81 | Special Themes on Saami Culture and Arts

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

The student chooses a free-choice section from the following thematic list: 1) Archive work section, which includes practical work in the Sámi Cultural Archive 2) Sámi Education and Pedagogy book package 3) Book package on language sociology 4) Multiculturalism, internationality and cultural sensitivity book package 5) Sámi Art section 6) Sámi Mythologies and Spirituality book package 7) Indigenous peoples book package 8) Classics of Sámi literature package 9) Sámi Society and Politics book package. Each book package is equal to five credits. The archival work section consists of five credits worth of archival work. In total, the student completes ten credits: Deepening into Sámi culture and arts and Deepening into Sámi history and society.

Learning outcomes

After completing the course, the student:

- Is able to independently plan their studies
- is able to choose a special theme that interests him/herself and collect the material needed for independent study work.
- is able to analyse and critically evaluate the material they use and choose an evaluable method as evidence of their competence.
- If the student chooses to complete the archival work part, after completing the course, he/she will be able to apply the knowledge they had previously received from the practical archival work.

[Official course record: HM00AS81](#)

HM00AS82 | Special Themes on Saami History and Society

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

The student chooses a free-choice section from the following thematic list: 1) Archive work section, which includes practical work in the Sámi Cultural Archive 2) Sámi Education and Pedagogy book package 3) Book package on language sociology 4) Multiculturalism, internationality and cultural sensitivity book package 5) Sámi Art section 6) Sámi Mythologies and Spirituality book package 7) Indigenous peoples book package 8) Classics of Sámi literature package 9) Sámi Society and Politics book package. Each book package is equal to five credits. The archival work section consists of five credits worth of archival work. In total, the student completes ten credits: Deepening into Sámi culture and arts and Deepening into Sámi history and society.

Learning outcomes

After completing the course, the student:

- Is able to independently plan their studies
- is able to choose a special theme that interests him/herself and collect the material needed for independent study work.
- is able to analyse and critically evaluate the material they use and choose an evaluable method as evidence of their competence.
- If the student chooses to complete the archival work part, after completing the course, he/she will be able to apply the knowledge they had previously received from the practical archival work.

[Official course record: HM00AS82](#)

695272P | Special Topics I (Basic Studies)

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, computational linguistics etc.).

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

Official course record: [695272P](#)

695279A | Special Topics I (Intermediate Studies)

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, interactional linguistics, computational linguistics etc.)

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

Official course record: [695279A](#)

695273P | Special Topics II (Basic Studies)

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, computational linguistics etc.)

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

Official course record: [695273P](#)

695280A | Special Topics II (Intermediate Studies)

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, interactional linguistics, computational linguistics etc.).

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

Official course record: [695280A](#)

695282P | Special Topics III (Basic Studies)

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, computational linguistics etc.)

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

[Official course record: 695282P](#)

695283A | Special Topics III (Intermediate Studies)

5 ECTS | General Linguistics | Intermediate Studies | Finnish

Person in charge: Santeri Palviainen

Content

Topics in linguistics (e.g., philosophy of language, cognitive linguistics, applied linguistics, a particular linguistic area, interactional linguistics, computational linguistics etc.)

Learning outcomes

Upon completion of this course, students will be able to use the knowledge acquired on other areas of linguistics.

[Official course record: 695283A](#)

YK00AG19 | Speech Communication 1

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Niina Sarajärvi

Content [Finnish source]

Opintojaksolla opiskelija analysoi, harjoittelee ja kehittää omia viestintä- ja vuorovaikutustaitojaan sekä muita geneerisiä taitojaan.

Keskeiset sisällöt:

- viestijäkuva
- viestintä- ja vuorovaikutustaidot ja teorat
- esiintyminen ja esiintymisjännityksen käsitteleminen
- viestinnällä vaikuttaminen
- äänenkäyttö- ja huoltoharjoitukset
- palautetaidot

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

[Official course record: YK00AG19](#)

YK00AG20 | Speech Communication 2

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Niina Sarajärvi

Content [Finnish source]

Opintojaksolla opiskelija harjoittelee viestintä-, vuorovaikutus- ja palautetaitojen ohjaamista ja opettamista sekä analysoi ja kehittää monia geneerisiä taitoja.

Keskeiset sisällöt:

- viestintä- ja vuorovaikutustaitojen ohjaaminen ja opettaminen
- draama ja toiminnallisuus opetuksessa
- palautetaitojen kehittäminen

Learning outcomes

This course is not offered in English. It is only for Finnish-speaking students.

[Official course record: YK00AG20](#)

682374P | Speech Production and Communication

5 ECTS | English | Basic Studies | English

Person in charge: Lydia Kokkola, Maarit Siromaa

Content

The course covers the fundamentals of the English sound system, intonation patterns and transcription. It also provides an introduction to features of spoken discourse. Students practice various kinds of spoken tasks such that they can advance their oral skills once the course is over.

Learning outcomes

Upon completion of the course, the students will

- display an understanding of the principles of the English sound system and intonation patterns
- implement and develop their skills in the conventions of spoken English in relation to various contexts (e.g. oral presentations, talks, interviews)
- be able to give, receive and engage with peer-based feedback
- demonstrate knowledge of their own abilities in spoken English and develop strategies to address areas of weakness independently
- be able to identify and use appropriate resources successfully to support interaction in general as well as pronunciation and intonation more specifically
- be able to make use of the knowledge and experiences that they acquire during the course in their future studies and/or working life.
- be able to assess one's own level of competence and set realistic goals for improvement
- increase tolerance of uncertainty and discomfort in public speaking situations

[Official course record: 682374P](#)

683475P | Spoken and Written Use of North Sami

5 ECTS | Saami as Foreign Language | Basic Studies | Sami

Person in charge: Anna-Liisa Väyrynen

Content

Oral exercises and presentations on different subjects and communication situations. Themes related to indigenous peoples will be emphasised. Written exercises and texts are used to support oral exercises. During the course, students also write short essays and translations into Northern Sámi. The main emphasis is still on the oral use of Northern Sámi.

Learning outcomes

Upon completion of the course, students will be able to discuss different subjects in North Saami in various communication situations.

Official course record: 683475P

AY905090Y | Spoken Chinese for Beginners I (OPEN UNI)

2 ECTS | Language studies, Chinese | Language and Communication Studies | English, Chinese

Person in charge: Elina Palola

Content

Embark on your Mandarin journey with "Spoken Chinese for Beginners I"—a dynamic course crafted for absolute beginners. Imagine confidently greeting friends, discussing hobbies, or navigating daily interactions in Mandarin within weeks! This experience blends English guidance with Chinese practice, ensuring you grasp essentials without overwhelm. Through lively role-plays, cultural insights, and real-world scenarios, you'll master the tones of pinyin, build core vocabulary, and unlock the rhythm of spoken Chinese. Whether for travel, friendships, or personal growth, this course transforms "Ni hao" into meaningful conversations. No prior experience needed—just curiosity and a desire to connect!

Learning outcomes

By the end of the course students will demonstrate:

- the ability to pronounce basic Chinese (pinyin)
- the ability to use some of the most commonly used words and sentences of the Chinese language
- the ability to use daily expressions used in spoken Chinese

Official course record: AY905090Y

AY905091Y | Spoken Chinese for Beginners II (OPEN UNI)

2 ECTS | Language studies, Chinese | Language and Communication Studies | Chinese, English

Person in charge: Elina Palola

Content

This course is designed for those with limited knowledge of Chinese but with an interest in listening and speaking Chinese and conversing with Chinese people about their life, work or business. This course mainly focuses on helping students to improve their communication skills, both speaking and comprehension. Proficiency level: A1

Learning outcomes

It is expected that after the course students are able to express their intentions and tell the main idea of an event with the words, phrases and sentence patterns that they have learned. This course also can cater to those who want to improve their pronunciation skills.

Official course record: AY905091Y

683666A | Spoken Use of Inari Saami

5 ECTS | Inari Saami | Intermediate Studies | Sami

Person in charge: Petter Morottaja

Content

Everyday Inari Saami, culture specific language, language of working life. Culture specific learning by doing as on-the-field teaching; participating in the activities of the Inari Saami language community as independent study; archive or students' own recordings; transcription of the recordings.

Learning outcomes

Upon completion of the course, students will be able to:

- * actively discuss topics pertaining to Saami life and culture
- * recognise the special features of idiolects and be able to compare them with the standard language
- * act equitably and equally with diverse individuals, respecting different environments and values
- * communicate clearly within a group, listen actively to others, provide constructive feedback, and resolve conflicts in a constructive manner

Official course record: [683666A](#)

694958Y | Structure of Finnish

5 ECTS | Finnish Language | General Studies | Finnish

Person in charge: Katja Västi

Content

Introduction to scholarly depiction of structures of Finnish

Learning outcomes

Students will be able to define the basic phonological, morphological, and syntactic structures of modern standard Finnish. In addition, students will be able to analyse linguistic material from a phonological, morphological, and syntactic point of view.

Official course record: [694958Y](#)

AY694958Y | Structure of Finnish (OPEN UNI)

5 ECTS | Finnish Language | General Studies | Finnish

Person in charge: Katja Västi

Content

Introduction to scholarly depiction of structures of Finnish

Learning outcomes

Students will be able to define the basic phonological, morphological, and syntactic structures of modern standard Finnish. In addition, students will be able to analyse linguistic material from a phonological, morphological, and syntactic point of view.

Official course record: [AY694958Y](#)

695017A | Study Circle

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Curricula and methods of S2 teaching, various learning environments, learning strategies, learning difficulties, and ethical questions

Learning outcomes

Upon completing the course, students will be able to develop and plan S2 teaching for student groups of various levels.

Official course record: [695017A](#)

683511S | Survey of Theory and Methods

5 ECTS | Saami Culture | Advanced Studies | Finnish

Person in charge: Marko Jousto

Content

Studying various theories and research methods concerning Saami culture

Learning outcomes

After completing the course, students will be able to evaluate and apply theories and theoretical points of departure as well as different research methods concerning the research on Saami and student's own Master's Thesis (Pro Gradu Thesis).

Official course record: [683511S](#)

YK00AU01 | Survival and Beginners' Finnish 1

5 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Person in charge: Heidi Niskanen

Content

This course covers the contents of the Survival Finnish course (900017Y) and the Beginners' Finnish 1 course (900013Y).

Do you want to learn Finnish? Start with this course.

During the course, students learn some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation. Students practise to understand easy Finnish discussions about everyday topics and reading and writing short and simple texts/messages (for example an informal email message).

The topics and communicative situations that are covered in the course are the following:

- general information about Finnish language
- some politeness phrases
- numbers
- some time expressions (how to tell and ask the time, days of the week, times of the day)
- talking about oneself, one's family, studies and daily routines, as well as asking about these things from others
- food, drink and transactions in the grocery store
- accommodation and describing it; colours and adjectives.

The structures that are studied are:

- forming simple sentences and questions
- some local cases for answering the 'where'-question
- verb types
- basics of the change of the consonants k, p and t in nouns
- basics of the partitive and genitive cases
- possessive structure.

Student will learn generic skills related to communication, interaction and digital skills as well as international and multicultural skills.

Learning outcomes

By the end of the course, students

- know the basic characteristics of Finnish language and Finnish communication styles
- can understand and use some very familiar and common everyday expressions related to themselves and everyday situations
- can read short and simple texts and messages dealing with familiar topics and can locate informational content in those (for example opening hours, informal email)
- can communicate in easy and routine tasks requiring a simple and direct exchange of information on familiar everyday matters (for example in a grocery store or in a café)
- recognize their own learning strategies and multilingual resources.

Official course record: [YK00AU01](#)

900017Y | Survival Finnish

2 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish, English

Person in charge: Heidi Niskanen

Content

The course Survival and Beginners' Finnish 1 (YK00AU01) covers the contents of this course and is the beginner level Finnish course meant for the degree students.

This introductory course aims to help students to cope with the most common everyday situations in Finnish. During the course, students learn some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation. The topics and communicative situations that are covered in the course are the following: general information about Finnish language, some politeness phrases (how to greet, thank and apologize), introducing oneself, asking about and providing basic personal information, numbers, some time expressions (how to tell and ask the time, days of the week, times of day), food, drink and asking about prices.

The structures that are studied are the personal pronouns and their possessive forms, forming affirmative, negative and interrogative sentences, the conjugation of some verbs, the basics of the partitive singular and some local cases for answering the 'where'-question.

Learning outcomes

By the end of the course, students

- can understand and use some very common everyday expressions and phrases
- can locate informational content in simple texts and messages
- know the basic characteristics of Finnish language and Finnish communication styles.

Official course record: [900017Y](#)

AY900017Y | Survival Finnish Course (OPEN UNI)

2 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish

Content

This introductory course aims to help students to cope with the most common everyday situations in Finnish. During the course, students learn some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation. The topics and communicative situations that are covered in the course are the following: general information about Finnish language, some politeness phrases (how to greet, thank and apologize), introducing oneself, asking about and providing basic personal information, numbers, some time expressions (how to tell and ask the time, days of the week, times of day), food, drink and asking about prices.

The structures that are studied are the personal pronouns and their possessive forms, forming affirmative, negative and interrogative sentences, the conjugation of some verbs, the basics of the partitive singular and some local cases for answering the 'where'-question.

Learning outcomes

By the end of the course, students

- can understand and use some very common everyday expressions and phrases
- can locate informational content in simple texts and messages
- know the basic characteristics of Finnish language and Finnish communication styles.

Official course record: [AY900017Y](#)

HG00AQ84 | Sustainability Communication in Public, Media, Business and Culture

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sandra Reimann

Content

Communication about sustainability is highly relevant to society and takes place with different actors, in a wide variety of media and communication situations, and also with regard to different functions. The course can focus on current areas, e.g. social media communication, didactic-pedagogical literature (e.g. school books) or company-relevant text types, such as sustainability reports. Because the course is (predominantly) self-study, participants can choose their own preferences for the topic of their term paper – preferably with regard to their previous courses. It is important to reflect on a suitable methodology for the chosen subject of investigation. Questions about suggestions for improvement and text optimisation from our scientific point of view can also be discussed after the analysis.

Learning outcomes

Examination of a socially relevant topic, independent and reasoned selection of research material, reflective use of relevant literature and methodology. Knowledge of academic work is required as a basis.

Official course record: [HG00AQ84](#)

HY00AT32 | Sustainable Development in the European Arctic

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

This course explores sustainable development and its different dimensions (historical, economic, social, environmental) in the European Arctic utilizing multidisciplinary approaches. The focus of the course is on communicative and collaborative learning through a combination of lectures, discussions, group work and studying of research literature.

Learning outcomes

Upon completion of the course, students will be able to explain and discuss about topics concerning sustainable development in the context of the European Arctic. Students will be able to apply key concepts and critically evaluate the interrelated and contradictory dimensions of sustainable development. Students will have developed their critical thinking, argumentation, presentation, and collaboration skills.

This course optimally complements the “People and Environment in the European Arctic” course but can be taken independently.

Official course record: [HY00AT32](#)

AY00AG32 | Svensk språk- och samhällshistoria (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

Study of linguistic development from Proto-Norse to Modern Swedish from the perspective of social and cultural history.

Learning outcomes

Upon completing the course, you will have become familiar with the historical background of the Nordic languages (with emphasis on Swedish) as well as the political, societal, and social factors that have had an impact on the development of the Swedish language. You can also describe the relationships between the Nordic languages.

You are aware of the interdisciplinary nature of language studies.

Official course record: [AY00AG32](#)

693690P | Swedish and Finland-Swedish Culture and Society

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

How long was Finland a part of Sweden and what traces can be found from that time? What is characteristic of the culture in today's Sweden? In this course, you will get to know the culture and society in both Sweden and Swedish-speaking Finland!

The societal structures of Sweden and Swedish-speaking Finland are presented through historical, religious, and cultural aspects, among others. Students will also get familiar with Swedish traditions and customs. In addition, the course is connected to actual holidays and events in both Sweden and Swedish-speaking Finland.

Learning outcomes

Upon completing the course, you will have become familiar with the general aspects of culture, society, religion, and history in Sweden and Swedish-speaking Finland. You will also be able to discuss and problematise concepts of Swedish and Finland-Swedish identity as well as historical and contemporary cultural phenomena in Sweden and Swedish-speaking Finland. You will also be able to discuss cultural, religious and social circumstances in present-day Sweden and Swedish Finland from a historical perspective.

You are aware of cultural diversity and cultural differences and respect them.

Official course record: [693690P](#)

AY00AG55 | Swedish culture - not bad! (OPEN UNI)

2 ECTS | Swedish Language | Basic Studies | Finnish, Swedish

Person in charge: Elisa Risto

Content

Refresh and strengthen your Swedish language skills in this culture-themed online course! The course is well suited to support Swedish studies in upper secondary school (lukio), as a training course before student exams or even to prepare for Swedish entrance exams. The course is free and you can complete it at your own pace. Hoppa ombord!

The students practise among other things listening and reading comprehension and vocabulary. The course includes information i.a. about Swedish culture and about Swedish in Finland. The course is in Swedish and includes four sections: Svenskan i Finland (Swedish in Finland), Företagskultur i Sverige och Finland (Corporate culture in Sweden and Finland), Mattraditioner (Food traditions) ja Svensk musik genom tiderna (Swedish music throughout times).

Learning outcomes

The student gets to know the different aspects of Swedish-speaking culture and learns about the contents of the subject of Swedish at the University of Oulu, especially about the cultural theme.

Official course record: [AY00AG55](#)

YK00AU49 | Swedish for dental students, Oral skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

No description supplied in the collected record.

Official course record: [YK00AU49](#)

YK00AU48 | Swedish for dental students, Written skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Esiintymistaidon harjoittelua. Tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia (esim. viestintä hoitotilanteissa) sekä pienryhmäkeskusteluja. Kuuntelutehtäviä. Opiskelijan omia ääni- ja videotiedostoja. Ajankohtaisia oman alan tekstejä harjoituksineen. Erityisalan sanaston ja terminologian opiskelua. Omaan alaan liittyviä kirjoitustehtäviä.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the university.

Official course record: [YK00AU48](#)

901053Y | Swedish for Economics, Oral Skills

3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen, Terhi Ruokanen-Jaakola (hyväksiluvut)

No description supplied in the collected record.

[Official course record: 901053Y](#)

AY901053Y | Swedish for Economics, Oral Skills (OPEN UNI)

3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen

No description supplied in the collected record.

[Official course record: AY901053Y](#)

901052Y | Swedish for Economics, Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen, Terhi Ruokanen-Jaakola (hyväksiluvut)

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Opintojakso sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja, esiintymistaidon harjoittelua sekä yritysvierailuun liittyviä tilanteita. Lisäksi tehdään omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * pystyy toimimaan vuorovaikutteisesti oman alan viestintätilanteissa
- * pystyy keskustelemaan ajankohtaisista alakohtaisista aiheista
- * käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * ymmärtää ja osaa käyttää kauppatieteen ja talouden erikoissanastoa
- * ymmärtää oman alansa tekstejä ja pystyy tekemään niistä johtopäätöksiä sekä välittämään keskeisen tiedon kuulijalle / lukijalle
- * osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- * pystyy kehittämään kielitaitoaan itsenäisesti

Opintojakson suoritettuaan opiskelijan osaaminen vastaa vähintään KoRu-kriteereissä kuvattua taitotasoa B1. Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

[Official course record: 901052Y](#)

AY901052Y | Swedish for Economics, Written Skills (OPEN UNI)

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Emilia Laukkanen

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Opintojakso sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja, esiintymistaidon harjoittelua sekä yritysvierailuun liittyviä tilanteita. Lisäksi tehdään omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija

- * pystyy toimimaan vuorovaikutteisesti oman alan viestintätilanteissa
- * pystyy keskustelemaan ajankohtaisista alakohtaisista aiheista
- * käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- * osaa esittää ja perustella mielipiteitään erilaisissa viestintätilanteissa
- * ymmärtää ja osaa käyttää kauppatieteen ja talouden erikoissanastoa
- * ymmärtää oman alansa tekstejä ja pystyy tekemään niistä johtopäätöksiä sekä välittämään keskeisen tiedon kuulijalle / lukijalle
- * osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- * pystyy kehittämään kielitaitoaan itsenäisesti

Opintojakson suoritettuaan opiskelijan osaaminen vastaa vähintään KoRu-kriteereissä kuvattua taitotasoa B1. Erityishuomio kohdistuu akateemisen ja oman alan käsitteistön ja terminologian hallintaan. Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia.

Official course record: [AY901052Y](#)

YK00AP30 | Swedish for Education Students, Oral Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Kaisu Hoikkala, Emilia Laukkanen

No description supplied in the collected record.

Official course record: [YK00AP30](#)

YK00AP29 | Swedish for Education Students, Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Kaisu Hoikkala, Emilia Laukkanen

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Tilannepohjaisia suullisia yksilö-, pari- ja ryhmäharjoituksia sekä pienryhmäkeskusteluja, ajankohtaisia alakohtaisia tekstejä, omaan alaan liittyviä kirjoitus-, kuuntelu- ja videotehtäviä sekä esiintymistaidon harjoittelua.

Opintojakson sisältö tarkentuu toteutuksen kohderyhmän mukaisesti.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in the Swedish language. There are no beginners' courses in Swedish at the University of Oulu.

Official course record: [YK00AP29](#)

YK00AU47 | Swedish for medical students, Oral skills

2 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

No description supplied in the collected record.

Official course record: [YK00AU47](#)

YK00AU46 | Swedish for medical students, Written skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Anne Saarijärvi

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alan ruotsin kielen taitoa. Esiintymistaidon harjoittelua. Tilannepohjaisia yksilö-, pari- ja ryhmäharjoituksia (esim. viestintä hoitotilanteissa) sekä pienryhmäkeskusteluja. Kuuntelutehtäviä. Opiskelijan omia videotiedostoja. Ajankohtaisia oman alan tekstejä harjoituksineen. Erityisalan sanaston ja terminologian opiskelua. Omaan alaan liittyviä kirjoitustehtäviä.

Learning outcomes [Finnish source]

Opiskelija saavuttaa sellaisen ruotsin kielen taidon, jota tarvitaan oman alan työtehtävissä.

Kurssin suoritettuaan opiskelija

- osaa toimia työelämän tyypillisissä viestintätilanteissa vuorovaikutteisesti (esim. hoitotilanteet)
- käyttää perusrakenteita pääsääntöisesti oikeakielisesti puheessa ja kirjoituksessa.
- käyttää eri viestintätilanteissa tarvittavia tavallisimpia tilannesidonnaisia fraaseja ymmärrettävästi
- osaa käyttää oman alan erikoissanastoa
- pystyy lukemaan oman alansa tekstejä ja löytää niistä ydinajatuksia ja pystyy välittämään tämän tiedon ruotsin kielellä kollegoille tai maallikkoyleisölle
- osaa keskustella ajankohtaisista ja alakohtaisista asioista
- ymmärtää oman alansa puhuttua ja kirjoitettua kieltä
- osaa kirjoittaa työtehtäviinsä liittyviä tekstejä
- osaa suunnitella ja pitää omaan alaan liittyviä esityksiä
- on hankkinut valmiuden kehittää omaa kielitaitoaan autenttisissa kielenkäyttötilanteissa.

Harjoitusten ja tehtävien yhteydessä opiskelija oppii viestintä-, vuorovaikutus- ja kommunikaatiotaitojen ohella myös muita geneerisiä taitoja, kuten esim. digitaalisia valmiuksia, ajanhallintaa, ryhmätyötaitoja sekä tekstien analysointia. Tilannepohjaisten yksilö-, pari- ja ryhmäharjoitusten kautta edistetään sosiaaliseen kanssakäymiseen ja ammatilliseen osaamisen liittyviä kielellisiä taitoja.

Official course record: [YK00AU46](#)

901070Y | Swedish for Psychology Students, Written Skills

1 ECTS | Language studies, Swedish | Language and Communication Studies | Finnish, Swedish

Person in charge: Terhi Ruokanen-Jaakola

Content [Finnish source]

Viestinnällisiä suullisia ja kirjallisia harjoituksia, joiden tarkoituksena on kehittää ja syventää opiskelijan työelämässä tarvitsemaa oman alansa ruotsin kielen taitoa. Opintojakso sisältää tilannepohjaisia pari- ja ryhmäkeskusteluja ja esiintymistaidon harjoittelua. Lisäksi tehdään omaan alaan liittyviä kirjoitus- ja videotehtäviä sekä itsenäisiä tehtäviä.

Learning outcomes

This course is only for Finnish speaking students with CEFR-level A2-B1 in Swedish language. There are no beginners' courses in Swedish at the University of Oulu.

Official course record: [901070Y](#)

693689P | Swedish Grammar I

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Main emphasis on the basics of morphology and syntax

Learning outcomes

Upon completing the course, students will have acquired knowledge of the structure of Swedish and the basic concepts of normative and descriptive grammar.

Official course record: [693689P](#)

693693A | Swedish Grammar II

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Close examination of chosen areas of grammar. The emphasis is on those grammatical constructions which often cause difficulties.

Learning outcomes

Upon completing the course, students will be able to apply grammatical rules and concepts to different kinds of exercise materials, and discuss them.

Students can use grammatical knowledge to find solutions to communication problems, for example by reformulating unclear sentences.

Official course record: [693693A](#)

AY00AG29 | Swedish Grammar II (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Kirsi-Maria Lepistö

Content

Close examination of chosen areas of grammar. The emphasis is on those grammatical constructions which often cause difficulties.

Learning outcomes

Upon completing the course, students will be able to apply grammatical rules and concepts to different kinds of exercise materials, and discuss them.

You can use grammatical knowledge to find solutions to communication problems, for example by reformulating unclear sentences.

Official course record: [AY00AG29](#)

693695A | Swedish Literature

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of the history of Swedish literature, discussion on works of literature.

Learning outcomes

Upon completing the course, students will be able to demonstrate a knowledge of the main aspects in the history of Swedish literature and its representative authors.

They can discuss literary texts analytically and critically, considering both content and form.

[Official course record: 693695A](#)

AY00AG31 | Swedish Literature (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Riitta Kosunen

Content

Study of the history of Swedish literature, discussion on works of literature.

Learning outcomes

Students are familiar with the main themes of Swedish literary history and its representative authors.

They can discuss literary texts analytically and critically, considering both content and form.

[Official course record: AY00AG31](#)

693691P | Swedish Phonetics and Pronunciation

5 ECTS | Swedish Language | Basic Studies | Swedish

Person in charge: Marjo Ohtamaa

Content

How is Swedish pronounced in Sweden and how is it pronounced in Finland? In this course, you will improve your knowledge of Swedish pronunciation. You will also have the chance to improve your own Swedish pronunciation with the help of theory and practical exercises

Systematic study of the sound system and word and sentence prosody of Swedish. Comparisons between Swedish as spoken in Sweden and as spoken in Finland, and transcription exercises. Reading of different kinds of texts with varying levels of difficulty.

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Learning outcomes

Upon completing the course, you will be able to describe the pronunciation of Swedish and its characteristics in relation to the Swedish sound system and word and sentence prosody. You will also be able to identify the most important differences of pronunciation regarding Swedish in Sweden and Finland. In addition, you will be able to read, analyse, and produce simple Swedish transcriptions. You will also be able to produce either the consonant and vowel sounds of Swedish as spoken in Sweden, or those of the Swedish spoken in Finland. In addition, you will be able to accentuate Swedish words, phrases, and sentences according to the recommendations for the chosen pronunciation variant.

You can communicate clearly in Swedish, both verbally and in writing.

[Official course record: 693691P](#)

694940P | Syntax

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Katja Västi

Content

Basic concepts of syntax, as well as syntactic functions and clause types of Finnish; main problematic features of Finnish syntax

Learning outcomes

Students will be able to analyse the syntactic aspects of modern Finnish and present justified arguments about the problematic features of clause structure.

Official course record: 694940P

695263P | Syntax

5 ECTS | General Linguistics | Basic Studies | Finnish

Person in charge: Santeri Palviainen

Content

Basic syntactic concepts and theories

Learning outcomes

Upon completion of the course, students will be able to analyse the syntactic structures of languages and apply the concepts of syntactic theories on novel linguistic data.

Official course record: 695263P

AY694940P | Syntax (OPEN UNI)

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Katja Västi

Content

Basic concepts of syntax, as well as syntactic functions and clause types of Finnish; main problematic features of Finnish syntax

Learning outcomes

Students will be able to analyse the syntactic aspects of modern Finnish and present justified arguments about the problematic features of clause structure.

Official course record: AY694940P

AY00BD08 | Sámegiella nubbin giellan didaktihkka - Didactics of Sámi as a Second Language (OPEN UNI)

2-5 ECTS | Saami Language | Other Studies | Northern Sami

Person in charge: Maren-Elle Länsman

Content

Kurssas oahpásnuvvat didaktihka vuodđodoahpágiidda ja gielaidoahppanteoriijaide ja mo daid heivehit sámegeielaide oahpahussii. Studeanttat oahpásnuvvat gielladiđolašvuhtii, sámiohppiid girjáivuhtii, vugiide oahpahit sátneráju ja grammatihka. Kurssas maid gieđahallat oahpaheaddji rolla ja mat áššiid váikkuhit oahppamii. Kurssas leat prahtihkalaš ovdamearkkat ja materiálat.

The course introduces the basic concepts of didactics and key language learning theories, focusing on their application in Sámi language teaching. Students will explore language awareness, the diversity of Sámi learners, methods for teaching vocabulary and grammar, as well as the teacher's role and factors influencing learning. The course includes practical examples and materials.

Learning outcomes

Kurssa maŋŋá oahppi

- Ipmirda didaktihka vuodđokonseapttaid ja mearkkašumi
- Dovdá guovddáš giellaoahppanteoriijaid ja máhtá heivehit daid iežas oahpahussii
- Mahtá govvidit gielladiđolašvuoda ja sámeohppiid girjáivuoda sámegeiela oahpahusas
- Máhtá govvidit dovdduid, motivašuvnna ja oahpaheaddji rolla sámegeiela oahppamis
- Dovdá ja máhtá válljet didáktalaš strategiijaid/vugiid sátneoahppama ja grammatihka oahpaheapmái
- Dovdá strategiijaid das mo hárbjehallat njálmmálaš giela
- Máhtá heivehit iežas riikka ja oahppofága oahppoplána oahpahusa plánemis ja ollašuhttimis

After the course, the student:

- Understands the basic concepts of didactics and their significance
- Is familiar with key language learning theories and can apply them to their own teaching
- Can describe language awareness and the diversity of Sámi learners in Sámi language instruction
- Can describe emotions', motivation's, and the teacher's role in learning the Sámi language
- Is familiar with and can choose didactic strategies/methods for teaching vocabulary and grammar
- Knows strategies to teach spoken language
- Is able to apply their country's and subject's curriculum in the planning and implementation of teaching

Official course record: [AY00BD08](#)

683708P | Sámi Culture

5 ECTS | Scandinavian Studies | Basic Studies | English

Person in charge: Élise Lépy

Content

In this course, culture is explored in its broad sense, considering traditional and contemporary forms of arts in addition to societal, political, and historical situatedness. The course introduces Sámi history, Sámi arts, cultural expressions, and Sámi languages and livelihoods.

Learning outcomes

The student will be able to identify various aspects of traditional and contemporary Sámi culture. The student will be able to recognize the diversity of Sámi culture and consider regional, linguistic, and cultural differences. The student will be able to identify current debates and phenomena in Sámi society and discuss the Sámi as an indigenous people among other indigenous peoples.

Official course record: [683708P](#)

902062Y | Tandem - English - Finnish

2 ECTS | Language studies, English | Language and Communication Studies | Finnish

Person in charge: Kari-Pekka Kallunki

Content

Useful phrases, vocabulary, pronunciation and a bit of basic grammar related to everyday life. Basic information related to culture, customs and societal functions.

Note: This course requires students to be NATIVE speakers of either English or Finnish.

Learning outcomes

- * To have the chance to get to know the target language and culture under the guidance of a native speaker, as well as improve oral communication. In exchange, the native speaker can share information about his/her own culture and way of life.
- * To use both languages equally so as to offer both language speakers practice in the target language.
- * To increase contacts between Finnish and foreign students.
- * To help foreign students adapt to life in Finland and provide the Finnish students with the opportunity to have cross-cultural contacts.

Official course record: 902062Y

904024Y | Tandem - French - Finnish

2-4 ECTS | Language studies, French | Language and Communication Studies | Finnish, French

Person in charge: Maritta Riekk

Content

- forming of French-Finnish study pairs (or small groups)
- regular meetings on agreed conversation and activity topics
- the students will familiarize themselves on, e.g., working life, studying or hobbies
- the meeting schedules are decided by the students themselves
- each student creates a learning diary and writes a personal reflection at the end of the course
- in addition the course includes four common meetings to which the students will get specific assignments

Learning outcomes

- facilitate intercultural interaction
- improve skills in oral French and Finnish
- encourage students to life-long learning

Official course record: 904024Y

905014Y | Tandem - Italian - Finnish

2 ECTS | Language studies, Italian | Language and Communication Studies | Finnish, Italian, English

Person in charge: Jukka Käräjäoja

Content

Some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation. Characteristics of target society's everyday life and culture.

Learning outcomes

By the end of the course, the student can

- understand and use some very common everyday expressions and phrases
- locate informational content in simple texts and messages
- understand basic characteristics of target country's culture and society.

Official course record: 905014Y

905046Y | Tandem - Japanese - Finnish

2-4 ECTS | Language studies, Japanese | Language and Communication Studies | Finnish, Japanese

Person in charge: Takako Karppinen

Content

The pairs meet on a regular basis each week to discuss pre-arranged topics or study the target language together. The student writes down the session dates and topics. After all sessions the student writes a report (1-2 pages long, with memo of used time) and sends it to the teacher.

Learning outcomes

Learning outcomes:

- To have the chance to get to know the target language and culture under the guidance of a native speaker, as well as improve oral communication.
- In exchange, the native speaker can share information about his/her own language, culture and way of life.
- To use both languages equally so as to offer both language speakers practice in the target language.
- To increase contacts between Finnish and foreign students.
- To help foreign students adapt to life in Finland and provide the Finnish students with the opportunity to have cross-cultural contacts.

[Official course record: 905046Y](#)

900051Y | Tandem Other language - Finnish

2 ECTS | Language studies, Finnish for Foreigners | Language and Communication Studies | Finnish, English

Person in charge: Jukka Käräjäoja

Content

Some useful everyday phrases, some general features of the vocabulary and grammar, and the main principles of pronunciation. Characteristics of target society's everyday life and culture.

Learning outcomes

By the end of the course, the student can

- understand and use some very common everyday expressions and phrases
- locate informational content in simple texts and messages
- understand basic characteristics of target country's culture and society.

[Official course record: 900051Y](#)

HS00AL99 | Teaching and Tutoring Students Learning Finnish

3 ECTS | Finnish as Second and Foreign Language | Basic Studies | Finnish

Person in charge: Sisko Brunni

Content

Language learning and tutoring learners

Learning outcomes

Upon completing the course, students will be able to apply the knowledge acquired in the studies of Finnish in tutoring learners of Finnish. Students will be able to use study materials of the field and will be able to describe the processes of language learning.

[Official course record: HS00AL99](#)

695013A | Teaching materials in Finnish as a second and foreign language

5 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Producing and evaluating learning materials

Learning outcomes

Upon completing the course, students will be able to describe textbook and electronic materials used in teaching. In addition, they will be able to explain why matters are taught in a certain order and will be able to produce learning materials.

[Official course record: 695013A](#)

695018A | Teaching Practice and Teaching Portfolio

10 ECTS | Finnish as Second and Foreign Language | Intermediate Studies | Finnish

Person in charge: Sisko Brunni

Content

Curricula and methods of S2 teaching, various learning environments, learning strategies, learning difficulties, and ethical questions

Learning outcomes

Upon completing the course, students will be able to develop and plan as well as implement S2 teaching for student groups of various levels.

[Official course record: 695018A](#)

900062A | Technical Communication

2-3 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Kaija Oikarainen

Content [Finnish source]

Haluatko erottua asiantuntijana ja menestyä muuttuvassa työelämässä? Tekniikan viestintä -opintojaksolla kehität viestintätaitojasi, jotka ovat välttämättömiä nykypäivän asiantuntijatyössä. Kurssi tarjoaa käytännönläheisiä tehtäviä ja ohjattua itsenäistä työskentelyä, joka ei ole aikaan tai paikkaan sidottua. Hyödynnä mahdollisuus oppia joustavasti verkossa ja varmista, että pysyt viestintäsi avulla kehityksen kärjessä!

Voit itse valita kurssin sisällöt seuraavista: oman osaamisen tunnistaminen ja myyminen, työnhaun tekstit, yhteistyö ja vuorovaikutus, tiedonhankinta ja lähteiden käyttö, tekstin eri vaiheet, asiantuntija sosiaalisessa mediassa, videot ammatillisessa käytössä, verkkotekstit, jännittäminen sosiaalisissa tilanteissa, ristiriitatilanteet ja ongelmanratkaisu.

Learning outcomes [Finnish source]

Opintojaksolla tavoitteena on kehittää opiskelussa ja työelämässä tarvittavien tekstitaitojen lisäksi viestintä-, vuorovaikutus- ja yhteistyötaitoja, oman asiantuntijuuden tunnistamista ja kokonaisuuksien hallintaa.

Opintojakson jälkeen opiskelija osaa

- * hakea tietoa itsenäisesti ja arvioida tietoa analyttisesti ja kriittisesti
- * soveltaa vaikuttamisen tapoja viestinnässään
- * määritellä omat asiantuntijan vahvuutensa ja kehittymisen kohteensa viestintä- ja vuorovaikutusosaamisessa
- * rakentaa toimivan tekstin.

Geneeristen taitojen näkökulmasta opiskelija osaa toimia vastuullisesti ja rakentavasti erilaisissa viestintätilanteissa, arvioida ja hyödyntää tietoa kriittisesti ja luovasti sekä tuottaa kohderyhmälle vaikuttavaa sisältöä tarkoituksenmukaisia digitaalisia ja vuorovaikutusosaamisen keinoja käyttäen.

Opintojaksolla korostetaan muun muassa seuraavia geneerisiä taitoja, joita opiskelija hyödyntää oppimisessaan ja kurssitavoitteiden saavuttamisessa:

- * Itsensä johtaminen, hyvinvointi ja asiantuntijaksi kasvu
- * Vaikuttava viestintä ja selkeä vuorovaikutus
- * Tiedon arviointi ja tarkoituksenmukainen soveltaminen
- * Digitaalinen lukutaito ja tekoälyn vastuullinen käyttö

Official course record: [900062A](#)

HP00BA80 | Ter Saami

5 ECTS | Skolt Saami | Advanced Studies | Sami, Finnish

Person in charge: Miika Lehtinen, Eino Koponen

Content

Collections of written and audio recordings of Ter Saami. The phonological and morphological differences between Ter Saami and other Saami languages, especially North Saami. Studying selected samples of Ter Saami written and audio recordings with the help of the dictionaries "Koltan- ja kuolanlapin sanakirja" by T. I. Itkonen and "Kuollan lapin murteiden sanakirja ynnä kielennäyteitä" by Arvid Genetz, translations of the samples into Finnish and other languages, and other available resources. Details of the history of Ter Saami.

Learning outcomes

After completing the course, the student is aware of the existing language samples of Ter Saami. The student can use the dictionary of Skolt and Kola Saami (Koltan- ja kuolanlapin sanakirja) by T. I. Itkonen to find Ter Saami words. The student understands written Ter Saami samples with the help of dictionaries and other materials, and understands Ter Saami audio recordings to some extent. The student knows the most prominent phonological and morphological differences between Ter Saami and another Saami language. The student can compare the words in the Ter Saami text to cognates in this other Saami language.

Official course record: [HP00BA80](#)

693494S | Text Analysis and Discourse Analysis

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Sandra Reimann

Content

Starting from the question of what a text is, we deal with the possibilities of appropriate linguistic text analysis and treat above all varieties of used texts in the context of their conditions of origin. Hypertexts and the characteristics of newer media in general are also topical and an exciting field of investigation. Reflection on texts can also help to promote text production competence. The second part will focus on conversations and discourse.

Learning outcomes

Students will be able to conduct analyses of (selected) texts, conversations, discourses. They learn to understand how communication works (context, communication participants, assignment to text types). Methodologically, the main part of the course will focus primarily on a text-grammatical model that students will be expected to apply to texts independently during the course. Among other things, the model is very well suited for identifying themes from a wide variety of texts.

[Official course record: 6934945](#)

693477A | Text Genres in Business Communication

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Sandra Reimann

Content

Analysis of selected text types in the field of business and corporate communication, e.g. also newer text types such as newsletters, homepage texts, blog posts, Instagram posts. The main focus is on functions, communication situations and target groups. Guest lectures with speakers from business practice are planned, so that a bridge between theory and professional life can also be established. Text production is also a topic.

Learning outcomes

Upon completion of the course, students will be able to analyse general text types in the fields of economics and commerce. They will also be able to compare and analyse German and Finnish texts of these topic areas.

[Official course record: 693477A](#)

694941P | Text Linguistics

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Maija Saviniemi

Content

genre, discourse and ideology, analysis of texts, the basics of critical reading

Learning outcomes

You will recognize the key concepts of textual analysis and be able to apply them to the analysis of different types of texts. You will be able to analyze text samples linguistically from the perspective of textual analysis.

In addition, you will practice the following generic skills:

Analytical, critical and creative thinking skills

You will analyze information, justify your opinions, and conceptualize and define entities. You will learn to distinguish between essential and non-essential information, recognize power relations, and reflect on what you have learned.

You will practice applying the content covered to everyday life and working life.

You will develop multiliteracies and a critical approach to examining texts.

Well-being and self-development skills

You will practice self-management by taking responsibility for your own actions on the course and paying attention to realistic time management between work, study, and leisure time.

You will pay attention to your well-being by developing your self-compassion and your ability to tolerate controlled discomfort.

You will reflect on the course content in relation to your professional identity and learn to recognize your strengths and weaknesses.

Communication, interaction and digital skills

You practice clear and concise expression, both verbally and in writing.

You develop your listening and discussion skills as well as your cooperation and teamwork skills.

You deepen your media and digital skills.

[Official course record: 694941P](#)

AY694941P | Text Linguistics (OPEN UNI)

5 ECTS | Finnish Language | Basic Studies | Finnish

Person in charge: Maija Saviniemi

Content

genre, discourse and ideology, analysis of texts, the basics of critical reading

Learning outcomes

You will recognize the key concepts of textual analysis and be able to apply them to the analysis of different types of texts. You will be able to analyze text samples linguistically from the perspective of textual analysis.

In addition, you will practice the following generic skills:

Analytical, critical and creative thinking skills

You will analyze information, justify your opinions, and conceptualize and define entities. You will learn to distinguish between essential and non-essential information, recognize power relations, and reflect on what you have learned.

You will practice applying the content covered to everyday life and working life.

You will develop multiliteracies and a critical approach to examining texts.

Well-being and self-development skills

You will practice self-management by taking responsibility for your own actions on the course and paying attention to realistic time management between work, study, and leisure time.

You will pay attention to your well-being by developing your self-compassion and your ability to tolerate controlled discomfort.

You will reflect on the course content in relation to your professional identity and learn to recognize your strengths and weaknesses.

Communication, interaction and digital skills

You practice clear and concise expression, both verbally and in writing.

You develop your listening and discussion skills as well as your cooperation and teamwork skills.

You deepen your media and digital skills.

Official course record: [AY694941P](#)

682389A | The Fundamentals of Poetry

5 ECTS | English | Intermediate Studies | English

Person in charge: Juha-Pekka Alarauhio

Content

This course offers students a broad introduction to English-language poetry. It will offer both a historical survey of the development of English language poetry, and training in the formal or structural analysis of individual poems. Student will be exposed to a range of theories regarding the form and function of poetry, and study relevant socio-historical contexts that can help to shape readings of individual poems from the 16th through the 21st centuries.

Learning outcomes

Upon completion the student should be able to:

- display knowledge of various formal features of poetic style (verse form, meter, diction, syntax, etc.) and apply this knowledge to the interpretation of individual poems
- identify major developments in the history of English-language poetry
- relate individual poems to broader socio-historical developments and contexts, and/or to particular theoretical perspectives
- present persuasive readings of poetic works linking formal features and poetic themes to a range of socio-historical and theoretical perspectives

Students develop analytical, critical, and creative thinking skills by learning to make evidence based inferences, examine materials in close detail, and apply analytical tools in inventive ways relevant to the course topic. The course also supports well being and self development skills as students practice distancing themselves from their own work, making constructive use of feedback. In addition, students enhance their international and multicultural competencies by reflecting on their thoughts, emotions, and actions in global contexts and by developing discipline specific language skills. Finally, they advance their communication, interaction, and digital skills by expressing ideas clearly and concisely and by learning effective strategies for accessing and working with challenging texts.

[Official course record: 682389A](#)

HM00AS76 | The History of the Saami People

5 ECTS | Saami Culture | Basic Studies |

Person in charge: Marko Jousté

Content

The course covers fundamental historical information on the origins of the Sámi people, the development of their livelihoods, culture, and society, and their role as active creators of their own history.

Learning outcomes

After completing the course, the student will:

- Understand the main features of the historical phases of the Sámi people.
- Be able to distinguish between prehistoric and historical periods.
- Recognize and explain the connections between Sámi history and broader historical processes.
- Be able to describe the role of the Sámi people as active agents in shaping their own history.

[Official course record: HM00AS76](#)

HS00AU30 | The Language, History, and Significance of the Kalevala

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Niina Kunnas

Content

The course familiarizes the student with the content, origins, and predecessors of the Kalevala. During the course, students will explore the folk poetry known in the Baltic-Finnic region, the rune singers and rune areas, Lönnrot's poetry collection journeys, and the history of the Kalevala's creation. Additionally, the course delves into the language of the Kalevala and teaches students to analyze the stylistic devices of Kalevala-meter poetry.

Learning outcomes

The student understands the content and creation process of the Kalevala, its impact on the Finnish language and culture, as well as the Kalevala's predecessors and its connections to international epics and myths. The student knows the basics of the Kalevala meter and the stylistic devices of Kalevala-meter poetry.

Upon completion of the course, students will have developed the following generic competences:

- 1) Analytical, critical and creative thinking skills (including the ability to analyse information and identify essential elements)
- 2) Well-being and self-development skills (effective time management, self-leadership, competence in community engagement and social interaction)
- 3) Communication, interaction and digital skills (encompassing listening and conversational skills, collaboration and teamwork abilities, presentation skills, media and digital literacy, artificial intelligence competencies).

[Official course record: HS00AU30](#)

682370S | The Modern Language Teacher

5 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen

Content

Students will explore aspects of language teaching as a complex phenomenon and their role as change agents in the field, especially after graduation. The students will get acquainted with trends and visions of the future and consider how they should develop their professional expertise further to anticipate the emerging needs of language education and to take an active role in its development.

Learning outcomes

Upon completion of the course students will be able to

- display an understanding of the complexity of the language teacher's profession today and in the future
- display their growing agency as professionals in language education
- display their capacity to develop their professional expertise and agency as modern language teachers of the future

Generic skills

The core generic skills developed during the course are skills in well-being and self-development: the portfolio work engaged in throughout the course supports the development of students' professional expertise and agency in response to the continuously changing societal needs. The evaluation of contemporary topics on language learning and teaching, and a small-scale multidisciplinary learning project carried out in small groups advance skills in interdisciplinarity and multidisciplinary, in communication and interaction, and in analytical, critical and creative thinking.

[Official course record: 682370S](#)

683505P | The Prehistory and the History of the Saami People

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Marko Jouste

Content

Examining archaeological and historical fundamentals and conceptions concerning the developments in the fields of livelihoods and society of the Saami; studying the origins of the Saami and the role of the Saami people in the production of their own history

Learning outcomes

After completing the course, students will be able to define the main features of the prehistory of the Saami people. In addition, students will be able to describe and explain developments in the history of the Saami people.

Official course record: [683505P](#)

683374P | The Saami Society and its Rights

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Sigga-Marja Magga

Content

Studying the Saami people as social actors; examining societal institutions of the Saami as well as their construction; introduction to the legal rights of the Saami people in the Nordic countries and Russia

Learning outcomes

Upon completion of the course, students will be able to describe the current society of the Saami. In addition, students will be able to examine in an evaluative way the social standing and rights of the Saami people in different countries.

Official course record: [683374P](#)

HM00AS77 | The Saami Society and its Rights

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Tiina Magga

Content

The societal activities of the Sámi as well as societal institutions and their construction will be presented. Introduction to the legal status of the Sámi in the Nordic countries and Russia.

Learning outcomes

After completing the course, the student:

- can describe Sámi society
- understands the social status and rights of the Sámi in different nation-states
- outlines the societal activities and institutions of the Sámi

Official course record: [HM00AS77](#)

682437S | The study of professional discourse

5 ECTS | English | Advanced Studies | English

Person in charge: Tiina Räisänen

Content

Discussion and application of conceptual frameworks and methods for studying professional discourse in various working life settings (e.g., ethnography, sociolinguistics, discourse analysis, computer-supported collaborative work); getting to know the job market; workplace visit

Learning outcomes

Upon completion of the course, the students will be able to

- display an understanding of different approaches, concepts and methods in the study of professional discourse in various working life contexts
- discuss and differentiate key theoretical and conceptual frameworks in the study of professional discourse
- apply appropriate concepts and methods in analyzing professional discourse in selected working life settings
- increasing knowledge on the job market and ways to profile oneself
- reflect on how they may use such tools and skills in their future work

The course develops students' analytical and critical thinking through the application of conceptual and methodological tools for studying professional discourse. Self-development and wellbeing skills are strengthened through reflective tasks and engagement with working-life expectations. Students enhance their international and multicultural competence by working with authentic data from diverse professional contexts. The course promotes ethical and responsible communication practices and supports multidisciplinary thinking through drawing on different research approaches. Communication, interaction, and digital skills are advanced through collaborative group work, use of digital platforms, and a workplace visit connecting academic insights to professional practice.

Official course record: [6824375](#)

694947A | Theories and Methods of Fennistics

5 ECTS | Finnish Language | Intermediate Studies | Finnish

Person in charge: Jari Sivonen

Content

Main theories and methods of Fennistics in the Finnish Language programme

Learning outcomes

Students will be able to use the concepts of Fennistic research properly. In addition, students will be able to use and apply the learned theories and methods to their own research.

Generic Skills

After completing the course, the student has:

- analytical, critical, and creative thinking skills (the ability to analyze information and identify what is essential)
- well-being and self-development skills
- time management, self-leadership, and the ability to take responsibility for one's actions and well-being
- communication, interaction, and digital skills (listening and conversational skills, collaboration and teamwork skills, presentation skills, and competencies in artificial intelligence)

Official course record: [694947A](#)

694956S | Thesis Seminar (Finnish Language)

10 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content

Planning and writing a Master's Thesis (Pro Gradu Thesis)

Learning outcomes

Students will be able to analyse the previous research in their field of study. Students will be able to critically evaluate the theoretical and methodological source literature for their theses, and utilise it in the context of their own research. Students will be able to comment on previous and contemporary research and scientific discourse. Students will be able to produce and evaluate new research by utilising a chosen theoretical and methodological approach and research data.

Upon completion of the course, students will have developed the following generic competences:

1) Analytical, critical, and creative thinking skills (including the ability to analyse information and identify essential elements, examination of research methods, sources, and findings, advanced argumentation skills, evaluation of arguments, drawing well-founded conclusions, problem identification and formulation, and critical assessment of sources), 2) Well-being and self-development skills (effective time management, maintaining a sustainable balance between professional duties, academic commitments, and personal well-being, self-leadership, personal goals and strategies, self-reflection, ability to take responsibility for one's actions and well-being, emotional intelligence, tolerance of uncertainty and discomfort, self-compassion, and development of professional identity), 3) Sustainability, responsibility and ethics skills (including compliance with principles of good scientific practice), 4) Communication, interaction and digital skills (clear and concise academic expression, listening and conversational skills, collaboration and teamwork abilities, presentation skills, and competencies in artificial intelligence).

[Official course record: 694956S](#)

682396A | Topics in Language Education

2-10 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Keisanen

Content

Introduction to, or more in-depth treatment of, some special area or field of study within language education. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within language education.

[Official course record: 682396A](#)

682410S | Topics in Language Education

2-10 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen

Content

Introduction to, or more in-depth treatment of, some special area or field of study within language education. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within language education.

[Official course record: 682410S](#)

AY00BD23 | Topics in Language Education (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

This is an intermediate course worth 5 credits. The course provides an introduction to research methods and data elicitation techniques used in second language acquisition (SLA) research with an emphasis on methods that students could use in their BA theses. The main assignment is to design a study, and you are encouraged to design a project you could carry out for your BA thesis. Students will also learn to read the most common statistical descriptions and tests used in SLA research and be able to describe the findings using everyday language.

Learning outcomes

Upon completion of the course, the student will be able to:

- Demonstrate familiarity with a variety of SLA data collection techniques and analysis
- Understand how and why research findings can be interpreted in more than one way
- Understand how research methodologies impact upon what can be known
- Demonstrate comprehension of the main statistical descriptions and tests used in SLA research
- Design a research project using at least one of the methods outlined
- identify a problem and think systemically about possible solutions
- demonstrate good self-management skills including time management skills
- appreciate knowledge formation and approaches from different disciplines.

Official course record: [AY00BD23](#)

682398A | Topics in Language Work

2-10 ECTS | English | Intermediate Studies | English

Person in charge: Pentti Haddington

Content

Introduction to, or more in-depth treatment of, some special area or field of study in the area of language work. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course, students are able to demonstrate learning of some area of language work.

Official course record: [682398A](#)

682412S | Topics in Language Work

2-10 ECTS | English | Advanced Studies | English

Person in charge: Pentti Haddington

Content

In-depth treatment of some special area or field of study in the area of language work. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course students are able to demonstrate learning of some area of language work.

Official course record: [682412S](#)

682337S | Topics in Linguistics

2-10 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen

Content

In-depth treatment of some special area or field of study within linguistics. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within linguistics.

[Official course record: 682337S](#)

682444A | Topics in Linguistics

2-10 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Keisanen

Content

In-depth treatment of some special area or field of study within linguistics. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within linguistics.

[Official course record: 682444A](#)

AY00BD24 | Topics in Linguistics (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The course explores the many ways in which English is present in Finland. It involves the reading of scholarly studies and the completion of small studies. These will help students to familiarise themselves with how English is used in Finland, as well as to focus on specific themes related to the course theme. These concern, for example, how English is present in Finnish interactions, education, literature, music, films, TV, media, sports, social media, hobbies, or video or online games.

Learning outcomes

This course examines the role and uses of English in Finland from various perspectives in language studies. After completing the course, students will be able to demonstrate familiarity with the ways in which English, as a global language, is present in Finland—for example, in interaction, culture, education, the linguistic landscape, public signage, the internet, and social media. They will be able to recognise and explain how English is visible and represented in Finnish media, how people incorporate English into their own speech, how English enters everyday life in Finland, and how it is used in various discursive and social contexts. Students will also be able to explain how English influences culture(s), Finnish and other languages spoken in Finland, and how English and Finnish (as well as other local languages) coexist and function side by side.

[Official course record: AY00BD24](#)

682397A | Topics in Literature and Culture

2-10 ECTS | English | Intermediate Studies | English

Person in charge: Tiina Keisanen, Hanne Juntunen

Content

Introduction to, or more in-depth treatment of, some special area or field of study within literature and culture. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within literature or culture.

[Official course record: 682397A](#)

682411S | Topics in Literature and Culture

2-10 ECTS | English | Advanced Studies | English

Person in charge: Tiina Keisanen, Hanne Juntunen

Content

Introduction to, or more in-depth treatment of, some special area or field of study within literature and culture. The course is offered by visiting lecturers or on a one-off basis.

Learning outcomes

Upon completion of the course the students display awareness of a special area or field of study within literature and culture.

[Official course record: 682411S](#)

AY00AG27 | Topics in Literature and Culture (OPEN UNI)

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The course provides an introduction to the role of communication in politics. We will examine historic and modern examples of political messages, including political speeches, debates, advertisement, social media and news. The primary focus will be on American politics and the 2026 United States midterm elections.

Learning outcomes

Upon completion of the course, the students

- understand the nature of political communication and its role in politics,
- are familiar with the techniques of political rhetoric and persuasion,
- are able to critically analyse historic and current political messaging

[Official course record: AY00AG27](#)

901028Y | Toward Proficiency

1-3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish, Finnish

Person in charge: Liisa Niemi

Content [Finnish source]

Yleisruotsin sanasto- ja rakenneharjoituksia. Tarkemmat ohjeet ohjaavalta opettajalta.

Learning outcomes [Finnish source]

På väg-opintojaksolla opiskelija kertaa keskeisimmät ruotsin kielen rakenteet ja perussanastoa. Tavoitteena on saavuttaa riittävä osaaminen, jotta opiskelija suoriutuu oman tutkinto-ohjelman toisen kotimaisen kielen kurssista. Oman ryhmän ruotsin kurssin opettaja ohjaa opintoihin lähtötasotestin tuloksen perusteella.

AY901028Y | Toward Proficiency (OPEN UNI)

1-3 ECTS | Language studies, Swedish | Language and Communication Studies | Swedish

Person in charge: Minna-Mari Kemppainen

Content [Finnish source]

Yleisruotsin sanasto- ja rakenneharjoituksia. Tarkemmat ohjeet ohjaavalta opettajalta.

Learning outcomes [Finnish source]

På väg -itseohjautuvalla opintojaksolla opiskelija kertaa keskeisimmät ruotsin kielen rakenteet ja kertaa perussanastoa. Tavoitteena on saavuttaa riittävä taso, jotta suoriutuu oman tutkinto-ohjelman varsinaisesta toisen kotimaisen kielen kurssista. Oman ryhmän ruotsin kurssin opettaja ohjaa opintoihin.

Official course record: AY901028Y

682441S | Translating Fiction

5 ECTS | English | Advanced Studies | English

Person in charge: Andrew Pattison

Content

The course focuses on translating short works of fiction from Finnish into English. Over the duration of the course, the students collaborate to produce suitable translations of agreed upon works. The works of fiction will be collectively and closely analyzed in class, genre and inherent challenges will be noted, and the merits of various translation solutions will be examined.

Learning outcomes

Upon completion of the course, the student should:

- be able to translate moderately difficult works of fiction from Finnish into English
- have an understanding of the typical challenges inherent in translating a specific literary genre
- be able to work on translations as a project in a collaborative environment
- have the ability to analyse works of fiction for the purposes of translation

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Intercultural and Multicultural Experiences

Official course record: 682441S

682394A | Translating into English

5 ECTS | English | Intermediate Studies | English, Finnish

Person in charge: Andrew Pattison

Content

The course focuses on translating moderately difficult texts chosen to highlight contrasts in the linguistic structures and culture-specific vocabularies of Finnish and English. The students gain experience via evaluating and discussing student-produced translations. A number of specific text genres will be introduced, translated independently, and the merits of the student's translation discussed in class. The course involves independent reading on translation theory and practice.

Learning outcomes

Upon completion of the course, the student should:

- be able to translate moderately difficult texts from Finnish into English
- have an understanding of the cultural and linguistic challenges inherent in translating between the Finnish and English language systems
- display an awareness of the challenges of translating different text genres
- have a basic understanding of the theory and practice of translation (e.g. sense for sense)

The course involves a number of generic skills, notably Analytical, Critical and Creative Thinking & Intercultural and Multicultural Experiences

[Official course record: 682394A](#)

682395A | Translating into Finnish

5 ECTS | English | Intermediate Studies | English

Person in charge: Mirka Rauniomaa

Content

The course focuses on linguistic and cultural perspectives to translating from English into Finnish. The students gain experience in translating, in the joint evaluation and discussion of translations, in the critical use of translation resources and tools as well as in project management.

Learning outcomes

Upon completion of the course, the student will

- be able to translate texts of varying style and difficulty from English into Finnish,
- be able to seek solutions to different linguistic and cultural challenges when translating,
- have an understanding of the use of various resources and tools in translation,
- recognise the importance of following general recommendations and guidelines on the Finnish language in finalising translations
- and have a developing understanding of translating as a professional task.

Moreover, the student will have developed their analytical, critical and creative thinking skills; international and multicultural skills; sustainability, responsibility and ethical skills as well as well-being and self-development skills.

[Official course record: 682395A](#)

693694A | Translation

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Riitta Kosunen

Content

Translation exercises with emphasis on translation from Finnish into Swedish

Learning outcomes

You can translate texts from various subject areas between Finnish and Swedish.

You can use language tools appropriately and responsibly in translation.

You can collaborate constructively in a group.

You can analyze and discuss translations critically.

You can monitor your own linguistic development and learn from past mistakes and successes.

[Official course record: 693694A](#)

HG00BB94 | Translation

5 ECTS | German Language and Culture | Intermediate Studies | German, Finnish

Person in charge: Sabine Grasz

Content

Models and processes of translation and inter-/multilingual mediation, raising awareness of approaches to German-Finnish-German translation. Analysis of translations.

Learning outcomes

Students are familiar with key translation theories and key aspects of the translation process and inter- and multilingual mediation. They can analyse texts from various genres (primarily non-fiction and technical texts, but also literary texts) and translate them into Finnish. Students are familiar with the key concepts and theoretical foundations of translation and are able to analyse translations in terms of their adequacy. They are familiar with ways in which the subject of translation can be approached academically.

[Official course record: HG00BB94](#)

AY00AG30 | Translation (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Riitta Kosunen

Content

Translation exercises with emphasis on translation from Finnish into Swedish.

Learning outcomes

You can translate texts from various subject areas between Finnish and Swedish.
You can use language tools appropriately and responsibly in translation.
You can collaborate constructively in a group.
You can analyze and discuss translations critically.
You can monitor your own linguistic development and learn from past mistakes and successes.

[Official course record: AY00AG30](#)

HG00AQ83 | Translation and Interculturality

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Anniina Havela

Content

The course deals with translation as a form of intercultural communication. In addition to basic concepts such as culture, communication, interculturality, multiculturalism and transculturality, it also covers the cultural specificity of verbalisation strategies and technical translation. Theoretical approaches and practical examples are used to address issues of translatability.

Learning outcomes

Students can analyse communication in intercultural and transcultural situations. They recognise possible sources of communication and translation problems and can use various translation strategies to solve translation problems.
Students can analyse and combine information. They are able to critically evaluate their learning and learning processes. They can create their own schedule to complete the required tasks within the specified time frame.

[Official course record: HG00AQ83](#)

HR00AP39 | Translation Finnish-French

3 ECTS | French Language | Basic Studies | French, Finnish

Person in charge: Xavier Martin

Content

Translation exercises from French to Finnish and from Finnish to French.

Learning outcomes

Students will have the ability to fluently translate French texts into good Finnish. The students will also have broadened their passive vocabulary. The students will understand and recognise the special characteristics of translating different kinds of texts into French.

[Official course record: HR00AP39](#)

HR00AP38 | Translation French-Finnish

2 ECTS | French Language | Basic Studies | French, Finnish

Person in charge: Maritta Riekkö

Content

Translation exercises from French to Finnish and from Finnish to French.

Learning outcomes

Students will have the ability to fluently translate French texts into good Finnish. The students will activate and broaden their passive vocabulary. The students will understand and recognise the special characteristics of translating different kinds of texts into French.

[Official course record: HR00AP38](#)

683522P | Translation I

5 ECTS | Saami Language | Basic Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Various kinds of translation exercises independently and in group

Learning outcomes

After completing the course, students will be able to translate various kinds of texts into North Saami. In addition, students will familiarise themselves with AV translation.

[Official course record: 683522P](#)

683523A | Translation II

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Translation exercises with texts representing various genres independently or in group; writing, correcting, commenting on, evaluating and comparing translations

Learning outcomes

After completing the course, students will be able to translate demanding texts into North Saami. In addition, students will be able to analyse critically the language used in translated texts.

Official course record: [683523A](#)

HP00AK92 | Translation of Skolt Saami

5 ECTS | Skolt Saami | Advanced Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

The course begins with theoretic lectures about general translation theory, special aspects of translation from Finnish to Skolt Saami and using dictionaries, online dictionary, grammatical analyzer and machine translation in translation tasks. After that, the students practice translating texts of different genres (e.g. magazine articles, educational material, novel excerpts, audiovisual material, administration texts) from Finnish (or other languages) to Skolt Saami, and assess each other's works and the language used in them.

Learning outcomes

The student knows the general principles of translation and can apply them in translating different types of texts from Finnish (or upon special agreement from other languages) to Skolt Saami. The student can make use of language technology in translations, and on the other hand knows how not to use it.

Official course record: [HP00AK92](#)

694966S | Valinnaisia opintojaksoja 3

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content [Finnish source]

vaihtelee kursseittain

Learning outcomes [Finnish source]

Opiskelija syventää ja täydentää pakollisilla opintojaksoilla omaksumiaan taitoja.

Official course record: [694966S](#)

694967S | Valinnaisia opintojaksoja 4

5 ECTS | Finnish Language | Advanced Studies | Finnish

Person in charge: Jari Sivonen

Content [Finnish source]

vaihtelee kursseittain

Learning outcomes [Finnish source]

Opiskelija syventää ja täydentää pakollisilla opintojaksoilla omaksumiaan taitoja.

Official course record: [694967S](#)

HP00AK89 | Vocabulary of Skolt Saami

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

The course begins with lectures on the essence and significance of word and vocabulary. The bulk of the course consists of practical exercises. The students read Skolt Saami literature according to prior agreement and each student will do a detailed vocabulary list of a range of pages assigned to him/her and present the list to the other students. The course also includes analyzing spoken language with the help of archive material.

Learning outcomes

The student increases his/her vocabulary and expressive ability e.g. by reading fiction texts and analyzing them from the perspective of vocabulary. The student collects the new words and expressions in a personal word list and can actively use the list to develop his/her proficiency in Skolt Saami. The student is able to critically evaluate knowledge in their own field and apply it to solving complex and unpredictable problems. The student is able to describe their own competence and develop their proficiency in the Skolt Saami language. The student is able to develop their communication and interaction skills.

[Official course record: HP00AK89](#)

693499A | Wissenschaftliche Kommunikation

5 ECTS | German Language and Culture | Intermediate Studies | German

Person in charge: Satu Selkälä, Anniina Havela

Content

Rules of academic writing and speaking. Oral presentations.

Learning outcomes

The students know the written and oral formulation methods in scientific communication in German. They can paraphrase content, cite sources, convey arguments and structure texts logically. They can read texts critically and express their reasoned opinions in scientific discussions.

[Official course record: 693499A](#)

683520P | Word Formation

5 ECTS | Saami Language | Basic Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Word formation in the context of grammar; describing word formation; methods of word formation in North Saami; exercises concerning word derivation

Learning outcomes

Upon completion, students will have a command of the word formation in North Saami on both theoretical and practical levels. Students will be able to derive and compound words, as well as describe the methods of word formation in North Saami. Students will be able to utilise fundamental source literature.

[Official course record: 683520P](#)

HR00AQ87 | Word Formation and Name Studies

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

A review of the principles of word analysis, compound words, derivations, and some modern tendencies in word formation. Additionally, a discussion on language care perspectives. Lastly, an overview of sources and methods within Nordic onomastics.

Learning outcomes

The students are familiar with the terminology, principles, and types of Swedish word formation. They can apply the principles of Swedish word formation to linguistic material. Additionally, the students will know the main sources and methods of Nordic (Swedish) onomastics.

The students are aware of the interdisciplinary nature of language studies.

[Official course record: HR00AQ87](#)

AY00AZ85 | Word Formation and Name Studies (OPEN UNI)

5 ECTS | Swedish Language | Intermediate Studies | Swedish

Person in charge: Paula Rossi

Content

A review of the principles of word analysis, compound words, derivations, and some modern tendencies in word formation. Additionally, a discussion on language care perspectives. Lastly, an overview of sources and methods within Nordic onomastics.

Learning outcomes

The students are familiar with the terminology, principles, and types of Swedish word formation. They can apply the principles of Swedish word formation to linguistic material. Additionally, the students are knowledgeable about the main sources and methods in Nordic (Swedish) onomastics.

[Official course record: AY00AZ85](#)

682304S | Work Practice

5 ECTS | English | Advanced Studies | English

Person in charge: Andrew Pattison

Content

Student acquires experience of language-related work. The work practice comprises a minimum of 4-week full-time work period in which the student participates in work life in Finland or abroad. Evidence of the work's relevance to the student's studies in the unit of English required.

Learning outcomes

After completing the work practice, students are able to assess and describe how their theoretical and practical skills, knowledge and interests as language experts can be used and applied in work life. The students are also able to verbalise how they have developed as language experts during the work practice period.

The course involves generic skills according to the nature of the work involved.

[Official course record: 682304S](#)

683421A | Work Practice

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Ante Aikio

Content

Students will work with tasks that require Saami language skills. Students are responsible for finding a suitable place of employment. It may also be located abroad.

Learning outcomes

Students will familiarise themselves with working life and its requirements in a working environment with Saami as its language.

[Official course record: 683421A](#)

693419S | Work Practice

5 ECTS | German Language and Culture | Advanced Studies | German

Person in charge: Satu Selkälä

Content

Students will apply the acquired knowledge of their major and/or minors in practice, for example, by working in Finland or abroad, in assignments related to their studies, by participating in conferences and reporting on them or writing publications.

Learning outcomes

Upon completion of the course, students acquire practical knowledge in various fields (business, public sector). They learn to recognise the key factors for their own well-being and self-management. They develop their professional identity, learn to describe their skills and recognise the need for lifelong learning. Students are able to work in multidisciplinary and interprofessional teams and appreciate the expertise of different fields.

[Official course record: 693419S](#)

900086Y | Working Life Communication

5 ECTS | Language studies, Finnish | Language and Communication Studies | Finnish

Person in charge: Kaija Oikarainen

Content

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Learning outcomes

This course is not offered in English. It is only Finnish-speaking students (CEFR level C1).

[Official course record: 900086Y](#)

683506P | World Views and Arts of the Saami People

5 ECTS | Saami Culture | Basic Studies | Finnish

Person in charge: Marko Jouste

Content

Introduction to the origins of the world view of the Saami from shamanism to oral tradition and the traditional Saami singing, yoiking; introduction to the basis and diversity of the modern literature, visual arts, cinema and theatre of the Saami

Learning outcomes

After completing the course, students will be able to describe and explain the central traditions in the spiritual and other nonmaterial culture of the Saami, as well as current world views and arts of the Saami.

[Official course record: 683506P](#)

683521P | Writing I

5 ECTS | Saami Language | Basic Studies | Sami

Person in charge: Kaarina Vuolab-Lohi

Content

Writing, analysing, commenting on and evaluation of various kinds of texts

Learning outcomes

After completing the course, students will have a good command of the orthography in North Saami. Students will be familiar with different text genres as well as their features. Students will be able to plan their writing process and produce various kinds of texts. Students will be able to critically evaluate text produced by themselves as well as by others. Students will be able to evaluate the content, structure, purpose and legibility of texts.

[Official course record: 683521P](#)

683525A | Writing II

5 ECTS | Saami Language | Intermediate Studies | Finnish, Sami

Person in charge: Ante Aikio

Content

Written exercises on demanding texts; analysing, commenting on and evaluating texts

Learning outcomes

Upon completion of the course, students will have a wide and multifaceted understanding of non-fiction text types and their characteristics. They will be able to form, analyse and produce demanding texts. Students will be able to solve problems concerning terminology and other special issues.

[Official course record: 683525A](#)

HR00AQ01 | Written Communication 1

5 ECTS | French Language | Basic Studies | French

Person in charge: Xavier Martin

Content

Writing reports and summarizing various journal articles. Versatile analysis of texts.

Learning outcomes

The students can write a clear text. The students understand the differences in text structures in different types of current publications, especially in newspapers and periodicals. The students are able to analyze and refer to the texts they read. They learn to assess the reliability of information and identify important news.

[Official course record: HR00AQ01](#)

HR00AQ03 | Written Communication 2

5 ECTS | French Language | Intermediate Studies | French

Person in charge: Xavier Martin

Content

Newspapers' big news and their evaluation in terms of the significance and authenticity of the texts. Referencing and summarizing texts and reformatting them.

Learning outcomes

Students know how to use information from printed media. They recognize the peculiarities of the French press. You learn to classify information in order of importance and to evaluate the trustworthiness of the information. Students know how to report news and tell the main content of texts. Students' vocabulary increases and their ability to argue develops. Students' academic writing skills develop.

[Official course record: HR00AQ03](#)

683663P | Written Use of Inari Saami I

5 ECTS | Inari Saami | Basic Studies | Sami, Finnish

Person in charge: Mervi Sistonen

Content

Practicing the writing conventions of Inari Saami through writing and transcribing; writing simple stories and expository texts

Learning outcomes

Upon completion of the course, students will be able to master the orthography, structure and different styles of Inari Saami, and will be able to write relatively simple texts in Inari Saami.

[Official course record: 683663P](#)

683667A | Written Use of Inari Saami II

5 ECTS | Inari Saami | Intermediate Studies | Sami

Person in charge: Marja-Liisa Olthuis

Content

Written assignments pertaining to different genres of texts and short translation exercises from Finnish to Inari Saami.

Learning outcomes

Upon completion of the course, the student is familiar with Inari Saami literature and genres of texts and genres. The student can write fluent Inari Saami and correct his texts based on comments. The student knows how to use the proofreading program to check their own texts and knows the limitations of the proofreading program. The student can produce news texts and factual articles in Inari Saami.

[Official course record: 683667A](#)

HP00AK84 | Written use of Skolt Saami I

5 ECTS | Skolt Saami | Basic Studies | Finnish, Sami

Person in charge: Markus Juutinen

Content

Practicing Skolt Saami orthography by writing and transcribing audio recordings; spelling issues, e.g. using the so called separation mark ' and the hyphen; reading easy stories and texts, writing simple stories and non-fiction texts.

Learning outcomes

The student masters the orthography and structure of Skolt Saami and can write relatively easy texts in Skolt Saami. The student knows the central language technological tools (digital dictionary, spell checker) and can use them to facilitate his/her writing. The student is able to develop their communication and interaction skills. The student is able to use digital pedagogical tools relevant to Skolt Saami studies in an appropriate, safe, and responsible manner.

[Official course record: HP00AK84](#)

HP00AK90 | Written use of Skolt Saami II

5 ECTS | Skolt Saami | Intermediate Studies | Finnish, Sami

Person in charge: Miika Lehtinen

Content

The course begins with theoretic lectures about different genres of texts, writing non-fiction texts, special matters of Skolt Saami writing and the use of the Skolt Saami spell checker. The students then practice writing texts of different genres (news text, column, literature review, opinion piece, letter, summary etc.) and evaluate each other's texts and their language. The students familiarize themselves with the differences between spoken and written language by transcribing samples of spoken language.

Learning outcomes

The student is familiar with the genres of literary language and is able to produce different types of texts in Skolt Saami. The student masters the norms of the Skolt Saami standard language and can write grammatically correct language. The student can use the Skolt Saami spell checker in writing tasks.

[Official course record: HP00AK90](#)

683402P | Written use of the North Saami language

5 ECTS | Saami as Foreign Language | Basic Studies | Finnish, Sami

Person in charge: Anna-Liisa Väyrynen

Content

During the course, students will write translations and short texts in North Saami.

Learning outcomes

Students will recall what they have learned in the basic and advanced courses and apply them to their written assignments. Upon completion of the course, students will be in good command of the basic grammar of North Saami and will be able to write different types of texts.

[Official course record: 683402P](#)

AY00BD10 | Čálamáhtu oahpaheapmi - Teaching Literacy Skills (OPEN UNI)

5 ECTS | Saami Language | Other Studies | Northern Sami

Person in charge: Maren-Elle Länsman

Content

Guovddáš sisdoallu

- Nuppi giela (L2) didaktikalaš prinsihpat
- Sámegiella nubbin giellan ja árbegiellan ja dan erenoamáš dárbbut
- Lohkama ja čállima teorehtalaš mállet (Reading Rope, Writing Rope)
- Teknihkalaš lohkandáiddu ovdáneapmi ja automatiseren
- Giellaipmárdus ja oppalaš giellamáhttu – máhtuid ja strategijaid nanosmahttin
- Čállinmáhtu didaktihka ja ovdamearkkat
- Lohkan- ja čállinprošeavttat oahpahusas
- Giellateknologija oassin čálamáhtu oahpaheami
- Sátneohppan, manne ja mo dan ovddidit
- Sátnegirjijt ja giellateknologalaš reaidut oassin čálamáhtu oahpaheamis

Course content:

- Didactic principles of second language (L2) learning
- Sámi as a second language and as a heritage language, and the specific needs related to these
- Theoretical models of reading and writing (Reading Rope, Writing Rope)
- Development and automatization of technical reading skills
- Language comprehension and general language proficiency – strengthening skills and strategies
- Didactics of writing and practical examples
- Reading and writing processes in teaching
- The role of language technology in learning to write
- Learning vocabulary, how and how to promote it
- Dictionaries and language technology tools as part of reading and writing instruction

Learning outcomes

Kurssa čadaheami maŋŋá studeanta

- Dovdá nuppi giela (L2) čálamáhtu didaktihka guovddáš teorijaid ja dutkanbohtosiid sámegiela geahčanguovllus
- Dovdá sámegiela ohppiid erenoamáš dárbbuid lohkama ja čállima oahppamis
- Máhtta govvidit lohkama ja čállima oahppama teorehtalaš málliid (Reading Rope ja Writing Rope)
- Máhtta govvidit teknihkalaš lohkandáiddu ovdáneami
- Máhtta govvidit mii lea oppalaš giellamáhttu ja makkár áššit dasa gullet
- Máhtta plánat guhkit lohkan- ja čállinprošeavttaid oahpahussii
- Máhtta geavahit giellateknologalaš reaiduid oahpaheaddji resursan
- Máhtta geavahit giellateknologalaš reaiduid oahpahusas

After completing the course, the student

- Understands key theories and research findings on the didactics of writing in a second language (L2) within the context of the Sámi language
- Recognizes the specific needs of learners of Sámi in acquiring reading and writing skills
- Can describe theoretical models of reading and writing development (Reading Rope and Writing Rope)
- Can explain the development of technical reading skills
- Can explain what general language proficiency means and what components it includes
- Can plan extensive reading and writing projects for teaching
- Knows how to use language technology tools as a resource for teachers
- Knows how to use language technology tools in teaching

Official course record: AY00BD10

Mathematics & statistics

806119P | A Second Course in Statistics

5 ECTS | Statistics | Basic Studies | Finnish

Person in charge: Jari Pääkkilä

Content

- skills for performing statistical analyses and inferences on the basis of data obtained in common experimental and observational studies are expanded and deepened
- statistical literacy of scientific articles with quantitative methods

Learning outcomes

Upon successful completion of the course, the student will be able to

- analyze continuous and categorical response variables in the most common experimental and observational studies
- critically evaluate scientific articles
- implement and interpret analyses of different areas of application using statistical software

[Official course record: 806119P](#)

802673S | Additive Combinatorics

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ville Suomala

Content

Roth's theorem on arithmetic progressions, Freiman's theorem, Balogh-Szemerédi-Gowers theorem. Applications of additive combinatorics.

Learning outcomes

Upon completion of the course, the students:

- Are familiar with the basic methods of additive combinatorics (sumset estimates, discrete Fourier transform etc.)
- Is familiar with Roth's theorem, Freiman's Theorem, Balogh-Szemerédi-Gowers theorem and knows the main ideas in the proofs
- Is able to apply these results

[Official course record: 802673S](#)

802308A | Algebra

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Kari Myllylä

Content

The course introduces algebraic structures, such as groups, subgroups, rings, subrings, ideals, integral domains, fields and finite fields. The course gives an understanding of algebraic terms and concepts used in mathematics.

Learning outcomes

After completing the course, student is able to:

- derive and proof main results in the course
- use and apply different proof techniques
- recognize algebraic structures and the concepts
- see connections and differences between different algebraic structures
- apply algebraic methods to scientific and practical problems

Official course record: [802308A](#)

NM00BD56 | Algebra 1

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Kari Myllylä

Content

The course includes basics in algebraic structures, such as

- groups, subgroups, normal subgroups, factor groups and isomorphisms
- Residual class groups, Matrix groups, Permutation groups

The course gives an understanding of algebraic terms and concepts used in mathematics and physics.

Learning outcomes

After completing the course, student is able to:

- derive and proof main results in the course
- use and apply different proof techniques
- recognize algebraic structures and the concepts
- see connections and differences between different algebraic structures
- Ability to think analytically, critically and creatively is developed

Official course record: [NM00BD56](#)

NM00BD57 | Algebra 2

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Kari Myllylä

Content

The course includes basics in algebraic structures, such as

- rings, subrings, ideals, integral domains, fields and finite fields
- polynomials, polynomial rings, division algorithm and greatest common factor.

The course gives an understanding of algebraic terms and concepts used in mathematics and physics.

Learning outcomes

After completing the course, student is able to:

- derive and proof main results in the course
- use and apply different proof techniques
- recognize algebraic structures and the concepts
- see connections and differences between different algebraic structures
- ability to think analytically, critically and creatively is developed

Official course record: [NM00BD57](#)

NM00BD54 | Analysis 1

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Esa Järvenpää

Content

Completeness of the real numbers via supremum and infimum, density of rationals, precise definition of the limit of a sequence and Cauchy sequences, Bolzano-Weierstrass theorem for sequences, basic topology, precise definition of the continuity and limit of a function, Bolzano's theorem and Weierstrass' minimum-maximum theorem.

Learning outcomes

In the course, the students are introduced to mathematics as written and spoken language. Special emphasis is in the role of proof in mathematics. The goal is to study the structure of the real axis, understand the precise definitions of a limit and continuity on the real line and explore the properties implied by these.

Generic skills: analytical, critical and creative thinking, well-being and self-development, responsibility and ethics and communication and interaction.

Official course record: [NM00BD54](#)

NM00BD55 | Analysis 2

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Esa Järvenpää

Content

The definition of the derivative, derivative of an inverse function and chain rule, Rolle's Theorem and Mean Value Theorem, extremal points, monotonicity, step functions and Riemann integrability, uniform continuity, Fundamental Theorem of Calculus, exponential function and logarithms, integration technique.

Learning outcomes

In the course, the students continue the introduction to mathematics as a written and spoken language. Special emphasis is in the role of proof in mathematics. The goal is to understand the precise definitions of derivative and integral, learn to justify the connections between the properties of a derivative and the behaviour of a function and figure out integral as an area and the inverse operation of derivation.

Generic skills: analytical, critical and creative thinking, well-being and self-development, responsibility and ethics and communication and interaction.

Official course record: [NM00BD55](#)

AY802136P | Basics of Cryptography (OPEN UNI)

2 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Marko Leinonen

Content

The course considers some traditional symmetric key methods.

Learning outcomes

After completing the course, student- knows the principles of some traditional symmetric key methods - is familiar with the possibility to use and apply number theory in cryptography

Official course record: [AY802136P](#)

805313A | Bayesian analysis

5 ECTS | Statistics | Intermediate Studies | Finnish

Content [Finnish source]

Bayes päättely, konjugaattinen prior, informatiivisuus, normalisoiva tekijä / Bayes faktori, MCMC. Kurssin sisältö kattaa Bayes analyysin keskeisimmät periaatteet ja tärkeimmät käsitteet ja tulkinnot sekä arvioidaan priorijakauman vaikutusta ja merkitystä posteriorille. Kyseistä analyysikehikkoa tarkastellaan ja vertaillaan perinteiseen frekventistiseen analyysiin nähden. Käydään läpi erilaisten priorijakaumien ominaisuudet ja siihen liittyvät käsitteet. Tällaisia ovat mm. epäinformatiivinen, voimakas, rajoittava, proper ja improper priorit, pessimistinen ja optimistinen, sekä konjugaattinen priorijakauma. Myös eksperttimuotoisen tiedon keräämistä ja muuttamista jakaumamuotoon tarkastellaan. Kurssilla tutustutaan hierarkiseen mallinnukseen ja malliparametrien yhteispriorin faktorointiin eli sen osittamiseen toisistaan ehdollisesti riippumattomiin osiin. Parametrien estimointi suoritetaan simulaatiomenetelmiä kuten Markovin ketju pohjaisia Monte Carlo menetelmiä käyttämällä. Näillä menetelmillä voidaan tuottaa otos halutusta posteriorijakaumasta.

Harjoituksissa tutustutaan mallinnustyökaluihin kuten OpenBUGS, STAN ja Python kirjasto PyMC3. Näistä opiskelijat valmistelevat toisilleen ryhmätyö-muotoisia esityksiä.

Learning outcomes [Finnish source]

Kurssin onnistuneen suorittamisen jälkeen opiskelija osaa kuvata Bayes analyysin periaatteet ja tunnistaa pääpiirteet joissa Bayes päättely eroaa perinteisestä uskottavuuspäätelystä. Hän myös ymmärtää posteriorijakauman tulkinnot ja osaa arvioida priorijakauman vaikutusta ja merkitystä posteriorille sekä tuntee posteriori prediktivisen jakauman ja Bayes faktorin käytön. Harjoituksissa tutustutaan mallinnustyökaluihin kuten OpenBUGS, STAN ja Python kirjasto PyMC3. Näistä opiskelijat valmistelevat toisilleen ryhmätyö-muotoisia esityksiä.

Official course record: 805313A

805665S | Bayesian analysis

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää

Content

Bayesian inference, conjugate priors, informativeness, normalizing factor / Bayes factor, MCMC. The course covers main contents and concepts of Bayesian analysis as well as how they should be interpreted. We learn to evaluate & dissect the influence of the prior distribution from the posterior. During the course we present many concepts and inference tools in Bayesian analysis in the light on how they differ from corresponding inference tools of classic (frequentist) statistical analysis. Here, especially, interpretational differences are important and focused. We cover the properties of most typical prior distributions and concepts associated to them. These are, for example, non-informative, strong, restrictive, proper and improper priors, pessimistic and optimistic as well as conjugate prior distributions. Also, we learn how the elicitation of expert knowledge into the form of prior distribution is working. We become familiar with hierarchical modeling and factorization of the joint prior into the conditionally independent parts. The parameters estimation (in Bayesian models) is performed using simulation methods such as Markov chain Monte Carlo (MCMC) methods. Using these methods, we can generate a sample from the posterior distribution. In exercise sessions, we familiarize ourselves to MCMC software tools such as OpenBUGS, STAN, Nimble, JAGS and Python-library PyMC3. From these, students will prepare group-presentations to each others.

Learning outcomes

After successful completion of the course, a student is eligible to describe general principles of Bayesian analysis and recognises main points where Bayesian analysis and inference differs from classic (frequentist) statistical inference. He understands how posterior distribution can be interpreted and could evaluate & dissect the influence of the prior distribution from the posterior. He knows what is a posterior predictive distribution and how Bayes factor can be used. In exercise sessions, we familiarize ourselves to Bayesian modeling tools such as OpenBUGS, STAN, Nimble, JAGS and Python-library PyMC3. From these, students will prepare group-presentations to each others.

031010P | Calculus I

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Pauliina Uusitalo

Content

- Inequalities and absolute value
- Vector algebra and analytic geometry
- Concept of the function and elementary functions
- Monotonicity of the function, the inverse function
- Limits
- Derivative as limit value of the difference quotient. Derivatives of elementary functions
- The extreme values of a function
- Parameter representation of the curve, polar coordinates, complex numbers
- Integral function and definite integral, applications
- Integration by parts, substitution method and integration of rational functions

Learning outcomes

After completing the course the student

- knows how to solve inequalities and equations with absolute value
- identifies the concepts of vector algebra
- can use vector algebra for solving the problems of analytic geometry
- can explain basic characteristics of elementary functions
- can analyze the limit and the continuity of the real valued functions of one variable
- can analyze the local minima and maxima of a function
- knows how to find the derivative for a function given with parametric representation
- can evaluate the basic calculation of the complex numbers and can rewrite a complex number in its exponential form
- knows the connection between the integral and area
- knows integral techniques such as integration by parts, a substitution method and a partial fraction composition
- can solve problems associated with the differential and integral calculus of the real valued functions of one variable.

Official course record: 031010P

AY031010P | Calculus I (OPEN UNI)

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Pauliina Uusitalo

Content

- Inequalities and absolute value
- Vector algebra and analytic geometry
- Concept of the function and elementary functions
- Monotonicity of the function, the inverse function
- Limits
- Derivative as limit value of the difference quotient. Derivatives of elementary functions
- The extreme values of a function
- Parameter representation of the curve, polar coordinates, complex numbers
- Integral function and definite integral, applications
- Integration by parts, substitution method and integration of rational functions

Learning outcomes

After completing the course the student

- knows how to solve inequalities and equations with absolute value
- identifies the concepts of vector algebra
- can use vector algebra for solving the problems of analytic geometry
- can explain basic characteristics of elementary functions
- can analyze the limit and the continuity of the real valued functions of one variable
- can analyze the local minima and maxima of a function
- knows how to find the derivative for a function given with parametric representation
- can evaluate the basic calculation of the complex numbers and can rewrite a complex number in its exponential form
- knows the connection between the integral and area
- knows integral techniques such as integration by parts, a substitution method and a partial fraction composition
- can solve problems associated with the differential and integral calculus of the real valued functions of one variable.

Official course record: AY031010P

031075P | Calculus II

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Pauliina Uusitalo

Content

- * Sequences, series, power series, Taylor and Fourier series
- * Directional derivative, extreme values of a real-valued function of two variables, constrained extreme values
- * Integration over the planar region and the body
- * Integration using polar, cylindrical and spherical coordinates
- * Vector-valued functions of several variables, divergence, curl
- * Line integral, Green's and Stokes theorems
- * Surface integral, flux, divergence theorem

Learning outcomes

After completing the course the student is able to

- * examine the convergence of series
- * apply power series in calculations
- * determine the Taylor polynomials for simple functions
- * form Fourier series in simple cases
- * study the behaviour of a function of two real variables and calculate the extreme values
- * calculate the integral over the planar region and the body
- * describe bodies in polar, cylindrical and spherical coordinates and integrate using them as an aid
- * investigate the properties of vector-valued functions, such as divergence and curl
- * calculate line integral, surface integral and vector field flux
- * apply Green's and Stokes' theorem

Official course record: 031075P

AY031075P | Calculus II (OPEN UNI)

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Pauliina Uusitalo

Content

- * Sequences, series, power series, Taylor and Fourier series
- * Directional derivative, extreme values of a real-valued function of two variables, constrained extreme values
- * Integration over the planar region and the body
- * Integration using polar, cylindrical and spherical coordinates
- * Vector-valued functions of several variables, divergence, curl
- * Line integral, Green's and Stokes theorems
- * Surface integral, flux, divergence theorem

Learning outcomes

After completing the course the student is able to

- * examine the convergence of series
- * apply power series in calculations
- * determine the Taylor polynomials for simple functions
- * form Fourier series in simple cases
- * study the behaviour of a function of two real variables and calculate the extreme values
- * calculate the integral over the planar region and the body
- * describe bodies in polar, cylindrical and spherical coordinates and integrate using them as an aid
- * investigate the properties of vector-valued functions, such as divergence and curl
- * calculate line integral, surface integral and vector field flux
- * apply Green's and Stokes' theorem

Official course record: [AY031075P](#)

NM00BE04 | Careers in Mathematics or Data Science

2 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Piia Haapsaari

Content

The course covers the following themes:

- working life and career fields of mathematics and data science
- typical work environments and professional roles of mathematicians and data scientists
- core skills and competences developed through studies in mathematics and data science
- working life case studies: how mathematicians and data scientists approach problem solving
- analysis of job advertisements and identification of mathematical competences
- reflection on personal interests and the creation of an initial career profile
- learning tasks based on alumni stories and working-life interviews

Learning outcomes

After completing the course, the student will

- identify key career paths and job roles related to degrees in mathematics and data science
- understand how mathematics and data science are applied in working life across different fields
- be able to articulate the skills developed through studies in mathematics and data science in work-related contexts (e.g. job applications, internships, CVs)
- understand the typical problem-solving processes and ways of thinking used by mathematicians and data scientists
- gain an initial insight into discipline-specific working life skills at an early stage of the studies

Official course record: [NM00BE04](#)

031077P | Complex analysis

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Jukka Kemppainen

Content

Complex numbers and functions, complex derivative and analyticity, complex series, Cauchy's integral theorem, Laurent and Taylor expansions, theory of residues, applications to signal analysis.

Learning outcomes

After completing the course the student

- .knows the basic properties of complex numbers and complex functions
- can calculate the derivative and the integral of functions of complex variable
- understands the concept of analyticity
- can calculate the Taylor and Laurent series representation for elementary functions in different domains
- can calculate the contour integrals and using the theory of residues for computing the line integrals
- will be able to apply the techniques of complex analysis to simple problems in signal processing

Official course record: [031077P](#)

NM00AR97 | Complex Analysis

10 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Antti Käenmäki

Content

Complex plane, Möbius map, analytic map, Cauchy's theorem, integral formula and Taylor series, singularity points of analytic maps, Casorati-Weierstrass theorem, residue theorem and the argument principle, Rouché's theorem, conformal map and Laurent series.

Learning outcomes

Upon completing the course the student

- understands what is the complex plane
- masters the connection between power series and analytic functions
- understands the concepts of the winding number and simply connectedness
- is able to deduce and apply the Cauchy integral formula and the residue theorem
- masters the basic properties of conformal maps
- masters Laurent series
- is able to perform slightly more advanced applications in complex analysis

Official course record: [NM00AR97](#)

802661S | Computational Inverse Problems

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Babak Maboudi Afkham

Content

- Multivariate Gaussian random variables
- Gaussian covariance operators and Karhunen-Loève expansion
- Bayesian formulation of inverse problems: prior, likelihood, and posterior distributions
- Introduction to continuous (infinite-dimensional) inverse problems
- Maximum a posteriori (MAP) estimation
- Markov chain Monte Carlo methods, including the Metropolis-Hastings algorithm
- Hamiltonian Monte Carlo (HMC) methods
- Introduction to Bayesian optimal experimental design

Learning outcomes

Upon successful completion of this course, students will be able to:

- Formulate inverse problems within a rigorous statistical framework.
- Select and justify appropriate Bayesian prior models for both discrete and infinite-dimensional unknown parameters.
- Distinguish between and implement sampling strategies suitable for linear and nonlinear inverse problems.
- Generate discrete samples from posterior distributions using Markov chain Monte Carlo (MCMC) methods.
- Assess the quality and convergence of posterior samples in approximating the target distribution.
- Summarize, visualize, and interpret uncertainty for posterior distributions using key statistical summaries, including posterior mean, maximum a posteriori (MAP) estimates, posterior standard deviation, and credibility intervals.

[Official course record: 802661S](#)

802655S | Continued Fractions

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Marko Leinonen

Content

We start our lectures by considering b-base expansions and simple continued fraction expansions of real numbers. The properties of these expansions like - terminating, non-terminating, irrationality, periodicity, approximation properties will be studied.

Next we investigate general continued fractions with corresponding recurrences and transformations. A particular attention is paid for convergence and irrationality criteria. Further, expansions of hypergeometric series are presented which imply expansions to well-known Napier's constant and pi.

The research will be directed to more general irrationality questions and Diophantine equations, too.

Learning outcomes

We start our lectures by considering b-base expansions and simple continued fraction expansions of real numbers. The properties of these expansions like -terminating, non-terminating, irrationality, periodicity, approximation properties will be studied.

Next we investigate general continued fractions with corresponding recurrences and transformations. A particular attention is paid for convergence and irrationality criteria. Further, expansions of hypergeometric series are presented which imply expansions to well-known Napier's constant and pi.

The research will be directed to more general irrationality questions and Diophantine equations, too.

[Official course record: 802655S](#)

801698S | Cryptography

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Marko Leinonen

Content

Primality testing, Pollard's p-1 factorization method, Shanks's Babystep-Giantstep algorithm, The index calculus method for computing discrete logarithms, Pollard rho method, The Pohlig-Hellman algorithm, Elliptic curves and cryptography (Diffie-Hellman, ElGamal, Menezes-Vanstone, Lenstra), Lattices and cryptography (GGH, NTRU), Digital signatures.

Learning outcomes

After passing the course the student is able to use:

- primality testing
- algorithms for solving discrete logarithm
- elliptic curves on cryptography
- lattices on cryptography
- digital signatures

[Official course record: 8016985](#)

NM00AR40 | Data analysis Master's thesis

30 ECTS | Applied Mathematics | Advanced Studies | Finnish

Person in charge: Juan Galarza Pavia

Learning outcomes

The student will explore his/her personal interest within data analysis and identify potential topics of interest. The supervisor can assist in narrow down potential topics based on data availability, time frame, and resources available. The student will then conduct a thorough literature review to understand the current state of the chosen area of interest, identify gaps in knowledge and propose research questions or hypotheses that will be addressed in the thesis.

[Official course record: NM00AR40](#)

802303A | Derivative and Integral

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Esa Järvenpää

Content

The definition of the derivative, derivative of an inverse function and chain rule, Rolle's Theorem and Mean Value Theorem, extremal points, monotonicity, step functions and Riemann integrability, uniform continuity, Fundamental Theorem of Calculus, exponential function and logarithms, integration technique.

Learning outcomes

In the course, the students continue the introduction to mathematics as a written and spoken language. Special emphasis is in the role of proof in mathematics. The goal is to understand the precise definitions of derivative and integral, learn to justify the connections between the properties of a derivative and the behaviour of a function and figure out integral as an area and the inverse operation of derivation.

Generic skills: analytical, critical and creative thinking, well-being and self-development, responsibility and ethics and communication and interaction.

[Official course record: 802303A](#)

800101P | Differential Calculus

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Pekka Salmi

Content

The course covers differential calculus and its applications starting from the basics. We also define and study elementary functions: trigonometric functions and their inverses as well as exponential and logarithmic functions. The concept of limit is approached computationally rather than rigorously but is illustrated in various ways. The derivative and its applications can be examined more precisely using limits. A key focus is the use of derivatives in analyzing the behavior of functions. Applications of derivatives covered in the course include optimization problems, L'Hôpital's rule, and approximation of functions using Taylor polynomials.

Learning outcomes

Upon successful completion of the course, the student

- knows elementary functions and can operate with them
- can calculate limits of functions
- can calculate derivatives without technical devices
- study functions using their derivatives
- can make mathematical deductions based on the results of the course
- can apply differential calculus to a variety of problems.

Official course record: 800101P

800103P | Differential Calculus of Several Variables

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Ilkka Launonen

Content

Essential concepts are vector, dot product, cross product, matrix, vector-valued function, curve, function of several variables, limits and continuity of functions of several variables, partial derivative, gradient, directional derivative. Differential calculus of several variables is applied in particular to extreme value problems.

Learning outcomes

After successfully completing the course the student can:

- operate with vectors and matrices,
- use vector-valued functions and parametrized curves and calculate their derivatives,
- use functions of several variables: describe their behavior and calculate limits,
- calculate and use derivatives of functions of several variables: partial derivative, gradient, directional derivative.

Official course record: 800103P

031076P | Differential Equations

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Teemu Tyni

Content

First order differential equations and their solution methods. Linear differential equations of higher order. Laplace transform and its use for solving differential equations. Systems of differential equations of first order.

Learning outcomes

After completing the course, the student

- can apply differential equations as a mathematical model.
- can identify and solve various differential equations and have knowledge on basic solvability of differential equations.
- can use the Laplace transform as a solution method.

[Official course record: 031076P](#)

AY031076P | Differential Equations (OPEN UNI)

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Teemu Tyni

Content

First order differential equations and their solution methods. Linear differential equations of higher order. Laplace transform and its use for solving differential equations. Systems of differential equations of first order.

Learning outcomes

After completing the course, the student

- can apply differential equations as a mathematical model.
- can identify and solve various differential equations and have knowledge on basic solvability of differential equations.
- can use the Laplace transform as a solution method.

[Official course record: AY031076P](#)

802664S | Differential geometry

10 ECTS | Mathematics | Advanced Studies | English

Person in charge: Esa Järvenpää

Content

Manifolds, vector fields, tensor fields and differential forms.

Learning outcomes

After completing the course successfully, students know the basic concepts of differential geometry and masters differential calculus on manifolds.

[Official course record: 802664S](#)

800695J | Doctoral Thesis in Mathematics

0 ECTS | Mathematics | Post-graduate Studies | Finnish

Person in charge: Aulikki Herneoja

No description supplied in the collected record.

[Official course record: 800695J](#)

802649S | Dynamical systems

10 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Esa Järvenpää

Content

Examples and basic concepts, topological dynamics, symbolic dynamics and ergodic theory.

Learning outcomes

After the completion of the course the students know the basic concepts in dynamical systems and master the basic results and techniques in this field.

[Official course record: 802649S](#)

805350A | Estimation and Test Theory

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Statistical model and observational data; construction and properties of point estimators and confidence intervals; likelihood ratio, score and Wald test statistics and their asymptotic sampling distribution; jackknife and bootstrap methods; use of R environment in inferential problems.

Learning outcomes

After successful completion of the course the student can describe the basic principles of frequentist inference, compute point and interval estimates, test statistics and P-values based on likelihood function of models with few parameters, and interpret results thus obtained.

[Official course record: 805350A](#)

NM00AS33 | Estimation of networks and graphical structures

5 ECTS | Statistics | Advanced Studies | Finnish, English

Person in charge: Markku Kuismin

Content

The course introduces some of the most important methods developed for estimating network structures and demonstrates how various types of data can be represented using networks and how results can be presented with tools available in R. More specifically, the course includes:

- basics of undirected networks
- Gaussian graphical models
- Partial correlation
- graphical lasso
- graphical model selection
- Weighted Correlation Network Analysis
- community detection
- joint graphical lasso
- bayesian formulation of network inference
- mixed graphical models
- gaussian graphical models with latent confounders

Learning outcomes

After completing the course, the student will be able to:

- demonstrate in-depth knowledge of the key algorithms and principles of network structure estimation, and understand the strengths and weaknesses of the methods in different situations
- apply and evaluate the suitability of essential statistical software tools for real data examples;
- apply creative thinking and problem-solving in their work to develop new knowledge and new procedures;
- analyze arguments and argue appropriately;
- critically evaluate knowledge in their field and apply it to solve complex and unpredictable problems.

[Official course record: NM00AS33](#)

802357A | Euclidean Spaces

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Markus Myllyoja

Content

Sequences, continuity and limit of a vector valued function, basic topological concepts

Learning outcomes

After passing the course the student:

- will be able to define basic topological concepts
- will be able to handle sequences
- will be able to justify basic properties of continuous vector valued functions

[Official course record: 802357A](#)

802677S | Fourier analysis of measures

5 ECTS | Mathematics | | English

Person in charge: Meng Wu

Content

We will first recall some basic notion from classical Fourier analysis, after that we will concentrate on Fourier transform of probability measures. The emphasis will be put on decay property of Fourier coefficients of singular Cantor measures. We will present applications of the Fourier decay property to the study of geometric structure of measures from fractal geometry and dynamical systems.

Learning outcomes

Upon completion of the course, the student will be able to know basic properties of Fourier transforms of some classical fractal measures and see various applications of Fourier analysis in the study of geometric structure of fractal sets and measures.

[Official course record: 802677S](#)

802650S | Fractal Geometry

10 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Esa Järvenpää

Content

Fractals are irregular sets having varying structure at all scales. Fractal geometry is a branch of mathematics where geometric properties of fractals are studied. Fractal are used in various fields of mathematics as well as in applications. The course concentrates on basic tools of fractal geometry including different concepts of dimension.

Learning outcomes

After passing the course the student:

- is able to use the central methods in fractal geometry
- can determine different dimensions
- knows the basic properties of dimensions

[Official course record: 802650S](#)

802674S | Fractal Geometry 2

10 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Esa Järvenpää

Content

- Fourier transform
- typical and exceptional projections
- general intersections
- Besicovitch sets
- random covering sets
- visible parts

Learning outcomes

Upon completion of the course, the student will be able to:

- use Fourier analytic methods in fractal geometry problems
- is familiar with several main research lines in fractal geometry
- use a great variety of methods used in fractal geometry

Generic skills: analytical, critical and creative thinking, well-being and self-development, internationality, responsibility and ethics and communication and interaction.

[Official course record: 802674S](#)

802670S | Functional Analysis

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Aleksi Pyörälä

Content

Linear spaces of infinite dimension, Banach and Hilbert spaces, quotient spaces, continuous linear mappings, orthonormal bases and Fourier series. As an example of a Hilbert space we discuss the L^2 -space of functions.

Learning outcomes

Upon completing the course the student masters the basic structure of Banach and Hilbert spaces.

[Official course record: 802670S](#)

NM00BD52 | Functions

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Pekka Salmi

Content

Set-theoretic notation, the general concept of a function, injection, surjection, bijection, the order of the real numbers, inequalities, monotonicity, approximation, even and odd functions, polynomials, rational functions, root functions.

Learning outcomes

A student who has completed the course is able to

- use set-theoretic notation
- explain the basic concepts related to functions, such as monotonicity, bijectivity and composition of functions
- examine the basic properties of functions
- work with polynomials, rational functions, and root functions
- make simple mathematical deductions related to functions and sets
- use approximation as a tool

[Official course record: NM00BD52](#)

802102P | Functions and Approximation

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Pekka Salmi, Ville Suomala

Content

Injective, surjective, and bijective function, inverse function and function composition, finite set, power functions and rational exponents, polynomials, exponentiation and logarithms, trigonometric functions, absolute value and triangle inequality, complex plane and arithmetic of complex numbers, polar coordinates.

Learning outcomes

In the course, the student learns the fundamental concepts of functions, understands when the inverse function exists, and becomes familiar with the most common elementary functions, the student also learns how to solve equations and inequalities, understands the concept of distance, and gets to know the complex plane.

[Official course record: 802102P](#)

NM00BD53 | Functions of Several Variables

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Mahmoud Filali

Content

The course covers differential and integral calculus of functions of several variables. Key concepts include partial derivatives, gradient, divergence, curl, vector fields, line integrals, and multiple integrals. The course also introduces integral theorems related to functions of several variables.

Learning outcomes

After successfully completing the course the student can

- operate with functions of several variables
- calculate and use various derivatives associated with functions of several variables: partial derivative, gradient, divergence, curl
- use and study vector fields
- calculate multiple integrals and line integrals.

[Official course record: NM00BD53](#)

NM00AL75 | Game Theory

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ville Suomala

Content

Basics of Game Theory: combinatorial games, zero-sum games, value, strategies. Key results such as Nash's theorem. Perfect information games. Random games.

Learning outcomes

After completing the course the students have acquainted basic understanding of Game Theory and its applications.

[Official course record: NM00AL75](#)

805352A | Generalized Linear Models

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Course includes for example

- Models for binary outcome and for count data (for example Poisson regression).
- Models with more than two outcome classes with and without ordering in the classes.
- Generalized linear mixed model briefly.
- Formulation of the models, selection of variables and interpretation of parameters. Fitting the models, estimation of parameters and prediction.
- Model criticism and diagnostics.
- Use of R environment in modelling

Learning outcomes

After successful completion of the course the student can describe basic concepts and assumptions for most common generalized linear models and can also apply these methods in analysis of experimental and non-experimental observation data.

Generic skills: Course develops analytical, critical and creative thinking skills. R environment, which is important in statistics, data science and machine learning, is used during the course.

[Official course record: 805352A](#)

805630S | Generalized Linear Models

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Course includes for example

- Models for binary outcome and for count data (for example Poisson regression).
- Models with more than two outcome classes with and without ordering in the classes.
- Generalized linear mixed model briefly.
- Formulation of the models, selection of variables and interpretation of parameters. Fitting the models, estimation of parameters and prediction.
- Model criticism and diagnostics.
- Use of R environment in modelling

Learning outcomes

After successful completion of the course the student can describe basic concepts and assumptions for most common generalized linear models and can also apply these methods in analysis of experimental and non-experimental observation data.

Generic skills: Course develops analytical, critical and creative thinking skills. R environment, which is important in statistics, data science and machine learning, is used during the course.

[Official course record: 805630S](#)

801399A | Geometry

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Pekka Salmi

Content

After an introduction to axiomatic geometry, we study affine geometry and Euclidean geometry using vector spaces and inner product spaces. Vectors are considered as functions which translate the points of the underlying space. Finally, we consider area and volume.

Learning outcomes

After completion of the course, the student can use geometric axioms to justify simple geometric results and apply axioms and known results in geometric problems and deductions.

Official course record: 801399A

NM00AS32 | Group Theory

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Kari Myllylä

Content

The course covers the arithmetic structure of finite groups, especially the effect of the order of the group on the structure of the group. It also covers the normal structure of a group, including, among other things, the effect of normal subgroups and their chains on the structure of the group.

Official course record: NM00AS32

030005P | Information Skills

1 ECTS | Architecture, Biochemistry, Biology, Electronics, Communications Engineering, Geosciences, Chemistry, Mechanical Engineering, Geography, Mathematics, Physics, Process and Environmental Engineering, Computer Science and Engineering, Information Processing Science, Industrial Engineering and Management, Civil Engineering | Other Studies | Finnish

Person in charge: Ursula Heinikoski, Anne-Mari Kivinen, Pertti Martinmäki, Minttu Luomala

Content

Scientific information retrieval process, the most important databases and publication channels of the discipline, evaluation of the reliability of information sources and reference management.

Learning outcomes

Upon completion of the course, the student

- * can search scientific information,
- * can use the most important databases of their discipline,
- * knows how to evaluate search results and information sources,
- * is familiar with good scientific referencing practices and reference management software.

The course develops students' ethical, responsible and critical use of information, as well as their digital and AI literacy.

Official course record: 030005P

800102P | Integral Calculus

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Marko Leinonen

Content

The course covers integral calculus and its applications starting from the basics. We start by exploring the connection between integral and area. The fundamental theorem of calculus links the concept of integral to derivative, leading us to integration techniques. The course also covers improper integrals and introduces numerical integration. Toward the end of the course, series and their convergence are discussed, with a key focus on power series and Taylor series.

Learning outcomes

After completing the course, the student

- manages differences between definite and indefinite integral
- understands the connection between the integral and the derivative
- can compute integrals without technical devices
- can use appropriate integration methods
- can apply integral calculus to a variety of problems
- can manipulate series and investigate their convergence
- can use power series in approximation
- is able to solve mathematical problems collaboratively with other students.

Official course record: [800102P](#)

800301A | Integral Calculus of Several Variables

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Mahmoud Filali

Content

Main contents are multiple integral, vector fields, potential, line integral, gradient, divergence, curl, the Green theorem, the Gauss divergence theorem, the Stokes theorem.

Learning outcomes

After successfully completing the course the student can

- calculate multiple integrals and line integrals
- use and study vector fields
- use gradient, divergence and curl operators
- apply theorems of integral calculus, such as the Stokes theorem, to calculate integrals.

Official course record: [800301A](#)

802675S | Introduction to Additive Combinatorics

5 ECTS | Mathematics | Advanced Studies | English, Finnish

Person in charge: Ville Suomala

Content

Roth's theorem on arithmetic progressions, Freiman's theorem, Balogh-Szemerédi-Gowers theorem. Applications of additive combinatorics.

Learning outcomes

Upon completion of the course:

- The student is able to handle basic sumset estimates.
- Is familiar with elementary results related to arithmetic progressions such as the Cauchy-Davenport Theorem and Van der Waerden's Theorem.
- Understands how arithmetic structure is related and nonrelated to the size of the set in various settings.
- Can recognize problems related to additive combinatorics and its applications.

Official course record: [802675S](#)

801623S | Introduction to Coding Theory

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Marko Leinonen

Content

The course is about the theory of error correcting codes needed in the transfer of information. The goal of the course is to give students the basic knowledge of the structure and use of these codes. The focus is on binary block codes and the most important subjects are linear codes, RM-codes and cyclic codes. Finally we consider convolutional codes.

Learning outcomes

After completing the course, the student:

- understands the basic principles and concepts of error correcting codes
- can code and decode using the codes introduced on the course

Official course record: [801623S](#)

802336A | Introduction to Cryptography

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Marko Leinonen

Content

The course considers some traditional symmetric key methods (affine system, matrix cryptography) and three public key methods, namely RSA, discrete logarithm and knapsack.

Learning outcomes

After completing the course, student:

- knows the principles of some traditional symmetric key methods
- knows how public key methods (RSA, discrete logarithm, knapsack) work
- is familiar with the possibility to use and apply number theory in cryptography

Official course record: [802336A](#)

TE00AT89 | Introduction to Distribution Theory

5 ECTS | Engineering Mathematics | Advanced Studies | Finnish

Person in charge: Markus Harju

Content [Finnish source]

Testifunktiot, distribuutiot, Fourier-muunnos, konvoluutio, temperoidut distribuutiot, sovelluksia

Learning outcomes [Finnish source]

Kurssin onnistuneen suorittamisen jälkeen opiskelija

- ymmärtää eri distribuutiotyyppien määritelmät merkityksineen ja eroineen
- osaa johtaa ja todistaa distribuutioiden perusominaisuudet
- osaa suorittaa perusoperaatioita (ml. Fourier-muunnoksen) distribuutioille
- osaa soveltaa distribuutioita osittaisdifferentiaaliyhtälöiden ratkaisemisessa

Official course record: [TE00AT89](#)

802676S | Introduction to Inverse Problems

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Andreas Hauptmann

Content

Theory of ill-posed inverse problems, singular value decomposition, Generalized-Inverse and Normal equations, Landweber iterations and Tikhonov regularization, Morozov discrepancy principle. Examples include convolutions, Fourier and Radon transform, corresponding to applications in image processing, X-ray and Magnetic Resonance Tomography. Use of Matlab/Python for implementation.

Learning outcomes

After successful completion of the course the student can identify linear ill-posed inverse problems and their severity. Furthermore, the students will be able to analyze and solve such problems with direct and indirect solution methods, identify necessary regularization, is able to implement such methods and work with basic simulated and experimental data.

[Official course record: 8026765](#)

AY802150P | Introduction to mathematical deduction (OPEN UNI)

2 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Pekka Salmi

Content

Logical thinking and problem-solving skills are important in everyday life. This course supports these skills by developing mathematical reasoning and the ability to understand various proof techniques. The course introduces the basics of logic and teaches both direct and indirect proof methods. In some cases, arguments can also be made using examples, counterexamples, or mathematical induction. Thus the course covers the fundamental methods of mathematical reasoning.

Learning outcomes

After completing the course, the student:

- is familiar with different proof techniques
- is able to evaluate and justify whether simple statements are true or false
- is able to understand and read text containing mathematical notation

[Official course record: AY802150P](#)

802365A | Introduction to Mathematical Software

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Ilkka Launonen

Content

During the course, the student learns the basics of some of commonly used mathematical software. See the particular software used on the course from the current course implementation.

Learning outcomes

Upon completion of the course, the student knows the basics about how to use of the most common mathematical software, is able to use mathematical software in solving mathematical tasks and problems, and is able to independently delve into advanced use of mathematical software as necessary.

[Official course record: 802365A](#)

802101P | Introduction to mathematics

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Esa Järvenpää

Content

Basic logic, direct proof, indirect proof, induction, basic set theory and relations.

Learning outcomes

In the course, students are introduced to mathematics as a written and spoken language. After the course, students can do logical reasoning, master various methods of proof and knows the basic concepts of set theory.

[Official course record: 802101P](#)

805306A | Introduction to Multivariate methods

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Jari Pääkkilä

Content

Logistic regression, principal components analysis, discriminant analysis, classification analysis and clustering analysis; Use of R environment in modelling; Course is an application oriented.

Learning outcomes

Upon successful completion of the course the student can describe the basic concepts and main principles of the logistic regression, principal components analysis, discriminant analysis, classification analysis and clustering analysis, and is able to apply these methods in analysing a small scale data set as well as to apply the necessary computational tools.

[Official course record: 805306A](#)

031025A | Introduction to Optimization

5 ECTS | Engineering Mathematics | Intermediate Studies | English

Person in charge: Marko Huhtanen

Content

Optimality criteria for unconstrained problems, convexity, gradient descent methods, Newton's and quasi Newton's method, least squares problems, KKT-conditions for constrained optimization, second order conditions in constrained optimization, simplex method for linear programming problems, duality in optimization.

Learning outcomes

After completing the course

- student can classify optimization problems and knows basic optimization algorithms for solving them.
- student is can formulate the necessary and sufficient conditions for optimality.

[Official course record: 031025A](#)

801195P | Introduction to Probability 1

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Ilkka Launonen

Content

The course is an introduction to probability calculus. The central topics are probability space, combinatorics, axioms of probability, conditional probability and independence, random variable and its expected value, discrete and continuous distributions, normal approximation.

Learning outcomes

Upon successful completion of the course, the student will be able to

- solve simple practical problems associated with probability
- solve simple theoretical problems associated with probability
- derive the basic properties of probability, starting from the axioms

Additionally, the course develops

- problem-solving and decision-making skills, analytical and critical thinking

Official course record: 801195P

801396A | Introduction to Probability 2

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Ilkka Launonen

Content

Central topics are two-dimensional discrete and continuous distributions, conditional distributions, conditional expectation, two-dimensional normal distribution, moments of distributions, moment generating function, Law of Large Numbers, Central Limit Theorem.

Learning outcomes

After completion of the course, the student:

- can work with random variables in theory and practice
- can use two-dimensional discrete and continuous distributions in problems
- can recognize two-dimensional normal distribution and work with those
- can work with conditional distributions and conditional expectations
- can explain the fundamental results of probability such as the Law of Large Numbers and the Central Limit Theorem
- can determine moment generating functions of random variables and apply them for example to determine moments.
- recognizes the key skills of analytical, critical, and creative thinking and is able to observe them in their own actions.
- recognizes and is able to describe the significance of analytical, critical, and creative thinking in scientific, professional, and ethical activities.
- is able to critically evaluate knowledge in their field and apply it to solve complex and unpredictable problems.

Official course record: 801396A

NM00BD51 | Introduction to Proofs and Number Theory

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Marko Leinonen

Content

Number systems: natural numbers, integers and rational numbers.

Methods of proof: direct proof, indirect proof, proof by induction.

Divisibility of integers: division algorithm, greatest common divisor, Euclidean algorithm and Fundamental Theorem of Arithmetic.

Modular arithmetic: equivalence relation, congruence, remainder classes, Diophantine equation, Fermat's little theorem.

Learning outcomes

Upon successful completion of the course the student:

- knows the different methods of proofing used in the course
- understands different concepts of number theory
- is able to apply arithmetic methods to scientific and practical problems
- is capable of analytical, critical, and creative thinking
- understands mathematics as an exact science, and through this, to grasp its differences and similarities compared to other sciences.

Official course record: NM00BD51

805305A | Introduction to Regression and Analysis of Variance

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Jari Pääkkilä

Content

Linear regression and analysis of variance models for continuous outcomes; Formulation of the model and interpretation of parameters; Fitting the models, estimation of parameters, and prediction with the method of least squares; Basic methods of model criticism and diagnostics; Use of R environment in modelling.

Learning outcomes

Upon successful completion of the course the student can describe the basic concepts and main principles of regression and variance analysis with one or several explanatory variables, and is able to apply these methods in analysing a small scale data set as well as to apply the necessary computational tools. The student is therefore able to apply the results of the course in problem-solving.

Official course record: 805305A

806113P | Introduction to Statistics

5 ECTS | Statistics | Basic Studies | Finnish

Person in charge: Emma Leppälä

Content

- the nature and meaning of statistics
- data and the acquisition of them: observations, variables, measuring and study design
- descriptive statistics of empirical distributions: tables, graphical representations and descriptive measures of center, variation and dependence
- Bernoulli and normal distributions and associated probabilities and quantiles
- the principles and basic methods of statistical inference: random sampling, sample statistics, sampling distributions, point estimation, confidence intervals and statistical testing

Learning outcomes

Upon successful completion of the course, the student

- will be able to identify and define the main principles of statistical research, collection and analysis of data
- will be able to apply basic methods of descriptive statistics and statistical inference in simple quantitative research using statistical software
- will be able to critically evaluate the results of statistical research presented in media
- masters the contents of elementary school and high school statistics

Additionally, the course develops

- problem-solving and decision-making skills, analytical and critical thinking (choosing an appropriate method or model, interpreting the results of statistical analysis)
- communication and interpersonal skills, the ability to work in a group, as well as oral and written communication
- digital skills (using a statistical software)

Official course record: [806113P](#)

806118P | Introduction to Statistics

5 ECTS | Statistics | Basic Studies | Finnish

Person in charge: Jari Pääkkilä

Content

- collecting data, e.g. sampling
- variables and measuring
- descriptive statistical methods and their selection
- basic concepts and rules of probability, Bernoulli and normal distributions
- statistical testing and confidence intervals for population mean and proportion
- basic analysis of data using statistical software

Learning outcomes

After completing the course, student will be able to

- use basic statistical concepts in proper contexts
- describe data by appropriate methods (tables, statistics and graphical presentations)
- apply probability rules and normal probability functions
- calculate confidence intervals and carry out statistical testing in simple situations
- use a statistical software in basic analyses of data and interpret results

Official course record: [806118P](#)

805349A | Likelihood and Bayesian Inference

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Statistical model and observation data; likelihood function, log-likelihood, score, information; maximum likelihood estimation, relative likelihood, likelihood interval and likelihood region, profile likelihood; normal approximation of log-likelihood; use of R environment in inferential problems.

Learning outcomes

After successful completion of the course the student can describe the basic principles of likelihood inference, derive likelihood functions of models with few parameters, compute likelihood quantities based on them, and interpret results such as obtained.

Official course record: [805349A](#)

NM00BD59 | Likelihood-based Inference

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

- Likelihood function and its derivatives for models with few parameters. Properties of likelihood statistics.
- use of R environment in inferential problems.
- Will be supplemented later.

Learning outcomes

After successful completion of the course the student knows the basic principles of statistical inference based on likelihood function (likelihood inference) and interpret results such obtained.

Generic skills: Course develops analytical, critical and creative thinking skills. R environment, which is important in statistics, data science and machine learning, is used during the course.

[Official course record: NM00BD59](#)

802320A | Linear Algebra

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Mahmoud Filali

Content

The aim of the course is to provide the student with the knowledge needed in almost all later courses in mathematics: abstract vector spaces and subspaces, linear independence and bases, inner product, linear mappings and concepts associated with linear mappings such as kernel. Eigenvalues, eigenspaces and diagonalization.

Learning outcomes

On successful completion of this course, the student will be able to:

- apply the definition of vector space and key concepts associated with vector spaces such as linear independence and basis
- work with linear mappings and their matrix representations
- apply the definition of inner product and key concepts associated with inner products such as orthogonality
- prove results related to vector spaces

[Official course record: 802320A](#)

802666S | Linear Optimization

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ilkka Launonen

Content

The course focuses on methods which can be applied for solving essential linear optimization problems in technical and economical sciences. The course addresses, among others, the following topics: convex sets, graphical solution of an LP problem, dual formulation, the simplex algorithm, the dual-simplex algorithm. The methods are studied theoretically, and numerical algorithms for solving the optimisation problems are presented.

Learning outcomes

On successful completion of this course, the student will be able to identify the correct methods for solving a linear optimization problem and implement the most typical numerical algorithms for solving linear optimization problems.

Official course record: [802666S](#)

805351A | Linear Regression

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Linear regression models for a continuous outcome variable including

- formulation of the model, selection of variables and interpretation of parameters,
- fitting the models, estimation of parameters and prediction using method of least squares,
- model criticism and diagnostics,
- use of R environment in modelling.

Learning outcomes

After successful completion of the course the student can describe basic concepts and assumptions in linear models for continuous outcome variables as well as main principles of regression modelling, and can also apply these methods in analysis of experimental and non-experimental observation data.

Generic skills: Course develops analytical, critical and creative thinking skills. R environment, which is important in statistics, data science and machine learning, is used during the course.

Official course record: [805351A](#)

802679S | Mathematical Principles of Deep Learning

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Andreas Hauptmann

Content

Universal approximation theorem, benefit of depth in neural networks (deep learning), infinite width networks, Barron spaces, Neural Tangent Kernel, Optimization and stochastic gradient descent, backpropagation, non differentiability, Nesterov acceleration, Generalisation properties, margin maximization, implicit Bias, Rademacher complexity.

Learning outcomes

Students will get familiar with mathematical concepts of neural networks and deep learning. We will introduce neural networks in a mathematical framework of function approximation and show that neural networks are universal approximator and how deep neural networks achieve efficient representations. We will discuss the concept of infinite width neural networks and Barron spaces.

Furthermore, optimization methods, backpropagation and generalization properties of neural networks will be discussed. After the course, the student will understand neural networks from a fundamental mathematical perspective. The course is NOT aimed to discuss applications of neural networks beyond classification.

Official course record: [802679S](#)

031079S | Mathematical Signal Processing

5 ECTS | Engineering Mathematics | Advanced Studies | Finnish

Person in charge: Vesa Kotila

Content

Multidimensional Fourier analysis, applications to image processing. Mathematics of image processing. Multichannel and multidimensional LSI systems. Two-dimensional spectral estimation. Multichannel spectral estimation. Wavelets.

Learning outcomes

After completing the course, the student will know the mathematical foundations of two-dimensional Fourier analysis and two-dimensional LSI systems and be able to apply them to image processing. He will also know the mathematical foundations of multi-channel signals and LTI systems and wavelet analysis and be able to apply them to signal processing.

Official course record: [0310795](#)

031023P | Mathematical Structures for Computer Science

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Matti Peltola

Content

Elementary logic. Mathematical induction. Elementary number theory. Set theory. Elementary graph theory. Elementary theory of formal languages. Theory of automata and Turing machines.

Learning outcomes

After completing the course the student

- can apply results of logic to find the truth value of a logical statement
- understands normal forms of logical statements
- can express sentences of natural language by symbols of logic
- can use arithmetic operations on different number bases
- recognize the main types of graphs and understand the basic concepts of graphs
- can apply formal methods of discrete mathematics to model simple information processing problems.

Official course record: [031023P](#)

802158P | Mathematics for Economic Sciences

7 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Kari Myllylä

Content

Course aims to build a solid background to mathematics in later economics courses. Course begins with a revision of concepts familiar from high school such as sequences, rationals, absolute value and powers. After that we focus on different types of functions such as polynomials, rational functions, exponential functions and logarithm. Different types of equations and inequalities, containing the functions mentioned above, are solved. Main concepts in the course are also limit of a function, continuity and derivative and their applications. Nämä käsitteet tullaan esittelemään kaikille kurssilla käsiteltäville funktiotyypeille. After the more mathematical part, the focus is turned on economical applications (such as interests, optimization, investments, indices).

Learning outcomes

After completing the course, student is able to:- define and apply basic mathematical concept such as rationals, absolute value, power and root function- handle different types of functions and knows their special properties- solve different equations and inequalities- define the concepts of limit and continuity of a function- calculate limits in case of different functions- calculate and apply derivative, and knows the relevance of the concept- use all mathematical concepts covered by the course in different problems related to economics (interest, investments, optimization and indices)

800351A | Mathematics for teachers

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Marko Leinonen, Pekka Salmi

Content

Learning and teaching mathematics is thought and discussed. The course consists of reflective exercises, reading articles, practice and seminar meetings where the exercises are discussed. The student writes a learning journal. The practice consists of exercise tutoring.

Learning outcomes

After the course, the student is able to reflect critically on the learning and teaching of mathematics. The student can discuss and explain the connection between mathematics at school and at university. The student is able to describe their competencies, develop their professional identity, promote the learning and development of the group, and recognize the need for lifelong learning. The student is able to discuss mathematics, guide other students, and give constructive feedback.

Official course record: 800351A

802678S | Mathematics of Imaging and Vision

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Andreas Hauptmann

Content

Basics of representing images and signals using Fourier and wavelet transforms. Variational models for image denoising and nonlinear diffusion. Deconvolution, denoising, and inpainting as examples for classic inverse problems arising in imaging. Segmentation and the Mumford-Shah functional.

Learning outcomes

Students will be familiar with basic operations to analyse, process, and understand images. Identify suitable presentations for different classes of images. Learn suitable analytical models for denoising and segmentation of images. Methods will be implemented using Matlab/Python.

Official course record: 802678S

802120P | Matrices 1

5 ECTS | Mathematics | Basic Studies | Finnish

Person in charge: Kari Myllylä

Content

The topics covered in the course are essential for almost all later mathematics courses and can also be applied in other disciplines.

- Vectors
- Lines and planes
- Matrices
- Determinant
- Inverse matrix
- Systems of linear equations and their solutions
- Vector space, basis of subspace of $\mathbb{R}^n$

Learning outcomes

After completing the course the student is able to:

- apply arithmetic operations of matrices
- solve system of linear equations by matrix methods
- study linear dependence and linear independence of vectors
- recognize the subspace of $\mathbb{R}^n$ and understands the concepts of basis and dimension of a vector space
- ability to think analytically, critically and creatively has been developed

Official course record: 802120P

NM00BD58 | Matrices 2

5 ECTS | Mathematics | Intermediate Studies | Finnish

Content

Eigenvalues and eigenvectors of a matrix, Eigendecomposition, LU decomposition, Rank factorization, Cholesky decomposition, QR decomposition, Jordan decomposition, Singular value decomposition, Moore-Penrose inverse.

Learning outcomes

After completing the course the student is able to:

- analyse properties of matrices by the parameters and the vectors
- do various factorizations of a matrix
- apply factorizations of a matrix.

Official course record: NM00BD58

031078P | Matrix Algebra

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Matti Peltola

Content

Basic concepts and basic operations for matrices. Systems of linear equations. Vector spaces. Matrix subspaces. Linear mappings and change of basis. Eigenvalues and eigenvectors of square matrix. Diagonalization of square matrix with applications. LU and QR factorizations. Iterative solution of system of linear equations. Least squares solution. Cayley-Hamilton theorem and its applications.

Learning outcomes

After completing the course, the student

- Can perform basic matrix operations and recognize basic types of matrices
- Can solve systems of linear equations using matrices, can apply LU and QR factorizations for a solution, and understands basic principles of iterative solutions and overdetermined systems
- Recognizes vector spaces and understands how basis and dimension describe vector spaces
- Understands how linear mappings can be represented using matrices
- Can analyze matrices using subspaces, vectors, and linear spaces
- Can evaluate determinants, eigenvalues, and eigenvectors of a square matrix.
- Can diagonalize square matrices and can apply diagonalization in simple problems
- Understands basic principles of iterative methods for finding eigenvalues

Official course record: 031078P

AY031078P | Matrix Algebra (OPEN UNI)

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Matti Peltola

Content

Basic concepts and basic operations for matrices. Systems of linear equations. Vector spaces. Matrix subspaces. Linear mappings and change of basis. Eigenvalues and eigenvectors of square matrix. Diagonalization of a square matrix with applications. LU and QR factorizations. Iterative solution of a system of linear equations. Least squares solution. Cauley-Hamilton theorem and its applications.

Learning outcomes

After completing the course, the student

- Can perform basic matrix operations and recognize basic types of matrices
- Can solve systems of linear equations using matrices, can apply LU and QR factorizations for solutions and understands basic principles of iterative solutions and overdetermined systems
- Recognizes vector spaces and understands how basis and dimension describe vector spaces
- Understands how linear mappings can be represented using matrices
- Can analyze matrices using subspaces, vectors and linear spaces
- Can evaluate determinant, eigenvalues, and eigenvectors of a square matrix can diagonalize square matrices, and can apply diagonalization in simple problems
- Understands basic principles of iterative methods for finding eigenvalues

Official course record: [AY031078P](#)

800300A | Maturity test

0 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Pekka Salmi

Content

The maturity test is taken in the language in which the student has received their education in Finland. If the student has received their education in a language other than Finnish or Swedish, the student writes the maturity test in Finnish or English. In such cases only the contents of the maturity test is evaluated, not the language.

Learning outcomes

After the maturity test, the student has demonstrated familiarity with the field of the thesis as well as sufficient proficiency in the student's language of previous schooling: Finnish or Swedish (in other cases the language is usually English).

Official course record: [800300A](#)

800600S | Maturity test

0 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Pekka Salmi

Content

The student describes and analyses the material, research methods, and results of his/her M.Sc. Thesis. The abstract must fit on a single page.

Learning outcomes

The student can write a clear abstract of their master's thesis.

Official course record: [800600S](#)

802651S | Measure and Integration

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Aleksi Pyörälä

Content

Basic concepts of measure theory: outer measure, sigma-algebra, measure, measurability, Lebesgue measure, Hausdorff measure, integral, product measure. Convergence theorems.

Learning outcomes

After completing the course student knows the basics of abstract measure and integration theory and their basic applications.

Official course record: 8026515

8000AE47 | Measure and Integration 2

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Aleksi Pyörälä

Content

Product measure, Fubini's theorem, Lebesgue spaces, absolute continuity, applications of measure and integral.

Learning outcomes

After completing the course, the students are able to apply various methods from measure and integration theory in different situations. They understand the basics of Lebesgue spaces, Fubini's theorem and absolute continuity.

Official course record: 8000AE47

802358A | Metric Spaces

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Ville Suomala

Content

The goal of the courses is to expand student's knowledge and understanding of continuity and to introduce to other topological concepts in the setting of metric spaces. Course considers basic topology of n-dimensional Euclidean space and introduces also other metric spaces as examples. Central concepts are open and closed sets, compactness and completeness.

The participants develop analytical and critical thinking through the examination of concepts and proofs related to metric spaces, as well as the ability to apply mathematical knowledge to solving abstract problems across different fields. The course prepares students for mathematical communication and collaboration through lectures and exercise work.

Learning outcomes

After the course the student is able to:

- define metric spaces
- give examples of metric spaces
- define elementary topological concepts (open and closed sets, accumulation point, etc)
- apply the definitions from elementary topology in examples and proofs
- understands the connection between continuity, limits, and the basic notations of metric space topology

Official course record: 802358A

806635S | Mixed Linear Models

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää

Content

Model formulation of mixed linear model, REML, BLUP, interpretation of parameters; fitting of models, estimation of parameters and prediction by the method of REML and BLUP; use of R environment in modeling.

Learning outcomes

After successful completion of the course the student is able to describe the basic concepts (fixed and random effects) and assumptions of linear mixed models (LMMs), as well as describing idea behind variance component estimation using restricted maximum likelihood (REML) method as well as solutions to fixed and random effects from the mixed model equations. Additionally, one knows general principles of mixed modeling, and is also able to apply these methods in the analysis of observational data.

In exercises, we are using a book (details found below), where groups become familiar with different chapters presenting case-study examples of the linear mixed models like multilevel models and mixed models for longitudinal data sets. From these, students will prepare presentations to each others.

[Official course record: 806635S](#)

801631S | Modern real analysis

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Meng Wu

Content

The course presents Lebesgue spaces (Hölder's and Minkowski's inequalities), the Vitali covering theorem, the Hardy-Littlewood maximal function, Lebesgue's density theorem, Mastrand's projection theorem, rectifiability.

Learning outcomes

On successful completion of this course, the student will be able to:

- derive and prove basic results of modern real analysis.
- apply the results and methods of modern real analysis in different topics of mathematics, like in Geometric Measure Theory, Fractal Geometry, Dynamical systems.

[Official course record: 801631S](#)

NY00BA79 | Natural Science Career Course

1 ECTS | Biology, Physics, Geography, Mathematics | General Studies | Finnish

Person in charge: Tiina Kempainen

Content [Finnish source]

Kurssilla tarkastellaan työelämäteemaa eri näkökulmista. Moodlekurssin osiot ovat:

- Tietoa työelämästä
- Arvot ja kiinnostukset
- Mitä osaan?
- Yliopiston harjoittelut ja muut työelämäprojektit
- Tukea työnhakuun
- Katse työelämään

Learning outcomes [Finnish source]

Opiskelija oppii:

- tunnistamaan ja sanoittamaan opintojen aikana kertyvää osaamistaan.
- pohtimaan ja tunnistamaan omia arvojaan ja kiinnostuksiaan,
- etsimään kiinnostavia ja koulutusta vastaavia harjoittelu- ja työllistymismahdollisuuksia ja
- laatimaan sekä laajan että kohdennetun CV:n

Official course record: [NY00BA79](#)

802667S | Nonlinear Optimization

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ilkka Launonen

Content

The lecture course is focused to methods, which can apply for solving essential optimization problems of technical and economical sciences. The lectures consist of following topics: Convex optimization problem, unconstrained convex optimization, constrained convex optimization, dual of convex problem, Karush-Kuhn-Tucker conditions and penalty optimization method. The topics are considered theoretically and also numerical algorithms for problem solution are presented.

Learning outcomes

On successful completion of this course, the student will be able to choose the correct methods for solving the nonlinear convex optimization problems and implement the most typical numerical algorithms for solving them.

Official course record: [802667S](#)

802304A | Number theory and combinatorics

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Kari Myllylä

Content

Number systems: natural numbers, integers and rational numbers.

Divisibility of integers: division algorithm, greatest common divisor and Fundamental Theorem of Arithmetic.

Modular arithmetic: congruence, remainder classes, Diophantine equation, Chinese Remainder Theorem, Fermat's Theorem and Wilson's Theorem.

Combinatorics: pigeon varnish principle, combination, permutation and partitioning.

Learning outcomes

Upon successful completion of the course:

- the student understands different concepts of number theory and combinatorics
- the student knows the different methods of proofing used in the course
- the student is able to apply arithmetic methods to scientific and practical problems
- the ability to think analytically, critically and creatively has been developed

Official course record: [802304A](#)

031022P | Numerical Analysis

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Lassi Korhonen

Content

Are you a student in the field of technology who is interested in how computers solve computational problems? Do you want to understand how numerical methods are the foundation of modern technology, such as scientific computing, modeling, and optimization? Then the Numerical Methods course is for you! The course combines mathematical foundations and direct applications in various fields of engineering, providing you with a valuable toolbox for future challenges.

- * Numerical linear algebra
- * Numerical methods for equations and systems of equations
- * Unconstrained optimization
- * Basics of the approximation theory
- * Differences and numerical quadratures
- * Numerical methods for differential equations.

Learning outcomes

After completing the course student knows numerical algorithms for solving basic problems in computing. Knows basics about numerical linear algebra and some of its applications. Knows how nonlinear systems are solved and how they appear in optimization. Knows basics about approximating functions and numerical intergration. Knows how differential equations are solved numerically. Understands basics, how a computer uses numerical algorithms.

[Official course record: 031022P](#)

802665S | Numerical Analysis

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ilkka Launonen

Content

The course focuses on numerical methods for solving common basic problems in mathematics. The methods are analysed for their convergence, stability and suitability for computer arithmetic. The course contains numerical solution methods for the following basic problems: systems of nonlinear equations, systems of linear equations, interpolation, integration, derivation and differential equations.

Learning outcomes

On successful completion of this course, the student will be able to choose proper numerical methods for solving basic mathematical problems and approximate the magnitude of errors in numerical results.

[Official course record: 802665S](#)

031051S | Numerical Matrix Analysis

5 ECTS | Engineering Mathematics | Advanced Studies | Finnish, English

Person in charge: Marko Huhtanen

Content

Theory of matrix decompositions, SVD-decomposition, partially pivoted LU-decomposition, QR-decomposition, Schur-decomposition, FFT, eigenvalue- and generalized eigenvalue problems, matrix functions, GMRES, MINRES, Preconditioning.

Learning outcomes

After completing the course the student knows the most efficient and numerically reliable methods to solve the basic problems in linear algebra. He/she knows the basic matrix factorizations and their approximations. The student has the capability to solve very large and sparse problems with the iterative solutions methods and understands the significance of preconditioning.

[Official course record: 031051S](#)

800012Y | Orientation for New Students

3 ECTS | Mathematics | General Studies | Finnish

Person in charge: Pekka Salmi

Content

During the course, older students introduce the new students to the studying environment and the university organization, provide information on the subject matters, aims and prospects related to the field of study, and help with the practical issues connected to the beginning of the studies. The course includes an introduction to different profiles in the degree programme, teacher tutor meetings and guidance for making a personal study plan. This course includes completion of the university's general orientation materials, which are intended for all students and must be reviewed before the studies.

Learning outcomes

After the course, the student is able to plan her/his studies and find answers to questions regarding teaching and studying. The student recognizes different areas of specialization within mathematics and is familiar with various learning techniques.

[Official course record: 800012Y](#)

NM00AK48 | Practical training

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Jari Päckilä

Content

2 months of internship in a pre-approved workplace. In addition, a short written report on the internship must be prepared and presented at the final seminar after the internship.

Learning outcomes

After successfully completing the course, the student has:

- got acquainted with a work organization and those who work there
- gained important work experience in tasks related to their field.

[Official course record: NM00AK48](#)

805687S | Pro gradu seminar

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää, Liisa Ilvonen

Content

The aim of the seminar is to support the writing of the master's thesis. In addition, the aim is to strengthen students' skills in written and oral scientific communication.

The student writes one small-scale written dissertation on a subject related to own master's thesis. Based on the written work, an oral presentation is prepared to be held at the session at the end of the semester. In addition, the student acts as an opponent for one other student.

The appropriate timing for taking the seminar varies from student to student. It is appropriate to participate in either in the early stages of writing the master's thesis, when the topic, the necessary empirical material and preliminary plans for the methodological approach of the thesis are already known, or in the middle of the process, when some empirical analyses may already be in progress or have been carried out.

Learning outcomes

After completing the seminar, the student is able to present and write a scientific text in the field of computational mathematics or data science.

Course develops the following generic skills:

- analytical, critical and creative thinking skills,
- self-development skills,
- multidisciplinary and interdisciplinary skills,
- communication, interaction and digital skills.

Official course record: 8056875

800697S | Pro Gradu Thesis

20 ECTS | Mathematics | Advanced Studies | Finnish

Content

A subject teacher's master's thesis may be a purely mathematical thesis or a thesis in mathematics education. Writing the thesis requires familiarising oneself with a particular question or method in mathematics or mathematics education and presenting the investigated topic in scientific language.

Learning outcomes

The student:

- is able to interpret scientific texts in mathematics and/or mathematics education
- is able to write scientific text in their field
- is able to apply mathematical and/or didactical expertise in investigating and contextualizing the chosen topic, as well as in writing the thesis
- is able to work persistently on a large, long-term project.

Official course record: 800697S

800698S | Pro gradu thesis

30 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Esa Järvenpää

Content

In Master's thesis, students familiarise themselves with a specific mathematical area or problem and write a report on it from which a mathematically educated person may learn the subject.

Learning outcomes

After writing the Master's thesis, students are able to read mathematical texts and write clear and logical reports on their content.

Generic skills: analytical, critical and creative thinking, well-being and self-development, responsibility and ethics and communication and interaction.

Official course record: 800698S

800699S | Pro gradu thesis

30 ECTS | Applied Mathematics | Advanced Studies | English, Finnish

Learning outcomes

After completion of M.Sc. thesis, a student is able to present and write scientific text in the fields of computational mathematics and data science. During the thesis process, a student gets exposed to the multidisciplinary working environment because data set to be analysed and associated theoretical questions often come from different scientific field. A one of the supervisors is also often from different field. Thus, in a thesis work, the internationality, the group working skills and communication are often important part of the successful completion of the thesis.

[Official course record: 8006995](#)

NM00AL77 | Probability

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Meng Wu

Content

Recall of probability spaces, construction of probability measures (Dynkin's theorem, Caratheodory theorem), independent random variables, Borel-Cantelli Lemma, zero-one law of Kolmogorov, weak and strong laws of large numbers, conditional expectations (examples, properties and methods of calculation), Martingales (sub-Martingales, stopping time theorem of Doob, martingale convergence theorems, ...)

[Official course record: NM00AL77](#)

031021P | Probability and Mathematical Statistics

5 ECTS | Engineering Mathematics | Basic Studies | Finnish, English

Person in charge: Jukka Kemppainen

Content

The key concepts of probability, random variable, parameters of probability distributions, the law of large numbers and the central limit theorem, analyzing statistical data, estimation of parameters, hypothesis testing, regression analysis.

Learning outcomes

After completing the course, the student

- knows the key concepts of probability and the most important random variables,
- will be able to use them in calculating probabilities and parameters of probability distributions,
- knows the law of large numbers and the central limit theorem,
- can analyze statistical data graphically and by calculating interval and point estimates for the parameters,
- will be able to formulate statistical hypotheses and test them,
- knows the basics of linear regression.

[Official course record: 031021P](#)

805628S | Probability Distributions

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Liisa Ilvonen

Content

Point mass function, density function, cumulative distribution function and quantile function of uni- and multivariate distributions; joint, marginal and conditional distribution; expectation, variance, covariance, correlation coefficient; moment and cumulant generating function; distributions of transformations of random variables and vectors; delta-method; convergence of random variable sequences and limit theorems; main univariate distribution models, multivariate normal distribution, important sampling distributions.

Learning outcomes

After successful completion of the course the student can define the basic concepts and theorems of uni- and multidimensional discrete and continuous probability distributions and can apply this knowledge in other studies in statistics or applied mathematics.

Generic skills: Course develops analytical, critical and creative thinking skills.

[Official course record: 805628S](#)

800683S | Project in mathematics

10 ECTS | Mathematics | Advanced Studies | English, Finnish

Person in charge: Esa Järvenpää

Content

The course starts with presentations of mathematics research groups. Students are divided into research groups and they make a small thesis under the supervision of a research group. The thesis is presented in a talk to other students.

Learning outcomes

After passing the course the student is able to do a small mathematical discourse based on literature.

[Official course record: 800683S](#)

800331A | Proseminar

10 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Kari Myllylä, Emma Leppälä

Content

Proseminar (Bachelor's thesis) is a small mathematical study based on literature. Student is familiarized to write mathematical texts and obtain information using literature. Thesis includes a oral presentation from the subject of the thesis.

Learning outcomes

After completing the Bachelor's thesis:

- student is able to form a clear and logical
- student is able to concentrate to important and essential details in the subject of thesis
- student gain experience presenting mathematical concept and research studies
- student can communicate clearly orally and in writing both to experts in their field and to a wider audience
- student can develop communication, interaction and multi-literacy skills

[Official course record: 800331A](#)

805661S | Quantitative genetics

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää

Content

Quantitative genetics, genetic relatedness coefficients and how to measure it, narrow-sense and broad-sense heritability, how to measure selection, polygenic and one locus model, single locus dominance for continuous trait, epistasis, breeding value, association genetics, inbreeding depression and heterosis.

Learning outcomes

After successful completion of the course the student can describe some basic principles and models of quantitative genetics and how pairwise genetic relatedness is defined.

During the course, students learn how to prepare the public presentation and working skills in a group as well as giving a presentation. Also, we learn to complete a practical work which covers some independently selected topic of quantitative genetics.

[Official course record: 8056615](#)

AY00AV46 | R Basics (OPEN UNI)

2 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen

Content

R is an important free open source software which is widely used in statistics, data science and machine learning. R Basics course teaches basic principles of R programming language, data management, graphics and programming. The acquired basic skills to examine and modify data provide a good starting point to start using R in statistical analysis. Course is targeted for everyone who is interested to learn how to use statistical software. Course doesn't teach statistical analysis methods, and it doesn't require previous knowledge from statistics or programming.

Learning outcomes

After completing this course, the student

- knows how to use R via the RStudio interface,
- knows how to work with the most common data types and data structures in R,
- is familiar with the R package tidyverse (especially packages tibble, readr, readxl, dplyr, ggplot2) and knows also how to install other R packages,
- knows how to create graphs from the data using both basic R functions and functions from ggplot2 package,
- can write own functions in R and knows the most common conditional statements and loops,
- knows the basics of R Markdown and is able to produce a simple R Markdown document,
- has gained the basic skills needed to examine and modify data in statistics courses.

Generic skills: Course develops analytical, critical and creative thinking skills. Furthermore, use of statistical software develops digital skills.

[Official course record: AY00AV46](#)

NM00AJ54 | R programming

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Liisa Ilvonen

Content

The course covers R and its most important tools for data management, statistical computation, graphics and programming will be introduced and proficiency for their fluent use is acquired.

Learning outcomes

After successful completion of the course the student can use independently R software needed in data analysis and used in all statistics courses in the Master's Programme in Computational Biology and Data analysis.

Generic skills: Course develops analytical, critical and creative thinking skills. Further R environment, which is important in statistics, data science and machine learning, is used during the course.

802302A | Real Numbers and Limits

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Esa Järvenpää

Content

Completeness of the real numbers via supremum and infimum, density of rationals, precise definition of the limit of a sequence and Cauchy sequences, Bolzano-Weierstrass theorem for sequences, basic topology, precise definition of the continuity and limit of a function, Bolzano's theorem and Weierstrass' minimum-maximum theorem.

Learning outcomes

In the course, the students are introduced to mathematics as written and spoken language. Special emphasis is in the role of proof in mathematics. The goal is to study the structure of the real axis, understand the precise definitions of a limit and continuity on the real line and explore the properties implied by these.

Generic skills: analytical, critical and creative thinking, well-being and self-development, responsibility and ethics and communication and interaction.

Official course record: 802302A

412188A | Research methods I

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Hanni Muukkonen-van der Meer

Content [Finnish source]

- * Tilastotiede ja kyselytutkimus
- * Mittaus oppimistieteissä
- * Tiedonkeruu, kuvat ja tunnusluvut
- * Vaihtelu ja riippuvuus
- * Ristiintaulukointi
- * Analyysiohjelmat

Learning outcomes [Finnish source]

Kurssin suorittamisen jälkeen opiskelija:

- * ymmärtää tilastotieteen ja tilastollisen lukutaidon merkityksen omien opintojensa, työelämänsä ja tulevaisuutensa kannalta
- * hallitsee opintojakson sisältöön kuuluvat tilastotieteen peruskäsitteet
- * ymmärtää tilastollisen tiedonkeruun ja mittaamisen mahdollisuuksia ja haasteita
- * tunnistaa vaihtelun ja riippuvuuden ilmenemismuotoja tilastollisissa esityksissä
- * osaa tulkita tilastollisia kuvia, taulukoita ja perustunnuslukuja ja hallitsee laadukkaan tilastollisen visualisoinnin perussäännöt
- * osaa tilastollisen analyysiohjelmien alkeita

Official course record: 412188A

800703J | Research plan seminar

1 ECTS | Mathematics | Post-graduate Studies | Finnish, English

Person in charge: Patrik Waldmann

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- * is able present his/her research plan to a wider audience
- * is able to answer questions and critical comments concerning the research plan
- * is able to prepare a scientific presentation

[Official course record: 800703J](#)

802680S | Riemann Geometry

10 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Esa Järvenpää

Content

Riemann metric, connection, geodesic and curvature.

Learning outcomes

After the completion of the course the students know the basic concepts in Riemann geometry and master the basic results in this field.

[Official course record: 802680S](#)

NM00BD44 | Scientific computing

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Babak Maboudi Afkham

Content

The core of the course is numerical methods for partial differential equations. ODEs, and then Elliptic, Parabolic and hyperbolic PDEs.

[Official course record: NM00BD44](#)

800321A | Series and Approximation

5 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Mahmoud Filali

Content

The course concerns both series of real numbers and series of functions. The central topics are convergence tests, pointwise and uniform convergence, power series and the Taylor series. The course gives also an introduction to approximation of functions by polynomials for example.

Learning outcomes

Upon completing the course the student is:

- able to manipulate series and investigate their convergence
- able to explain the difference between uniform and pointwise convergence
- able to study the uniform and pointwise convergence of function sequences and series
- able to use power series in approximation

[Official course record: 800321A](#)

031080A | Signal Analysis

5 ECTS | Engineering Mathematics | Intermediate Studies | Finnish, English

Person in charge: Vesa Kotila

Content

Signals, classification, frequency. Fourier analysis, analog and digital signal, fast Fourier transform. LTI system. Hilbert transform. AM- FM- and PM-modulation. Random variable. Covariance matrix. Random signal. Stationarity, autocorrelation. Power spectral density. Random signal in LTI system.

Learning outcomes

After completing the course the student

- is able to calculate the energy, the power, the convolution and the frequency spectrum of discrete and analog, periodic and non-periodic deterministic signals
- is able to study the effect of sampling on the signal
- is able to study the effects of modulation or an LTI-system on the signal
- is able to study the properties and mutual dependence of random variables using the joint distribution and its characteristics (such as the covariance matrix)
- is able to study the stationarity, the mutual dependence and the frequency content of random signals by means of the auto- and cross-correlation functions, and the power- and cross-power spectral densities

[Official course record: 031080A](#)

805622S | Simulation methods

5 ECTS | Statistics | Advanced Studies | English

Person in charge: Patrik Waldmann

Content

The course covers basic methods how to generate samples from common distributions. Also principles of sampling (bootstrapping) and MCMC methods (Metropolis-Hastings, Gibbs sampling) needed in Bayesian analysis are central in the course.

Learning outcomes

After successful completion of the course the student is able to implement simple MCMC sampler to the computer and understand the basic principle of the MCMC sampling.

[Official course record: 805622S](#)

806642S | Spatio-temporal statistics

5 ECTS | Statistics | Advanced Studies | English

Person in charge: Patrik Waldmann

Content

The course presents some of the most important methods for statistical models that contain both spatial and temporal structures, and describes how to analyze data from various sources and present results using tools available in R. More specifically, the course includes:

- Introduction to spatio-temporal statistics
- Visualization and exploratory analysis of spatio-temporal data
- Spatio-temporal statistical models
- Descriptive spatio-temporal statistical models
- Dynamic spatio-temporal models
- Evaluating and checking spatio-temporal statistical models

Learning outcomes

After successful completion of the course the student will be able to:

- demonstrate in depth knowledge of major algorithms and principles of spatio-temporal models. Understand pros and cons of the methods in various situations.
- apply and evaluate the suitability of some of the most important statistical software tools to real data examples.

[Official course record: 806642S](#)

800661S | Special course for teachers of mathematics

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Marko Leinonen

Content

In this course the students plan and execute teaching samples and grade matriculation exam answers. In addition we examine research in didactics of mathematics. The students also report about their works. Works are discussed in a seminar.

Learning outcomes

After completing the course the student is able to:

- combine a mathematical way of thinking to teaching
- plan teaching content that supports mathematical understanding
- is able to grade the mathematics problems in the matriculation examination.
- use studies in didactics of mathematics in their teaching
- find and interpret articles in didactics of mathematics.

[Official course record: 800661S](#)

802641S | Special Course for Teachers of Mathematics: Training

5 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Kari Myllylä,

Content

Teaching practice in mathematics. The practice may include training, preparation of teaching materials and reporting.

Learning outcomes

The student is able to apply her/his skills in practice and gains experience in teaching mathematics.

[Official course record: 802641S](#)

031085S | Special course on differential equations

5 ECTS | Engineering Mathematics | Advanced Studies | Finnish

Person in charge: Jukka Kemppainen

Content

The content of the course can vary depending on the teacher or the students. Topics can be for example the most typical partial differential equations appearing in the mathematical physics or the differential equations of non-integer order.

Learning outcomes

The course aims to give a deeper understanding related to the differential equations depending on the interest of the teacher or the students.

Official course record: 0310855

802628S | Special topics in mathematics

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Pekka Salmi

Content

The contents vary depending on the implementation. See the description of the implementation for the contents.

Official course record: 802628S

NM00AH47 | Special topics in mathematics 2

5 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Pekka Salmi

Content

The contents vary depending on the implementation. See the description of the implementation for the contents.

Official course record: NM00AH47

806620S | Special topics in statistics

5 ECTS | Statistics | Advanced Studies | English

Person in charge: Patrik Waldmann

Content

The course is centered around reading, presentation and discussion of methods that are in the forefront of statistics and machine learning. At the start of the course, students will get a set of journal papers and be assigned to at least one paper aimed for their presentation. The seminars will be arranged following a typical PhD defense structure with respondents and opponents.

Learning outcomes

After successful completion of the course the student will be able to:

- demonstrate knowledge of how to read and understand scientific papers from leading journals in statistics and machine learning.
- get experience from presentation of advanced statistical methods and results.

Official course record: 806620S

801645S | Special Work in Applied Mathematics

10 ECTS | Mathematics | Advanced Studies | Finnish

Person in charge: Ilkka Launonen

Content [Finnish source]

Sovelletun matematiikan erikoistyö on oiva tapa hankkia kokemusta teollisuuden kannalta relevanttien matemaattisten probleemoiden ratkaisemisesta. Yleensä työ tehdään teollisuuden kanssa yhteistyössä, mutta se voidaan tehdä myös itsenäisesti edellyttäen, että matemaattinen ongelma on teollisuuden kannalta relevantti. Työn tavoitteena on opiskelijan johdattaminen teollisuusorientoituneiden matemaattisten ongelmien ratkaisemiseen. Työn sisältö muotoutuu kulloisenkin yhteistyökumppanin intressien perusteella. Tyypillisesti työhön liittyy ohjelmistojen testausta ja ohjelma-algoritmien kehittämistä. Työn pääpaino ei yleensä ole testattavien menetelmien teoreettisilla tarkasteluilla, vaan käytännön tuloksissa.

Official course record: 8016455

806636S | Statistical analysis with missing data

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää

Content

Techniques of handling missing data including simple and modern methods. Modern methods are multiple imputation, EM-algorithm, chain equations, Bayesian missing data methods, and observed data maximum likelihood. Additionally, assumptions of missing data mechanisms (random and non-random missing data mechanisms), R-packages for handling of missing data.

Learning outcomes

After successful completion of the course, the student is eligible to describe a principle on how missing data can be handled in statistical analysis. This includes typical assumptions made on missing data mechanisms that has caused the missing data and principle of multiple imputation. Additionally, student is eligible to apply this techniques in practice using R.

During the course, students will do a practical work, where they create new handling method for missing data, apply their method to their own simulated data set, and document everything as a single text document that need to be accepted. The new method will follow closely the general principles of the missing data handling methods.

Official course record: 806636S

806640S | Statistical learning

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Ilkka Launonen

Content

The course presents some of the most important methods in statistical learning, and describes how to analyze data from various sources and present results using tools available in R.

Learning outcomes

After successful completion of the course the student will be able to:

- demonstrate in depth knowledge of major algorithms and principles of statistical learning models and understand pros and cons of the methods in various situations.
- apply and evaluate the suitability of some of the most important statistical software tools to real data examples.
- is able to apply creative thinking and problem-solving in their work to develop new knowledge and new procedures.
- is able to analyze arguments and to argue appropriately.

Official course record: 806640S

805353A | Statistical Software

5 ECTS | Statistics | Intermediate Studies | Finnish

Person in charge: Liisa Ilvonen,

Content

The course covers R and SAS , and their most important tools for data management, statistical computation, graphics and programming will be introduced and proficiency for their fluent use is acquired.

Learning outcomes

After successful completion of the course the student can use independently major statistical software needed in data analysis.

Generic skills: Course develops analytical, critical and creative thinking skills. Further, course develops digital skills (use of statistical software).

[Official course record: 805353A](#)

806116P | Statistics for Economic Sciences

5 ECTS | Statistics | Basic Studies | Finnish

Person in charge: Emma Leppälä

Content

- collecting data, e.g. sampling
- variables and measuring
- choosing and implementing appropriate descriptive methods: tables, statistics and graphical representations
- basic concepts and rules of probability, Bernoulli and normal distributions
- statistical inference of the population proportion and the mean of a continuous variable
- statistical literacy
- basic analysis of data using a statistical software

Learning outcomes

Upon successful completion of the course, the student will be able to

- use basic statistical concepts in proper contexts
- describe data by appropriate descriptive methods: tables, statistics and graphical representations
- apply probability rules and normal distribution functions
- calculate confidence intervals and carry out statistical testing in simple situations
- use a statistical software for basic analysis of data and interpret results

Additionally, the course develops

- problem-solving and decision-making skills, analytical and critical thinking (choosing an appropriate method or model, interpreting the results of statistical analysis)
- digital skills (using a statistical software)

[Official course record: 806116P](#)

BO00AM36 | Statistics for Economic Sciences (IBM)

5 ECTS | Mathematics | Basic Studies | English

Person in charge: Emma Leppälä

Content

- collecting data, e.g. sampling
- variables and measuring
- choosing and implementing appropriate descriptive methods: tables, statistics and graphical representations
- basic concepts and rules of probability, Bernoulli and normal distributions
- statistical inference of the population proportion and the mean of a continuous variable
- statistical literacy
- basic analysis of data using a statistical software

Learning outcomes

Upon successful completion of the course, the student will be able to

- use basic statistical concepts in proper contexts
- describe data by appropriate descriptive methods: tables, statistics and graphical representations
- apply probability rules and normal distribution functions
- calculate confidence intervals and carry out statistical testing in simple situations
- use a statistical software for basic analysis of data and interpret results

Additionally, the course develops

- problem-solving and decision-making skills, analytical and critical thinking (choosing an appropriate method or model, interpreting the results of statistical analysis)
- digital skills (using a statistical software)

Official course record: [BO00AM36](#)

802642S | Symmetry groups

5 ECTS | Mathematics | Advanced Studies | Finnish, English

Person in charge: Pekka Salmi

Content

The notion of group comes from symmetries of different objects such as sets or geometrical objects. In this course we consider groups from this viewpoint. Permutations, i.e. symmetries of sets, give the foundation for these considerations. Then we proceed to study symmetries of more complicated objects such as geometrical ones. Symmetries are closely related to group actions on different objects. We cover the basic notions associated to group actions such as orbits and stabilisers. One important class of symmetry groups is formed by matrix groups and also those are studied. In addition we consider the relations between all these groups.

Learning outcomes

After completing the course the student is able to:

- describe well-known symmetry groups
- determine symmetry groups of geometric objects
- use groups as objects that encode symmetries
- use permutations to represent symmetries
- explain basic concepts associated to group actions
- apply algorithms associated to permutations

Official course record: [802642S](#)

NM00AT59 | Teacher's digital skills: Geogebra

2 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Emma Leppälä

Content

The basics of GeoGebra calculator apps.

Learning outcomes

Upon succesful completion of the course, the student

- can use different GeoGebra calculator apps
- can solve mathematical exercises and problems with GeoGebra both algebraically and numerically
- can create geometric constructions as well as simple animations in GeoGebra
- is able to use GeoGebra to design materials for teaching mathematics

Additionally, the course develops

- analytical, critical, and creative thinking
- written communication
- time management and self-leadership

[Official course record: NM00AT59](#)

NM00AT58 | Teacher's digital skills: programming

2 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Emma Leppälä

Content

Basic principles of programming, programming with Python, using programming in problem solving

Learning outcomes

Upon succesful completion of the course, the student

- understands the basic principles of programming
- knows the basics of Python programming
- can independently write small programs
- can use programming to solve computational problems
- is able to design and create content for teaching programming

Additionally, the course develops

- analytical, critical, and creative thinking
- written communication
- time management and self-leadership

[Official course record: NM00AT58](#)

NM00AT60 | Teacher's digital skills: spreadsheet computation

1 ECTS | Mathematics | Intermediate Studies | Finnish

Person in charge: Emma Leppälä

Content

The basics of a spreadsheet program.

Learning outcomes

Upon succesful completion of the course, the student

- knows the basics of using a spreadsheet program
- can solve various mathematical exercises and problems using a spreadsheet program
- can utilize the tools of a spreadsheet program for calculations and visualization of data

Additionally, the course develops

- analytical, critical, and creative thinking
- written communication
- time management and self-leadership

805627S | Theory of Statistical Inference

5 ECTS | Statistics | Advanced Studies | Finnish

Person in charge: Mikko Sillanpää

Content

Frequentist inference, Bayes inference, likelihood, multiple testing problem, False Discovery Rate (FDR), permutation test, parametric and non-parametric bootstrap method, Sandwich estimator / robust inference

Learning outcomes

After successful completion of the course the student is able to do statistical inference in likelihood framework as well as in Bayesian analysis using common statistical softwares.

Official course record: 805627S

DP00AH30 | Tilastolliset perusanalyysit SPSS-ohjelmistolla

1 ECTS | Statistics | Post-graduate Studies | Finnish

Person in charge: Opettaja: Tero Vahlberg

Content

Tällä 2-päiväisellä kurssilla on tavoitteena opettaa tutkijoille SPSS-ohjelmiston käyttöä tilastollisten analyysien toteutuksessa. Pääpaino on valikoiden avulla tapahtuvan ohjelman käytön opetuksessa. Kurssi on itsenäinen kokonaisuus. Koko kurssin opetus tapahtuu pienryhmässä mikroluokassa, menetelmäopetuksen ohessa harjoittelemalla esimerkkiongelmia ratkaisemalla. Ohjelmistolla tapahtuvan ratkaisun yhteydessä opetellaan aineistojen käsittelyä, analyysiongelmien jäsentelyä, menetelmien tulkintaa sekä tulosten raportointia. Tavoitteena on lisätä tutkijoiden omien aineistojen käsittelymahdollisuuksia, menetelmätuntemusta sekä omatoimisuutta analyysien toteutuksessa. Analyysien toteutuksessa aputyövoimaa käyttävillekin tutkijoille kurssi tarjoaa mahdollisuuden saavuttaa kommunikoinnissa paremmin toimiva taso.

KURSSIOHJELMA:

1.

- Miten käytän ohjelmaa? (Ohjelman käyttöliittymään tutustuminen)
- Miten käsittelen aineistoja? (Aineistojen talletus, aineistojen sisäänluku, aineiston muokkaus, uusien muuttujien luonti)
- Miten tutkin luokittelevan muuttujien jakaumaa? (Frekvenssijakauma, pylväs- ja piirakkakuviot)
- Miten tutkin ja havainnollistan luokittelevien muuttujien välisiä yhteyksiä? (Frekvenssiaineistojen analyysi, ristiintaulukointi, Khiin neliötesti, Fisherin tarkka testi, McNemarin testi, ristitulosuhde, suhteellinen riski, pylväs- ja piirakkakuviot)
- Miten tiivistän numeerisen muuttujan jakaumaa tunnuslukuihin ja miten havainnollistan jakaumaa? (Tunnusluvut, histogrammi, runko-lehti-esitys, laatikko-jana-kuvio, normaalisuustestit)
- Miten vertailen numeerisen muuttujan jakaumia kahden ryhmän välillä? (Kahden otoksen t-testi, Mann-Whitneyn U-testi, parittainen t-testi ja Wilcoxonin merkittyjen järjestyslukujen testi)

2.

- Miten vertailen numeerisen muuttujan jakaumia kolmen tai useamman ryhmän välillä? (Yksisuuntainen varianssianalyysi, Kruskal-Wallis testit)
- Miten analysoin ja havainnollistan numeerisen muuttujien välisiä yhteyksiä? (Pearsonin korrelaatio, Spearmanin järjestyskorrelaatio, sirontakuviot)
- Miten tarkastelen ja havainnollistan selittävien muuttujien yhteyttä numeeriseen vastemuuttujaan. (Regressiosuorat ja lineaarisen regressioanalyysin perusteet)
- Miten tarkastelen ja havainnollistan selittävien muuttujien yhteyttä kategoriseen vastemuuttujaan. (Logistisen regressioanalyysin perusteet)

Official course record: DP00AH30

DP00AI54 | Tilastollisten analyysien jatkokurssi SPSS-ohjelmalla

1 ECTS | Statistics | Post-graduate Studies | Finnish

Person in charge: Opettaja: Tero Vahlberg

Learning outcomes

2-päiväisellä kurssilla perehdytään tilastollisiin menetelmiin, joiden avulla voidaan analysoida aineistoja erityyppisissä tutkimusasetelmissä. Menetelmiin tutustutaan erilaisten havainnollisten esimerkkien avulla soveltamalla yhden ja monen selittävän muuttujan malleja. Menetelmien soveltuvuus erilaisiin kysymyksenasetteluihin, mallin oletusten tarkastelu, analyysien toteutus SPSS-ohjelmalla, mallien tulosten tulkinta ja raportointiperiaatteet käydään läpi esimerkkiaineistojen avulla.

Logistisella regressioanalyysillä voidaan analysoida yhden tai monen selittävän tekijän yhteyksiä luokittelevaan vastemuuttujaan. Lineaariset mallit soveltuvat tilanteeseen, jossa ollaan kiinnostuneita yhden tai monen selittävän muuttujan yhteydestä jatkuvaan vastemuuttujaan. Toistettujen mittausten menetelmillä voidaan analysoida pitkittäisaineistoja, joissa vastemuuttujan arvoja on mitattu useampana ajankohtana. Poisson regressiolla analysoidaan selittävien tekijöiden yhteyksiä vastetapahtumien lukumäärään/insidensseihin. Elinaika-analyysillä tarkastellaan selittävien tekijöiden yhteyttä päätetapahtumaan (esim. kuolema tai taudin uusiutuminen) huomioiden seuranta-aika tutkimuksen alusta päätetapahtumaan tai tutkimuksen loppumiseen.

Lineaariset mallit (yhdysvaikutukset, sekoittavat tekijät ja vaikutusta muovaavat tekijät):

- Varianssianalyysi
- Lineaarinen regressio
- Kovarianssianalyysi
- Toistettujen mittausten varianssianalyysi/kovarianssianalyysi

Logistiset regressioanalyysit (yhdysvaikutukset, sekoittavat tekijät ja vaikutusta muovaavat tekijät):

- Binäärinen regressioanalyysi
- Multinominen logistinen regressioanalyysi
- Kumulatiivinen logistinen regressioanalyysi
- Toistettujen mittausten logistinen regressioanalyysi (GEE-estimointimenetelmä)

Poisson regressioanalyysi:

- Esim. selittävien tekijöiden yhteys vastetapahtuman insidenssiin

Elinaika-analyysit:

- Kaplan Meierin menetelmä
- Coxin regressioanalyysi

[Official course record: DP00AI54](#)

802669S | Topology

5 ECTS | Mathematics | Advanced Studies | English, Finnish

Person in charge: Mahmoud Filali

Content

The course deals with point-set topology and includes:

The basic definitions of a topological space, examples, nets and convergence, continuous functions, compact spaces, connected spaces.

Learning outcomes

Topology is used in many areas of mathematics as well as in physics and other branches in pure sciences. The student will learn how to handle abstract situations, in particular infinite dimensional spaces where the basic Euclidean metric is not enough to study such spaces and so topology is essential.

[Official course record: 802669S](#)

NM00BD43 | Topology 2

5 ECTS | Mathematics | Advanced Studies | English

Person in charge: Mahmoud Filali

Content

This is a continuation of the basic topology course. The course includes more details on separation axioms. In particular we prove Urysohn's lemma and Tietze extension theorem, we see that normality is not inherited by subspaces and does not pass to products (unlike the other separation axioms). We study product spaces and prove Tychonoff theorem.

Learning outcomes

This is a continuation of the basic topology course. The course includes more details on separation axioms. In particular we prove Urysohn's lemma and Tietze extension theorem, we see that normality is not inherited by subspaces and does not pass to products (unlike the other separation axioms). We study product spaces and prove Tychonoff theorem.

Official course record: [NM00BD43](#)

Medicine & health

352011Y | Academic Study and Career Planning

1 ECTS | Health Sciences | General Studies | Finnish

Person in charge: Jonna Juntunen, Saara Kukkohovi

Content

Presentation of Nursing science and health management's master's degree programmes, planning of studies, study techniques, assessment, tutorial with senior tutor. Student's status, rights, and obligations. Planning of own career - goals, development and orientation of working life skills. Networks and networking.

Learning outcomes

Upon completion of the course, the student will be able to:
integrates into the university's multidisciplinary scientific community and into the student group of their own field of study;
is able to plan internship opportunities and thesis topics as part of their bachelor's degree;
is able to describe their competence and develop their own professional identity;
is able to promote group learning and recognise the need for lifelong learning;
recognises the key factors related to their own well-being and self-management;
is able to describe their competence, develop their professional identity, promote group learning and development, and recognise the need for lifelong learning

[Official course record: 352011Y](#)

352010Y | Academic Study and Study Planning

1 ECTS | Health Sciences | General Studies | Finnish

Person in charge: Jonna Juntunen, Saara Kukkohovi

Content

The University of Oulu and the Research Unit of Nursing Science and Health Management as a learning environment.

Student's status, rights, and obligations. Student organizations.

Presentation of degree programmes, planning of studies, study techniques, assessment, tutorials with senior tutor. Personal well-being and student support services at university. Professional growth and developing own competence.

Learning outcomes

Upon completion of the course, the student will be able to:
integrate into university and multi-disciplinary scientific community and the student group of one's discipline
learn to plan and schedule one's studies which are included in the Bachelor's degree
learn to plan one's studies as a part of a lifelong learning process
identify the key elements of personal well-being and self-management

[Official course record: 352010Y](#)

092117S | Acting as a Dentist in the Oral Health Care System

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Saujanya Karki, Ritva Näpänkangas

Content

Social and health care system in Finland, current topics of health care

Learning outcomes

Upon completion of the course, the student will be able to

- explain the social and health care service system in Finland
 - illustrate the current topics of health care such as health policy, social security, and health economics
 - discuss the concepts and goals of sustainability in dentistry
 - identify the possibilities of working in the private sector
 - apply a holistic approach to the management of the patients and appraise the treatment of patients with special needs.
 - draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material
 - Recognize the importance of their physical, mental and social well-being and care for themselves compassionately
 - follow the development of scientific and professional knowledge in their field
 - deal with the challenges of work and workload, uncertainty and change
 - reflect on their thoughts, feelings and actions in international environments
 - perform the tasks required for the course in accordance with the HTK Guide
 - work effectively in multidisciplinary teams, utilizing expertise from different fields and promoting common goals
 - work effectively in a group and negotiate and share tasks
- identify ethical questions and perspectives related to different situations and are able to search for information and answers to them. Identify the consequences of policy options.
- take into account the environmental and climate impacts of digital and other tools in their own operations, and to make sustainable choices

[Official course record: 092117S](#)

402957A | Addictions and Health

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Addictions and Health- course is part of the Intermediate Studies of Health education. The contents of the course include:

- * addiction and its effect on health and well-being
- * factors predisposing to addiction
- * functional dependencies
- * substance addictions
- * the process of breaking away from addiction and the stage model of addiction
- * service system in outline

Learning outcomes

Upon completion of the course students should be able to:

- * understand factors related to the connection between substances and health
- * can name the most commonly used intoxicants and explain their modes of action and key risks
- * know the most common functional dependencies
- * understand the factors influencing the emergence of addiction and breaking away from addiction

[Official course record: 402957A](#)

AY402957A | Addictions and Health (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Addictions and Health- course is part of the Intermediate Studies of Health education. The contents of the course include:

- * addiction and its effect on health and well-being
- * factors predisposing to addiction
- * functional dependencies
- * substance addictions
- * the process of breaking away from addiction and the stage model of addiction
- * service system in outline

Learning outcomes

Upon completion of the course students should be able to:

- * understand factors related to the connection between substances and health
- * can name the most commonly used intoxicants and explain their modes of action and key risks
- * know the most common functional dependencies
- * understand the factors influencing the emergence of addiction and breaking away from addiction

[Official course record: AY402957A](#)

402953A | Advanced Course in the Didactics of Health Studies

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Advanced Course in the Didactics of Health Studies - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * development of health education curriculum and teaching
- * health literacy
- * learning material and information and communication technology in supporting the teaching of health education
- * different ways of working as well as the principles, forms and development of evaluation
- * school development as a health promoter

Learning outcomes

Upon completing the course, the student:

- * reform the teaching of health education and related practices from the perspective of school development
- * choose and plan teaching forms, methods and working methods that support the achievement of the learner's goals
- * examine their own capabilities to act as a health education teacher

[Official course record: 402953A](#)

AY402953A | Advanced Course in the Didactics of Health Studies (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Advanced Course in the Didactics of Health Studies - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * development of health education curriculum and teaching
- * health literacy
- * learning material and information and communication technology in supporting the teaching of health education
- * different ways of working as well as the principles, forms and development of evaluation
- * school development as a health promoter

Learning outcomes

Upon completing the course, the student:

- * reform the teaching of health education and related practices from the perspective of school development
- * choose and plan teaching forms, methods and working methods that support the achievement of the learner's goals
- * examine their own capabilities to act as a health education teacher

Official course record: [AY402953A](#)

090603S | Advanced Practical Training DC11

30 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Before starting the advanced practical training, the student will set the learning objectives based on the assessment criteria. The student will get to know broadly various aspects of the dental care environment. During the advanced practical training, the student will evaluate the achievement of the learning objectives together with the supervisor of the training. At the end of the training, the student prepares a final report based on the competence goals.

Learning outcomes

During the advanced practical training the student will deepen the theoretical knowledge and clinical skills. After the training the student will identify and manage the field of a dentist in a basic health care, will know the Health Center as an operational environment including specialist medical care and different sectors offering basic health care in Finland.

Official course record: [090603S](#)

HL00AQ50 | Advanced Speech and Language Assessment: Children and Adolescents

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Nina Timonen

Content

The theoretical basis of the assessment of communication, language and speech skills in children and adolescents (psychometrics, testing, screening, using parental assessment to assess children's language development, observation, multidisciplinary assessment, assessment of multilingual children and adolescents) and practical application through cases.

Learning outcomes

On completion of the course, the student

- can interpret and apply the theoretical and methodological knowledge of communication, language and speech assessment of children and adolescents when evaluating the client's skills and functioning,
- can apply the results of the assessments when discussing the need for intervention and in setting the goals of intervention,
- can work in teams,
- has developed his/her interaction and communication skills through group work and discussions,
- has developed his/her problem-solving skills relevant to the clinical work of a speech and language therapist through the cases to be solved together.

Official course record: [HL00AQ50](#)

694791A | Assessment and Diagnostics of Disorders of the Communication, Language and Speech of Children and Youth

7 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Suvi Sarlund

Content

Etiology, differential diagnosis, and assessment of communication, language, and speech disorders in children and adolescents.

Learning outcomes

After completing the course, students will be able to:

- assess the functional capacity of children and young people by gathering relevant information using interviews and justified testing and assessment methods
- analyze and interpret information gathered about clients objectively and critically
- draw justified conclusions about the client's situation
- use concepts related to assessment in their own field
- identify and describe various speech, language, and communication disorders in children and young people
- the basics of differential diagnosis of speech, language, and communication disorders in children and young people
- the basics of interaction skills needed in speech therapy assessment and teamwork with children and young people

Official course record: [694791A](#)

HL00AQ49 | Autism spectrum

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Aija-Riitta Kotila

Content

- Introduction to autism and related terminology
- ICF in autism spectrum
- Differential diagnosis
- Neurobiology of autism
- Sensory processing
- Early intervention and targeted rehabilitation methods
- Parental involvement and community-based rehabilitation
- Eating
- Speech-supporting and alternative communication
- Social communication

Learning outcomes

This course provides students with an in-depth understanding of autism spectrum disorder . Upon completing the course, students will be able to describe the functional abilities and participation of individuals on the autism spectrum using the ICF framework.

Students will learn to explain key challenges associated with sensory processing and eating in individuals on the autism spectrum. In addition, they will be able to identify and describe characteristic features of interaction, communication, and language development in autistic individuals.

The course further equips students with the ability to explain evidence-based clinical practices used in the assessment and rehabilitation of individuals on the autism spectrum. Students will also become familiar with current scientific understanding of the neurobiological underpinnings of autism spectrum disorders. After completing the course, students will be able to apply and combine multidisciplinary knowledge when planning intervention for individuals on the autism spectrum, and will also be able to participate in solving challenges together with other experts.

Official course record: [HL00AQ49](#)

351222A | Bachelor's Thesis

10 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Anne Oikarinen, Minna Ylisirniö, Jonna Juntunen

Content

Planning, implementation, evaluation and presentation of a research process. Writing of a Bachelor's thesis based primarily on scientific literature and/or empirical data in accordance with scientific principles.

Written maturity test, Bachelor's Thesis, OECTH. See 352514A Maturity test.

Learning outcomes

Upon completion of the course, the student will be able to:

- produce a Bachelor's thesis based on scientific literature and/or empirical data following principles of scientific writing and research and demonstrating one's skills in scientific communication
- able to use the most relevant reference databases, follow the basic principles of information retrieval in health sciences, and to evaluate the retrieved results and sources
- explain and discuss of one's own Bachelor thesis and to produce a scientific conference presentation or/and a poster on the basis of it
- evaluate and give feedback on the peer candidate's thesis at it's different stages
- understand the process of conducting scientific research and the different stages of it
- critically evaluate the reliability of one's own research, the research material used, and the source literature
- understand the basics of scientific communication.

Official course record: [351222A](#)

091795A | Basic Orthodontic Skills

5 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Virpi Harila, Matti Hannula

Content

Orthodontic equipment and materials will be introduced. Practical exercises individually and in pairs and teaching videos will instruct the basics of patient care in Orthodontics.

The basic concepts in orthodontics and documentation for the orthodontic treatment planning; understand the possibilities of treatment methods in different stages of the developing dentition; treatment methods, appliances, and mechanics in preference to growth guidance; basic knowledge to make the diagnosis, treatment planning and timing in orthodontic treatment. Patient information to clarify home care in Orthodontics. Orthodontic examination including anamnesis, occlusal status, biologic developmental stage of the dentition, occlusal function, cephalometric analysis, photography of the face and dentition and making dental casts including alginate copy and wax index of the dentition as well scanning dentition and occlusion for 3D-model option.

Treatment possibilities of all kind of occlusal problems especially in the mixed dentition. The mechanics of expanding appliances and how to mount orthodontic band, extraoral traction, early cross-bite treatment, interceptive slicing in crowding and collaboration with technical laboratory.

Biomechanics and reactions in bone and teeth due to moving teeth in Orthodontics. How to make Orthodontic appliances will be introduced e.g., brackets, arch wire and how to fix them, remove fixed appliances and how to make retention appliances and fix them. The student learns the basics to bend an ideal orthodontic arch wire and retention wire. Oral hygiene and first aid in Orthodontics. 3D-imaging in Orthodontics.

Learning outcomes

The student is able to estimate the incidence and implication of abnormal occlusion. Student is able to make a diagnosis on most common occlusal abnormalities and is able to define the degree of difficulty and the demand of treatment. The student knows the protocol and methods of orthodontic examination and uses radiology in diagnosis. Student is able to consider the function in orthodontic treatment need evaluation. Student understands the options for treatment methods and the importance of timing in treatment. The student is able to make most common orthodontic appliances and understands the overall care and advice for the patient. Student manages the orthodontic first aid.

With guidance, is able to make analytical inferences, critically examine materials, and apply creative methods within the scope of the course.

Is able to follow the development of scientific and professional knowledge in their field.

Is able to take into account the linguistic and cultural diversity of their student group and make use of it as part of the learning process

Is able to complete the tasks required in the course in accordance with the course guidelines

Is able to work in multidisciplinary teams, making use of expertise from different fields and advancing shared goals.

Is able to apply and further develop their professional interaction skills.

Official course record: 091795A

044113S | Basics in eHealth for Medical Students

3 ECTS | Medicine | | English

Person in charge: Jarmo Reponen

Content

terms and concepts

-societal dimensions

-delivery of health services

-electronic patient records

-data transfer within the health care system

-data transfer between the health care professionals and the patients

- citizens providing their own health data, mHealth-solutions

-national healthcare information exchange in Finland

- remote consultations, examples like teleradiology, remote physician appointments, telerehabilitation

-economical and functional assessment

-remote education

-future visions of health care information systems

-changing current topics in connected health like: AI, knowledge based medicine, cybersecurity, etc.

according to availability

Learning outcomes

Upon completion of the course:

- The student is able to describe key information and communication technology (ICT) terms and solutions used in healthcare, and identify corresponding applications in healthcare services and education.

- The student is able to critically evaluate digital health information, technologies and research evidence (e.g. their societal and economic significance).

- The student understands the role of digital health services and telemedicine solutions as part of the national healthcare information system.

- The student gains an initial understanding of future trends in healthcare ICT from the perspective of patient care, and is able to apply this understanding in practical environments.

- The student is able to communicate clearly and purposefully in digital learning and working environments, including giving and receiving constructive feedback.

- The student learns to identify digital and AI applications relevant to their field and to use them appropriately, safely and responsibly in their studies.

[Official course record: 0441135](#)

402961P | Basics of Anatomy and Physiology

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Basics of Anatomy and Physiology - course is part of the Basic studies in Health Education. The course covers thematic units:

1. From cell to individual (cell, tissue, organ, communication, human life cycle).
2. Building and metabolic waste materials of the body (digestion and urine formation, structures and functions).
3. Information management of the body (nervous system and senses, structures and functions).
4. Respiration and blood circulation (structures, function and basics of function regulation).
5. Muscle work and movement in the body (structures of the musculoskeletal system, muscle work, movement directions, basics of regulation).

Learning outcomes

Upon completing the course, the student understands and can describe:

- *cells and basic tissues as part of organs.
- *location and functions of organs in the body, numerical values of vital functions.
- *regulation of vital functions and cell communication in the body.
- *in Finnish terms of anatomy and physiology, body structure and function.

[Official course record: 402961P](#)

AY402961P | Basics of Anatomy and Physiology (OPEN UNI)

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Basics of Anatomy and Physiology - course is part of the Basic studies in Health Education. The course covers the following content areas:

1. From cell to individual (cell, tissue, organ, communication, human life cycle).
2. Building and metabolic waste materials of the body (digestion and urine formation, structures and functions).
3. Information management of the body (nervous system and senses, structures and functions).
4. Respiration and blood circulation (structures, function and basics of function regulation).
5. Muscle work and movement in the body (structures of the musculoskeletal system, muscle work, movement directions, basics of regulation).

Learning outcomes

Upon completing the course, the student understands and can describe:

- *cells and basic tissues as part of organs.
- *location and functions of organs in the body, numerical values of vital functions.
- *regulation of vital functions and cell communication in the body.
- *in Finnish terms of anatomy and physiology, body structure and function.

[Official course record: AY402961P](#)

AY00BB16 | Basics of Human-Centered Leadership in Social and Health Care (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Iina Nerg, Outi Kanste

Content

- basic concepts of leadership in social and health care
- human-centered leadership models and styles
- psychology of leadership and positivity in leadership
- self-leadership skills

Learning outcomes

Upon completion of the course, the student will be able to:

- define the basic concepts of leadership in social and health care
- describe the characteristics, objectives, and values of human-centered leadership and apply human-centered leadership methods in the practical management of social and health care
- recognize the psychology of leadership and the effects of positivity in social and health care management
- apply human-centered leadership methods in practical social and health care management
- apply self-leadership skills in everyday management work

Official course record: [AY00BB16](#)

402951P | Basics of the Didactics of Health Education

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Basics of the Didactics of Health Education - course is part of the Basic studies in Health Education. The course covers the following content areas:

- * health education curriculum at different school levels
- * pedagogical approaches and related teaching methods
- * the role and tasks of the teacher and the learner
- * the choice and importance of learning environments, tools and materials
- * the principles of planning, implementation and evaluation of health education teaching

Learning outcomes

Upon completing the course, the student is able to:

- * comprehensively examine the individual and communal starting points of health promotion and health education
- * to plan health education teaching contents, teaching methods, learning environments and evaluation
- * choose health education contents and subject didactic teaching methods, plan different learning environments and learning materials and compare their suitability from the point of view of achieving learning goals

Official course record: [402951P](#)

AY402951P | Basics of the Didactics of Health Education (OPEN UNI)

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Basics of the Didactics of Health Education - course is part of the basic studies in health education. The course covers the following content areas:

- * health education curriculum at different school levels
- * pedagogical approaches and related teaching methods
- * the role and tasks of the teacher and the learner
- * the choice and importance of learning environments, tools and materials
- * the principles of planning, implementation and evaluation of health education teaching

Learning outcomes

Upon completing the course, the student is able to:

- * comprehensively examine the individual and communal starting points of health promotion and health education
- * to plan health education teaching contents, teaching methods, learning environments and evaluation
- * choose health education contents and subject didactic teaching methods, plan different learning environments and learning materials and compare their suitability from the point of view of achieving learning goals

Official course record: AY402951P

MD00AX96 | BDent Bachelor's Thesis

6 ECTS | Dentistry | Basic Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Bachelor's Thesis in dental undergraduate education (6 ECTS). Literature review or small-scale study project. For the degree, the student must write a maturity exam that demonstrate competence related to the field of the thesis and language skills in Finnish or Swedish.

Learning outcomes

A student can conduct a literature review or a small-scale study and report the results. A student learn to apply research methods and develop skills in information retrieval, critical thinking, and scientific communication.

Official course record: MD00AX96

091793A | Caries Risk, Diagnostics and Restorative Treatment

8 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Tarja Tanner, Päivi Havela, Päivi Rajavaara

Content

Caries diagnostics, caries risk assessment, caries control at individual level, materials and methods in restorative dentistry, treatment of deep dentinal lesions.

Learning outcomes

Upon completion of the course, the student will be able to

- understand factors associated with development of dental caries and their impact in progression of dental lesions and eventually pulpal infections (ICDAS/ICCMS)
- know the principles of cariological and endodontics diagnostics
- be competent in the principles of restorative dental treatment and materials
- know how to restore lesions using current methods and materials

Generic Skills to Be Taught

- Analytical, critical, and creative thinking skills
- Well-being and self-development skills
- Sustainability, responsibility, and ethical skills

Official course record: 091793A

091711A | Cariology I

2 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Tarja Tanner, Päivi Havela, Päivi Rajavaara

Content

Histology of dental tissues, histopathology, microbiology, saliva, diet, epidemiology of caries, caries indices, fluorides in caries prevention

Learning outcomes

Upon completion of the course, the student will be able to

- understand factors associated with development of dental caries lesions as well as those protecting from caries lesions
- be aware of the histology of dental hard tissues as well as histopathology of dental caries
- know prevalence of caries as well as indices meant for measuring the disease

Official course record: [091711A](#)

MD00AZ40 | Cariology III

3 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Tarja Tanner, Marja-Liisa Laitala

Content

An advanced course in cariology, reviewing the challenges of restorative treatment.

Identifying patients at risk of caries and making a treatment plan. Oral care of a person with special needs.

Diagnosis and restorative treatment of tooth wear.

Other current topics

Generic skills to be taught

- Analytical, critical, and creative thinking skills
- International and multicultural competences
- Sustainability, responsibility, and ethical competences
- Multidisciplinary and interdisciplinary competences
- Communication, interaction, and digital competences

Learning outcomes

Upon completion of the course, the student will be able to

- Identify challenging situations in restorative care
- Understand the connection between general diseases and caries risk, and incorporate this knowledge into treatment planning
- Recognize special conditions related to dentition, such as resorptions

Official course record: [MD00AZ40](#)

092101A | Cariology, Endodontology and Pediatric Dentistry, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Tarja Tanner, Päivi Havela

Content

1. All theoretical courses in Cariology, Endodontology and Pediatric Dentistry including clinical practice:

- Introduction to Oral Health II
- Tooth Morphology
- Cariology I
- Cariology II
- Cariology III
- Endodontics I
- Endodontics II
- Pedodontics

2. The student accomplishes the treatment of cariological and endodontic patients and participates to pedodontics clinic's work according to the criteria of teaching clinic

Generic skills to be taught

- Analytical, critical, and creative thinking skills
- Multidisciplinary and interdisciplinary competences
- Communication, interaction, and digital competences

Learning outcomes

In the final exam, students are expected to master all previously lectured and trained topics in the field. Upon completion of the course, the student will be able to know aetiology of dental diseases and

- diagnose different hard dental tissues lesions among different ages
- make a treatment plan and perform it
- know different restorative materials in theory and in clinical work
- master endodontic pathologies and diagnoses, make an endodontic treatment plan and execute it and know therotating endodontic instruments
- master different ages in children which affect dentition, manifestations of general diseases and child abuse and restorative treatment plan and it's execution with children know differences of public dental health and special treatment clinics considering cariology, endodontics and pediatric dentistry.

[Official course record: 092101A](#)

091510A | Cariology, Endodontology and Pediatric Dentistry, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

Content

Generic Skills to Be Taught:

- Analytical, critical, and creative thinking skills
- Multidisciplinary and interdisciplinary skills
- Communication, interaction, and digital skills

[Official course record: 091510A](#)

DR00AI55 | Clinical data/sample collection for scientific purposes: advantages and pitfalls

1 ECTS | Medicine, Obstetrics and Gynaecology | Post-graduate Studies | English

Person in charge: Riikka Arffman

Content

The course includes the following lectures:

1. Different types of data: Questionnaires, patient records, registers, biological samples
2. Sample size calculations
3. Study Funding
4. Good Clinical Practise (GCP)
5. General Data Protection Regulation (GDPR)
6. The Northern Finland Birth Cohorts
7. Data collection with applications -experience Onnikka
8. Endometrial sample bank collections
9. Clinical Trials Regulation in the European Union

In addition, the student needs to pass a short test after each lecture/section in order to move on to the next. The course also includes some reading assignments and mandatory activity on the discussion board.

Learning outcomes

The course introduces clinical data and sample collection process during clinical trials: what data could be collected from patients and what are the pitfalls when planning the data collection. It introduces practical examples from previous and ongoing studies at the University of Oulu

Official course record: [DR00AI55](#)

551307S | Clinical epidemiology

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Outi Uimari

Content

1. Causality
2. Diagnosis
3. Screening tests
4. Intervention studies and ethics
5. Outcome studies and RCTs
6. Studying natural cause and prognosis of illness
7. Systematic reviews on clinical trials
8. Observational studies on treatment effects
9. Prevention in clinical practice

Learning outcomes

Upon completion of the course, the student will be able to:

- Contemplate case identification with disease cutoffs and disease frequency using measures such as prevalence, incidence risk, odds and rate.
- Explore and determine association and causality between factors, and thereof identify risk/protective factors.
- Understands the principles of screening tests and basics of interpreting the results.
- Understands the pros and cons of different study designs in clinical epidemiology
- Understands the basic principles of designing, conducting and evaluating studies on effectiveness of interventions and treatments, explaining and avoiding errors and biases.
- Understands the principles of utilizing epidemiology in preventive work and in developing policy guidelines.
- Understands the methodology of systematic reviews.
- Understands the ethics of designing, conducting and reporting studies.

Official course record: [551307S](#)

MD00AX91 | Clinical microbiology

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Pia Holma, Antti Tiisanoja

Content

Lectures of common infectious diseases linked to dentistry, their diagnosis, and treatment.

Learning outcomes

Upon completion of the course the student knows infectious diseases linked to dentistry, their diagnosis and treatment, and give readiness to study infectious diseases independently.

Generic skills, student is able to:

- assess the significance of a patient's potential infectious diseases in dental care
- follow developments in the fields of immunology and infectious diseases
- take other students and teachers into consideration on the course and treat them with respect

[Official course record: MD00AX91](#)

694838A | Clinical Skills I

6 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Suvi Sarlund

Content

Rehabilitation service system and its sub-areas, healthcare legislation, fundamentals of clinical work, documentation, professional ethics issues

Learning outcomes

After completing the course:

- the student is familiar with the structure of social and health care, its general operating principles, and service provision
- the student recognizes the job descriptions and fields of work of speech therapists
- students will be able to explain the significance of healthcare legislation from the perspective of speech-language pathology
- students will recognize key concepts in their field
- students will have the basic documentation skills essential for speech-language pathology
- The student has formed an understanding of key working life skills
- The student is able to analytically assess ethical issues related to the work of a speech therapist
- The student has the basic knowledge required to begin guided practical training in clinical work

[Official course record: 694838A](#)

694851S | Clinical Skills II: Clinical Practice

4 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Reetta Baldin

Content

Monitoring the work of speech therapists in various social and health care institutions, rehabilitation companies and educational units. An overview of the structure of the social and health care system and the organizations in which the speech therapist works.

Learning outcomes

After completing the course, the student should

- be able to explain the main features of a speech therapist's job description and forms of cooperation in multidisciplinary teams in different social and health care institutions, rehabilitation companies and educational units.
- recognize the different roles of the speech therapist, both in their own work and as a member of the wider community.
- be familiar with the structure of the social and health care system, its general policies and service delivery.
- be able to describe the importance of professional and constructive communication within their own profession and with different professional groups
- know how to build his/her professional identity and maintain his/her own expertise in a goal-oriented manner
- be able to work in multidisciplinary and multi-professional teams and values expertise in different fields.

Official course record: [694851S](#)

694850S | Clinical Skills II: Group Meetings

3 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content

The multidimensionality of speech therapy work, professional interaction situations, and professional growth. The possibilities of supervision in supporting occupational well-being

Learning outcomes

After completing the learning module, the student will be able to:

- analyze various perspectives and ethical issues related to the work of a speech therapist
- recognize different roles and interaction relationships in their own work as a future speech therapist and more broadly as a member of the work community
- examine their own interaction and listening skills and understand their central importance as essential work-life skills from both the clinical work and multidisciplinary work perspectives of a speech therapist.
- reflect on and analyze their own professional growth.
- understand the importance of continuous learning and reflection on their own actions for professional development throughout their career.
- identify and explain the key factors of occupational well-being and become familiar with supervision, as well as know how to utilize supervision later to support their work

Official course record: [694850S](#)

694829S | Clinical Skills III

25 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala, Reetta Baldin

Content

Four months training period

Implemented as a practice by a speech therapist doing clinical work and guided by speech therapists in various organizations where speech therapists work

Learning outcomes

Upon completion of the course, students will be able to work independently as speech therapists. After completion of the course students can:

- structuring and describing the central knowledge base of logopedia related to the topic of the internship
- seek, utilize and critically evaluate up-to-date scientific information, treatment recommendations and generally accepted and justified clinical practices in the planning, implementation and effectiveness monitoring of client work
- Evaluate and analyze the client's situation and functional capacity comprehensively, plan rehabilitation goals to improve functional capacity, and implement rehabilitation in a client-oriented manner
- Consciously use their interaction skills in a constructive, respectful and collaborative manner in various situations required for professional role
- act in accordance with the legislation governing the work of the speech therapist and the professional ethical principles of the speech therapist
- identify and highlight the importance and role of prevention, information, training and other societal influence as part of the speech therapist's work
- evaluate their own professional strengths and form their own learning objectives to develop their professional competence, understanding the limits of their own competence and resources

Official course record: [6948295](#)

MD00AX93 | Clinical Training DC10

8 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Endodontic treatment, extractions of teeth, cariological examination, diagnostics, treatment procedures and caries control, intermediate and advanced periodontal treatment, conservative treatment of TMD patient, occlusal rehabilitation and prosthetic treatment, clinical examination, treatment plan and treatment for patient with orthodontic treatment need, clinical examination of emergency dental cases, clinical examination and treatment of pedodontic patients, clinical examination, diagnostics and treatment of oral mucosal diseases, clinical examination and treatment of elderly patients.

Learning outcomes

Upon completion of the course, the student will be able to perform independently clinical examination, treatment plan and basic procedures in patients of different age groups.

Student get acquainted with general clinical assessment in Dentistry and clinical learning outcomes in Finland based on ADEE publications [Hammaslääketieteen yleinen kliininen arviointi ja oppiainekohtaiset kliiniset osaamistavoitteet, KLART].

Official course record: [MD00AX93](#)

MD00AX83 | Clinical Training DC5

0 ECTS | Dentistry | Basic Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

The basics of clinical environment and orientation to the patient information system.

Learning outcomes

Upon completion of the course the student will

- know the basics of authentic clinical environment.
- demonstrate developing abilities to integrate theoretical knowledge into practical patient work.

MD00AX80 | Clinical Training DC6

6 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

The clinical training consists of comprehensive patient care under supervision of the clinical teachers in different subjects of dentistry such as oral radiology, oral surgery, orthodontics, cariology, and periodontology.

Learning outcomes

Upon completion of the course the student will

- know the basics of patient interaction and comprehensive dental care in authentic clinical environment.
- be able to perform clinical examination, treatment plan and basic procedures in cariology, periodontology, oral surgery, orthodontics, oral radiology, and stomatognathic physiology under supervision.

Official course record: MD00AX80

091703A | Clinical Training DC7

8 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Endodontic treatment, extractions of teeth, cariological examination, diagnostics and treatment, intermediate periodontal treatment, conservative treatment of TMD patient, clinical examination and treatment plan for patient with orthodontic treatment need, diagnostics in oral radiology.

Learning outcomes

Upon completion of the course the student will

- know the basics of oral health promotion.
- be able to perform clinical examination, treatment plan and basic procedures in endodontics, cariology, periodontology, oral surgery, orthodontics, oral radiology, and stomatognathic physiology.
- get acquainted with general clinical assessment in Dentistry and clinical learning outcomes in Finland based on ADEE publications [Hammaslääketieteen yleinen kliininen arviointi ja oppiainekohtaiset kliiniset osaamistavoitteet, KLART].

Official course record: 091703A

MD00AX90 | Clinical Training DC8

10 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Endodontic treatment, extractions of teeth, cariological examination, treatment plan and treatment procedures, intermediate and advanced periodontal treatment, conservative treatment of TMD patient, assessment of treatment need for occlusal rehabilitation and prosthetic treatment, clinical examination, treatment plan and treatment for patient with orthodontic treatment need, clinical examination of emergency dental cases, clinical examination and treatment of pedodontics patients, clinical examination, introduction of diagnostics and treatment of oral mucosal diseases, dental treatment in specialist care.

Learning outcomes

Upon completion of the course the student will be able to

- be able to perform independently comprehensive dental care.
- be able to treat pedodontic patients.
- get acquainted with diagnostics and treatment of oral mucosal diseases
- discuss the dental care in specialist care
- get acquainted with general clinical assessment in Dentistry and clinical learning outcomes in Finland based on ADEE publications [Hammaslääketieteen yleinen kliininen arviointi ja oppiainekohtaiset kliiniset osaamistavoitteet, KLART].

Official course record: MD00AX90

091705A | Clinical Training DC9

8 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Endodontic treatment, extractions of teeth, cariological treatment, intermediate and advanced periodontal treatment, conservative treatment of TMD patient, occlusal rehabilitation and prosthetic treatment, clinical examination, treatment plan and treatment for patient with orthodontic treatment need, clinical examination of emergency dental cases, clinical examination and treatment of pedodontic patients, clinical examination, diagnostics and treatment of oral mucosal diseases, clinical examination and treatment of elderly patients, dental care in specialist care.

Learning outcomes

Upon completion of the course the student will

- be able to perform independently clinical examination, treatment plan and basic procedures in patients of different age groups.
- get acquainted with general clinical assessment in Dentistry and clinical learning outcomes in Finland based on ADEE publications [Hammaslääketieteen yleinen kliininen arviointi ja oppiainekohtaiset kliiniset osaamistavoitteet, KLART].

Official course record: 091705A

DP00AJ81 | Content analysis

5 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Maria Kääriäinen, Heidi Siira

Content

1. The content analysis in Health sciences and research process
2. Inductive and deductive approach
3. Reporting of results
4. Trustworthiness and ethics

Learning outcomes

Upon completion of the course, the student is able to:

explain the phenomena and approaches for the content analysis

develop and implement a qualitative data data collection and analysis process.

report the results of the qualitative analysis

evaluate trustworthiness and ethic of content analysis

combine analytical, critical and creative thinking skills to solve complex problems in research activities

communicate effectively and discuss dialogically with the scientific community and other audiences about their own research and discipline

Official course record: [DP00AJ81](#)

091792A | Controlling dental caries

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Päivi Havela, Tarja Tanner

Content

Caries control at individual level

Learning outcomes

Upon completion of the course, the student will be able to

- know how to control caries at individual level
- carry out the basic methods of caries control

Official course record: [091792A](#)

AY00AM16 | Customer-oriented and secure digital health and social services (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish, English

Person in charge: Jonna Juntunen

Content

1. The concepts and the starting points for the development of customer-oriented and secure digital health and social services.

Learning outcomes

Upon completion of the course the student will be able to:

define the concepts of customer orientation, customer involvement and security in digital health and social services.

identify various digital customer-oriented solutions, services and products used in social and healthcare.

define the starting points of the development of customer-oriented and secure health and social services.

Official course record: [AY00AM16](#)

AY044120S | Dental and oral health (OPEN UNI)

2 ECTS | Dentistry | Other Studies | Finnish

Person in charge: Ritva Näpänkangas, Tarja Tanner

Content

Most common dental and oral diseases, prevalence of dental and oral diseases, oral health promotion, the relationship between general and oral health.

Learning outcomes

After the course the student is able to discuss the most common dental and oral diseases as well as treatment of those diseases. Student is able to discuss oral health promotion and also the basic aspects of the relationship between general and oral health.

[Official course record: AY044120S](#)

MD00BD68 | Dental Anxiety

1 ECTS | Dentistry | Other Studies | English

Person in charge: Saujanya Karki, Taina Kankaala

Content

Causes and prevalence of dental anxiety; treatment of anxious child and adult patients

Learning outcomes

Upon completion of the course, the student will be able to

- discuss the causes and prevalence of dental anxiety
- explain the treatment of anxious child and adult patients
- develop their professional skills to meet the needs of a changing society.
- work effectively in multidisciplinary teams, utilizing expertise from different fields and promoting common goals

[Official course record: MD00BD68](#)

090638A | Dental traumas, tooth transplantations and maxillomandibular fractures

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

The course contains lecture material and reading material that cover the topics of dental traumas and maxillomandibular fractures.

Learning outcomes

This course is designed for the International student to be a supplement to their already acquired knowledge at their home dental school in their own country. The student will show understanding in the principles of splinting, treatment of dental injuries and maxillomandibular fractures.

[Official course record: 090638A](#)

HL00AI87 | Development of Language and Communication: Fostering Linguistic Development

2 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Suvi Sarlund

Content

Areas of linguistic awareness, description of methods and techniques to support linguistic development, principles of group facilitation and teamwork skills.

Learning outcomes

During the course, students will learn to explain and use skills to support interaction and communication. After completing the course, students will be able to present and apply different ways of supporting language development. Students will be able to consciously use their interaction skills in a constructive, respectful and collaborative way. In addition, students will be able to describe different principles of group management and use teamwork skills.

Official course record: [HL00AI87](#)

AY694817P | Development of Language and Communication: Fostering Linguistic Development (OPEN UNIV)

2 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Terhi Hautala

Content

Areas of linguistic awareness, description of methods and techniques to support linguistic development, principles of group facilitation and teamwork skills.

Learning outcomes

During the course, students will learn to explain and use skills to support interaction and communication. After completing the course, students will be able to present and apply different ways of supporting language development. Students will be able to consciously use their interaction skills in a constructive, respectful and collaborative way. In addition, students will be able to describe different principles of group management and use teamwork skills.

Official course record: [AY694817P](#)

694817P | Development of Language and Communication: Fostering Linguistic Development and Instructing of Child Group

5 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Suvi Sarlund

Content

Describing the methods for fostering linguistic development, principles of instructing a group, instructing of a child group.

Learning outcomes

During the course, students will learn to explain and use skills to support interaction and communication. After completing the course, students will be able to present and apply different ways of supporting language development. Students will be able to consciously use their interaction skills in a constructive, respectful and collaborative way. In addition, students will be able to describe different principles of group management and use teamwork skills.

Official course record: [694817P](#)

694809P | Development of Language and Communication: Stages of the Language Development of Children

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Reetta Baldin

Content

Language development in interaction, description and analysis of the typical development of the different areas of language, description of the linguistic development of bilingual and multilingual children.

Key content

- prerequisites for language development
- phonology, lexicon, semantics, pragmatics, morphology, syntax
- development of reading and writing skills
- multilingualism and multiculturalism

Learning outcomes

Upon completion of the course, students will be able to

- describe the development of different aspects of language and the progression of development in typically developing children
- describe the language development of bilingual and multilingual children and identify the role of culture and language environment in the acquisition of language, speech and communication skills
- identify basic concepts and terms related to different aspects of language
- to search for and use scientific information
- communicate clearly, both orally and in writing, with experts in their field and with the general public
- use their interpersonal skills in a constructive, respectful and collaborative way

[Official course record: 694809P](#)

AY694809P | Development of Language and Communication: Stages of the Language Development of Children (OPEN UNIV)

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Terhi Hautala

Content

Language development in interaction, description and analysis of the typical development of the different areas of language, description of the linguistic development of bilingual and multilingual children.

Key content

- prerequisites for language development
- phonology, lexicon, semantics, pragmatics, morphology, syntax
- development of reading and writing skills
- multilingualism and multiculturalism

Learning outcomes

Upon completion of the course, students will be able to

- describe the development of different aspects of language and the progression of development in typically developing children
- describe the language development of bilingual and multilingual children and identify the role of culture and language environment in the acquisition of language, speech and communication skills
- identify basic concepts and terms related to different aspects of language
- to search for and use scientific information
- communicate clearly, both orally and in writing, with experts in their field and with the general public
- use their interpersonal skills in a constructive, respectful and collaborative way

Official course record: AY694809P

091794A | Diagnostics in Orthodontics

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Virpi Harila, Matti Hannula

Content

Characteristics of malocclusions
Diagnostic tools in orthodontics
Emergence timetables of teeth
Occlusion examination on dental casts
Imaging in orthodontics
General growth and orthodontics
Functional issues related to orthodontic patient examination
Extrinsic factor related to the emergency of orthodontic problems

Learning outcomes

Upon completion of the course the student will

- be able to evaluate and diagnose the most common malocclusion on population level and the importance of malocclusions
- understand the referring system and comprehensive care, related to the treatment of malocclusions
- be able to make the difference between mild and severe malocclusions.
- be competent to use the most common diagnostic tools and documentation methods to screen malocclusions.
- be able to evaluate the functional factors of occlusion, related to malocclusion.
- With guidance, is able to make analytical inferences and critically examine materials
- Is able to follow the development of scientific and professional knowledge in their field.
- Is able to complete the tasks required for the course
- Is able to approach the perspectives of other disciplines with openness and respect, and to recognize their potential impact on the development of their own field.
- Is able to work effectively in a group and to negotiate and share tasks

Official course record: 091794A

044115S | Diagnostics Tests

1 ECTS | Medicine | Advanced Studies | English

Person in charge: Outi Uimari

Content

The book includes the principles of diagnostic tests and their appraisal.

Learning outcomes

The aim is that after the course the student understands what is physiological and what is pathological, the principles of causation and clinical reasoning and is able to appraise diagnostic tests.

Official course record: 0441155

AY00AM17 | Digital competence in health and social services (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish, English

Person in charge: Jonna Juntunen

Content

1. Areas of digital competence (knowledge, skills, values, attitudes) in social and healthcare.
2. Factors associated with digital competence and competence development.
3. Digital competence development and assessment process.

Learning outcomes

Upon completion of the course, the student will be able to:

- identify the needs for digital competence in social welfare and healthcare.
- identify the factors affecting digital competence in social welfare and healthcare.
- identify and evaluate the importance of digital competence in future social welfare and healthcare
- identify challenges and opportunities for developing digital competence.

Official course record: AY00AM17

AY00AR78 | Digital counselling in social and healthcare (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Anne Oikarinen

Content

The modules:

1. Introduction
2. Supporting self-care
3. Interaction
4. Digital literacy
5. Development
6. Ethics

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the legal, pedagogical, and technological bases of digital counselling
- apply technology and data management processes in digital counselling and solve problems related to them
- resolve issues related to patient care in evidence-based ways as a part of a multidisciplinary team
- support the client in self-care and guide them to use the digital counselling environment
- create a reciprocal counselling relationship with a patient in a digital counselling environment
- evaluate and solve ethical challenges related to digital counselling
- innovatively develop digital counselling, considering the needs of different user groups

Official course record: AY00AR78

352212A | Digital pedagogy

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Content

Digital and Hybrid Pedagogy in Health Professions Education (main focus)

Digital learning environments and hybrid teaching: design, implementation, and pedagogical solutions

Hybrid intelligence in pedagogy: human-AI collaboration, teacher agency, ethical and inclusive use of data and AI in education

Interaction and guidance in hybrid settings (synchronous/asynchronous)

Learning analytics and hybrid intelligence-informed evidence-based pedagogical development (what can be measured and how results are interpreted)

Research on Teaching Methods and Learning

Evaluation of teaching interventions and pedagogical models: effectiveness and quality

Measurement and assessment: competence assessment, rubrics/assessment matrices, standardised assessment methods

Simulation Pedagogy as Part of Education Research

Pedagogical design of simulation and learning theories (briefing, debriefing, psychological safety)

Research on simulation in digital and hybrid formats (remote simulation, virtual simulation, VR/AR, multi-site implementation)

Assessment of simulation-based learning and research designs in hybrid intelligence environments (human decision-making, AI support, teamwork)

Structure of simulation exercises and application to practice

International Research Group Collaboration

Students familiarise themselves with the research lines, current articles, and seminar practices of an international health professions education research group

The course includes one or more joint seminars / guest lectures / journal clubs with the international group

Students reflect on their own research ideas in relation to international research evidence and receive peer feedback (also in English)

Learning outcomes

Upon completion of the course the student:

Understands the key theoretical foundations and research traditions of health professions education research (e.g. learning theories, pedagogical content knowledge, workplace learning) and their application in digital hybrid, and hybrid intelligence-informed learning environments and hybrid contexts.

Is able to analyse and evaluate teaching methods and learning processes in health professions education using a research-based approach and hybrid intelligence-informed approach (learning outcomes, learning experiences, engagement, development of competence).

Demonstrates competence in the research-oriented examination of digital, and hybrid intelligence pedagogy: is able to identify and measure pedagogically relevant phenomena (interaction, guidance/supervision, quality of feedback, learning analytics, accessibility, inclusion).

Understands the role of simulation pedagogy in health professions education research and is able to examine simulations (including remote, VR/AR, and hybrid solutions) from the perspectives of research design, learning objectives, and effectiveness, and hybrid intelligence (human decision-making, AI support, teamwork).

Is able to work in international collaboration and to take the international operating environment into account: follows and utilises international literature, participates in research group interaction, and identifies practices and research designs transferable to their own context.

Is able to teach and guide students' learning by creatively and ethically using pedagogically justified digital, hybrid, and simulation-based learning environments, demonstrating teacher agency in hybrid intelligence context

Official course record: 352212A

OH00AS63 | DigiWellPRO

2 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Krista Hylkilä

Content

The most used social media platforms, digital games and their genres, the benefits of social media and digital gaming, the adverse effects of digital media use for well-being, identifying the harms of problematic gaming and social media use, common risks related to online environment (cyberbullying, sexual harassment, grooming, and harmful content), guiding and supporting adolescents with digital media use, preventing problems with various methods.

Learning outcomes

After completing the course, you will have competence to:

- identify and explain the concept of digital well-being.
- recognize common digital media used by adolescents.
- explain the well-being effects of digital media (digital gaming and social media).
- explain the concepts of problematic digital gaming and problematic social media use, along with their well-being effects.
- identify challenges related to the digital media environment.
- support adolescents in the use of digital media to promote their health and well-being.

Official course record: OH00AS63

AY00AR83 | DigiWellPRO - Basics of Digiwellbeing (OPEN UNI)

2 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Krista Hylkilä

Content

The most used social media platforms, digital games and their genres, the benefits of social media and digital gaming, the adverse effects of digital media use for well-being, identifying the harms of problematic gaming and social media use, common risks related to online environment (cyberbullying, sexual harassment, grooming, and harmful content), guiding and supporting adolescents with digital media use, preventing problems with various methods.

Learning outcomes

After completing the course, you will have competence to:

- identify and explain the concept of digital well-being.
- recognize common digital media used by adolescents.
- explain the well-being effects of digital media (digital gaming and social media).
- explain the concepts of problematic digital gaming and problematic social media use, along with their well-being effects.
- identify challenges related to the digital media environment.
- support adolescents in the use of digital media to promote their health and well-being.

[Official course record: AY00AR83](#)

091791A | Diseases of Oral Mucosa

3 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Tuula Salo, Ritva Näpänkangas

Content

How to examine oral mucosa and take biopsy sample from a patient. How oral diseases are linked to the overall health (for example skin and sexually-transmitted diseases, HIV-infection). How to treat and follow a patient with oral diseases. Histopathological diagnosis and treatment of the following oral diseases: vesiculobullous diseases, ulcerative conditions, white, red-blue and pigmented lesions, verrucal-papillary and connective tissues lesions, potentially malignant oral lesions and oral cancer. Diagnostics and treatment Burning mouth and Sjögren's syndromes.

Learning outcomes

Upon completion of the course, the student will

- know the basic anatomy and histology of the oral mucosa.
- know the variations of the normal oral mucosa.
- be able to clinically diagnose oral mucosal diseases.
- be able to treat the most common oral mucosal diseases.
- is able, with guidance, to make analytical inferences, critically examine data, and identify the need for creative solutions based on a relatively limited dataset
- is able to reflect on their own actions and seek support when necessary
- recognizes the fundamentals of professional ethics in their field and is able to act in accordance with them

[Official course record: 091791A](#)

HL00BA82 | Disorders in Communication of Adults III: In deaf and/or hard-of-hearing, aging, and memory disorders

5 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Terhi Hautala

Content

- The assessment of communication abilities and difficulties of adults with varying degrees of hearing loss, as well as the specific features of their rehabilitation
- Communication changes related to aging, as well as communication disorders associated with cognitive impairment and memory disorders
- The student is able to name and use cognitive ability screening tests and utilize tests and qualitative language-cognitive assessment method
- In lectures and exercises, students become familiar with assessment methods and case examples, which include problem-solving tasks to be completed in small groups or pairs

Learning outcomes

After completing the course, the student

- can analyze the communication difficulties of adults who are deaf or hard-of-hearing,
- is familiar with the specific features of their rehabilitation,
- can apply relevant rehabilitation methods of adults who are deaf or hard-of-hearing in speech and language therapy,
- can analyze the communication changes related to normal aging and distinguish them from communication disorders caused by cognitive impairment and memory disorders,
- becomes familiar with supporting and rehabilitating the communication of individuals with memory disorders,
- has developed his/her interaction and communication skills through group works and discussions, as well as face-to-face teaching,
 - has developed his/her problem-solving skills through case examples that are solved together, which is important for the clinical work of a speech and language therapist.

Official course record: HL00BA82

694714A | Disorders in the Communication of Adults I: Voice and Voice Disorders

5 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Aija-Riitta Kotila

Content

Normal voice and voice control, voice disorders and their clinical examination and rehabilitation

Learning outcomes

Upon completing the course, a student will be able to explain what normal voice is and to classify voice disorders. The student will be able to define and explain the concepts related to the use of voice and voice disorders.

The student will be able to utilize current scientific evidence, theoretical frameworks, treatment recommendations and widely accepted clinical practice in the planning, implementation and evaluation of speech and voice and rehabilitation of clients with voice disorders.

In addition, the student will be able to demonstrate and instruct voice therapy exercises effectively in pair and group interactions.

Official course record: 694714A

694830A | Disorders in the Communication of Adults II: Aphasiology

6 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Terhi Hautala, Heli Huttu

Content

Neural processes related to aphasia, evaluation methods, types and rehabilitation methods of aphasia

Learning outcomes

After completing the course, the student will be able to:

- * explain the neural processes underlying aphasia
- * analyze different types of aphasia and their psychosocial effects on communication and interaction
- * identify, select, and use aphasia testing and assessment methods, independently administer one test to a healthy individual, and report on the process
- * utilize up-to-date scientific evidence, clinical guidelines, and generally accepted and justified clinical practices in their assessment and rehabilitation work
- * through group discussions and pair work during the course, reflect on the assessment and rehabilitation planning of hypothetical/real client cases together
- * understand that problem-solving and working with client cases are important professional skills, for example when working in a multidisciplinary rehabilitation team

Official course record: [694830A](#)

694797A | Disorders in the Communication of Adults IV: Motor Speech Disorders

5 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Heli Huttu

Content

Neural processes related to motor speech disorders, the diagnosing and rehabilitation of motor speech disorders

Learning outcomes

After completion of the course, students will be able to:

- explain the essential neural processes behind the motor speech disorders and identify the different disorders related to them
- apply this knowledge in the assessment and rehabilitation of motor speech disorders.
- utilize scientific evidence, treatment recommendations, and generally accepted and justified clinical practices in their assessment and rehabilitation work
- use and apply a variety of interaction and communication skills in both group and pair work

Official course record: [694797A](#)

694828A | Disorders in the Communication of Adults V: Dysphagia

4 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Heli Huttu

Content

Neural processes related to deglutition, types and rehabilitation of dysphagia, rehabilitation methods.

Learning outcomes

Upon completion of the course, student is able to:

- explain different neural processes behind deglutition
- analyse different types of dysphagia
- identify and use some of the assessment methods of the process of deglutition and also select and implement the essential rehabilitation methods for treat dysphagia
- use and apply various interaction and communication skills in both group and pair work

[Official course record: 694828A](#)

356016J | Doctoral Education Network of Health Sciences

5 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Maria Kääriäinen

Content

Content varies based on courses of the Doctoral Education Network of Health Sciences with nationally and internationally.

Doctoral courses support the national and international mobility of doctoral candidates by rotations in research groups in different universities.

Learning outcomes

Student is able to analyze the basics of health sciences and evaluate methodological choices from the perspective of multidisciplinary research in the field of health sciences internationally and nationally.

[Official course record: 356016J](#)

DP00AL41 | Doctoral thesis

0 ECTS | Archaeology, English, German Language and Culture, History, Information Studies, Literature, Cultural Anthropology, Logopedics, Swedish Language, Saami Culture, Saami Language, Finnish Language, Science Communication, History of Science and Ideas | Post-graduate Studies | Finnish, English

Person in charge: Pauliina Rautio

No description supplied in the collected record.

[Official course record: DP00AL41](#)

DP00BD88 | Doctoral Thesis

0 ECTS | Dentistry, Medicine | Post-graduate Studies | English, Finnish

Person in charge: Mika Martikainen

No description supplied in the collected record.

[Official course record: DP00BD88](#)

OH00AU54 | Education and development in worklife

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Heli Kerimaa, Mira Rajala, Heli Kuivila

Content

Research based educational and development competence; creation of training materials; planning and implementing a training event, podcast, or seminar presentation; clear and impactful communication of scientific knowledge; collaboration with working life partners and professional networks; recognition, reflection, and development of one's expertise.

Learning outcomes

Upon completion of the course, the student will be able:

- analyze key forms of collaboration with working life and relevant networks within their own discipline
- apply collaboration with working life in the development of their discipline
- analyze the competence needs of working life and link these observations to nursing science research
- design and implement a research-based educational or communication-oriented initiative
- participate in societal discourse from the perspective of their discipline in an analytical and responsible manner
- reflect on their own expertise and influence at the interface of science and society
- communicate research and key themes of their discipline to different target groups using appropriate methods
- describe the key methods of science communication and evaluate their suitability for different audiences
- recognize the significance of science popularization for individuals and society
- assess the role of popularization in strengthening understanding based on scientific evidence

Official course record: [OH00AU54](#)

351218A | Education and Teaching in Health Care

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Mira Rajala, Jonna Juntunen

Content

The Finnish social and health care education system and its objectives, goals and different educational policy programs, legislation governing higher education, internationalization of Finnish higher education institutions, building of qualifications of different occupational groups in social and health care, evaluation of education and training in social and health care, organization of social and health teacher training, teaching monitoring and fundamentals of social and health pedagogy.

Learning outcomes

Upon completion of the course, the student will be able to:

explain the main features of the Finnish education system for social and health care (ISCED) and the National Board of Education

summarize key objectives and strategies of the Ministry of Education and Culture, and identify international activities and partners

identify the qualifications produced by the social and health education system and their structures training understand skills and qualifications of social and health teachers and identify the competences required of a health educator

explain the principles of pedagogy in social and health education and training

understand principals of education research

Official course record: [351218A](#)

352228A | Elective special research course

3-10 ECTS | Nursing Science | Intermediate Studies | Finnish

Person in charge: Jonna Juntunen, Heli Kuivila, Outi Kanste

Content

According to a personal study plan in a research project including any phase of the research process and research methodology.

Learning outcomes

Upon completion of the course the student is able to conduct research or part of it according to a personal study plan following phases of a research process, and to evaluate learning process.

[Official course record: 352228A](#)

091713A | Endodontics I

2 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Päivi Havela, Tarja Tanner

Content

The prevention, pathogenesis and diagnosis of pulpal diseases, anatomy of the pulpal space. Treatment of deep dental caries lesion. The fundamentals of endodontic treatment.

Learning outcomes

Upon completion of the course, the student will be able to

- know the pathogenesis and the diagnostics of basic endodontic problems
- know how to proceed with the endodontic treatment

[Official course record: 091713A](#)

091713S | Endodontics II

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Päivi Havela, Tarja Tanner

Content

The preventics of endodontics, treatment of deep carious lesions. Factors influencing the outcome of endodontic treatment, the flare ups in endodontics, secondary treatments, endodontic problems beyond treatment, emergency treatments in endodontics, dental traumas.

Learning outcomes

Upon completion of the course, the student will be able to

- know diagnosis and fundamentals of treatment on demanding endodontic problems
- know how to diagnose, prevent and treat most common endodontic complications

[Official course record: 091713S](#)

040119Y | Environmental health care

1 ECTS | Medicine | General Studies | Finnish

Person in charge: Timo Hugg

No description supplied in the collected record.

[Official course record: 040119Y](#)

OH00AK40 | Epidemiological methodology in health and data science

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Jouko Miettunen

Content

Topics in the course include

- Foundations (and limitations) of data analysis and statistical modelling
- Epidemiological concept of population
- Ethical issues in medical research and data science
- Attrition
- Linking data to study design
- Strategies for analysis
- Selection biases
- Confounding, moderation, interaction, and effect modification
- Variation in disease by time, place, and person
- Disseminating data and interpretations
- Systematic reviews and meta-analyses

Learning outcomes

Upon completion of this module the students will be able to:

- Explain the basis of hypothesis testing and statistical estimation.
- Recognise the fundamental in epidemiologic data analysis (descriptives, directed acyclic graphs (DAGs), handling missing value, ...)
- Apply DAGs and statistical models to test associations.
- Identify the theory and the methods to test and estimate associations.
- Define the suitable analytical model for the question at hand.
- Assess, recognise and communicate differences between confounding / moderation / interaction / effect modification.
- Recognise ethical issues of medical research.
- Is able to apply analytical and critical thinking skills in epidemiological research.

Official course record: [OH00AK40](#)

090642A | Esthetics in prosthodontics

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Ritva Näpänkangas, Kirsi Sipilä

Content

Esthetic considerations in fixed and removable prostheses.

Learning outcomes

Upon completion of the course, the student will be able to discuss the esthetic considerations in fixed and removable prostheses.

Official course record: [090642A](#)

351210P | Ethics and Values as the Basis of the Health Care System

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Heli Kuivila, Jonna Juntunen

Content

Fundamentals of ethics and moral theories

Ethical principles, values, and guiding laws in the health sector

Identifying ethical challenges in social and health care phenomena

Sustainability, equality, and responsible expertise

Digitalization, artificial intelligence, and related ethical issues in the health sector

Good scientific practice and research ethics issues.

Learning outcomes

Upon completion of the course, the student will be able to:

- define the basic concepts of ethics and understand their significance in the healthcare field
- explain the different areas of ethics as well as the most common moral theories
- identify and be able to define the ethical principles, values, and laws that guide healthcare practice and relate to the position and rights of clients/patients
- evaluate and analyze the implementation of values and the challenges involved, as well as the importance of ethical principles and recommendations in healthcare contexts
- recognize the key principles of research ethics
- recognize ethical issues related to digital solutions and be able to discuss the ethical aspects of implementing artificial intelligence in healthcare
- recognize the dimensions of sustainability (social, ecological, economic, and cultural) and evaluate one's own actions in relation to them
- recognize the United Nations Sustainable Development Goals
- act equally and non-discriminatorily with diverse individuals in accordance with professional ethics and good scientific practice, while respecting different stakeholders, environments, and values

Official course record: [351210P](#)

AY351210P | Ethics and Values as the Basis of the Health Care System (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Jonna Juntunen

Content

Fundamentals of ethics and moral theories
Ethical principles, values, and guiding laws in the health sector
Identifying ethical challenges in social and health care phenomena
Sustainability, equality, and responsible expertise
Digitalization, artificial intelligence, and related ethical issues in the health sector
Good scientific practice and research ethics issues.

Learning outcomes

Upon completion of the course, the student will be able to:

- define the basic concepts of ethics and understand their significance in the healthcare field
- explain the different areas of ethics as well as the most common moral theories
- identify and be able to define the ethical principles, values, and laws that guide healthcare practice and relate to the position and rights of clients/patients
- evaluate and analyze the implementation of values and the challenges involved, as well as the importance of ethical principles and recommendations in healthcare contexts
- recognize the key principles of research ethics
- recognize ethical issues related to digital solutions and be able to discuss the ethical aspects of implementing artificial intelligence in healthcare
- recognize the dimensions of sustainability (social, ecological, economic, and cultural) and evaluate one's own actions in relation to them
- recognize the United Nations Sustainable Development Goals
- act equally and non-discriminatorily with diverse individuals in accordance with professional ethics and good scientific practice, while respecting different stakeholders, environments, and values

Official course record: [AY351210P](#)

OH00BB50 | Evaluation and Research of the Social and Health Care Service System

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- structures, operations and guidance of the social and health care service system
- research topics related to the social and health care service system
- multidisciplinary networks and the leadership of collaboration within the social and healthcare service system
- the international operating environment of the social and health care service system

Learning outcomes

Upon completion of the course, the student will be able to:

- critically assess the overall structure of the social and health care service system and compare it internationally
- analyse research topics related to the organisations, governance, and leadership of the social and health care service system
- manage multidisciplinary networks and collaboration within the social and healthcare service system
- work in international cooperation and take the international operating environment into account in their activities

Official course record: OH00BB50

DR00AI57 | Evaluation of tissue histology from female reproductive tract by microscopy

1 ECTS | Medicine | Post-graduate Studies | English

Person in charge: Riikka Arffman

Content

The course includes the following main sections:

1. Lecture: Basics of the endometrium: structure, function, menstrual cycle – Riikka Arffman
2. Lecture: Histological assessment of the endometrial cycle– Outi Lindgren
3. Lecture: Endometrial receptivity – Andres Salumets
4. Lecture: Endometrial pathologies and their recognition – Terhi Piltonen
5. Method: Immunohistochemistry
6. Method: Electron microscopy
7. Assignment: Essay

In addition, the student needs to pass a short test after each lecture/section before moving on to the next. The course also includes some reading assignments and mandatory activity on the discussion board.

Learning outcomes

Evaluation of tissue histology from female reproductive tract – microscopy training. Description: focuses on endometrial function, dating the endometrium and identifying different pathologies, using immunohistology and electron microscopy. Methods: Lectures, Microscopy images, Quizzes, reading assignments.

After completion of this course, the student knows how to identify the menstrual cycle phase by histology. The student is familiar with the common methods used in analysis of endometrial structure and histology.

Official course record: DR00AI57

044104S | Evidence Based Medicine Toolkit

1 ECTS | Medicine | Advanced Studies | English

Person in charge: Outi Uimari

Content

The students read the book Evidence-based Medicine Toolkit. Heneghan C, Badenoch D. BMJ Books, 2nd ed. 2006 (e-Book in the library) and will take the exam in electronic examination system, EXAM.
EXAM Instructions for students: <https://ict.oulu.fi/5330/> .

Learning outcomes

The aim of the course is that after having answered the questions of the online exam the student knows basics of the evidence based medicine including basic concepts for practicing it.

Official course record: 0441045

351215A | Evidence Based Practice, Research and Development

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Anne Oikarinen, Jonna Juntunen

Content

Evidence-based activity in social and health care, evolution of evidence-based activity in Finland and worldwide, evidence-based activity structures, process and evaluation, evidence-based decision making, evidence-based nursing development, organizational evidence-based activity, key evidence-based information publications and databases (for example Hotus, Käypähoito, Evidence-Based Nursing).

Learning outcomes

Upon completion of the course, the student will be able to:

- identify evidence-based approaches to social and health care
- tell the history and development of evidence-based activities
- explain the process of evidence-based action
- justify the importance of evidence-based information to support the development of health care and nursing

Official course record: 351215A

356019J | Evidence synthesis for use of healthcare

5 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Maria Kääriäinen

Content

Syntesis evidence

Judgement of the level of evidence

Learning outcomes

Student is able to synthesis the evidence to a clear reporting of recommendations linked to the evidence and evaluate the judgement of the level of evidence.

Official course record: 356019J

AY00AM19 | Evidence-based digital health and social services (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish, English

Person in charge: Jonna Juntunen,

Content

1. Evidence-based healthcare model.
2. Current national and international development needs of digital health and social services.
3. Evidence on digital health and social services.

Learning outcomes

Upon completion of the course, the student will be able to:

identify the importance of the evidence-based healthcare model in the development of digital health and social services.

identify the development needs of digital health and social services.

search for current and reliable evidence on digital health and social services.

exploit the evidence to the development of digital health and social services.

[Official course record: AY00AM19](#)

694843S | Expertise and working life skills in Logopedics 1

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

- arvioida omia ammatillisia vahvuuksiaan ja muodostaa omia oppimistavoitteita ammatillisen osaamisen kehittämiseksi
- analysoida ja soveltaa asiantuntijaksi kasvamiseen tarvittavia teoreettisia ja metodisia tietoja sekä työelämää tukevia taitoja
- soveltaa logopedista osaamistaan asiantuntijana toimimiseen
- seurata kansallisia ja kansainvälisiä muutoksia, jotka vaikuttavat oman alan kehitykseen

[Official course record: 694843S](#)

694844S | Expertise and working life skills in Logopedics 2

1-5 ECTS | Logopedics | Advanced Studies | Finnish, English

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

- arvioida omia ammatillisia vahvuuksiaan ja muodostaa omia oppimistavoitteita ammatillisen osaamisen kehittämiseksi
- analysoida ja soveltaa asiantuntijaksi kasvamiseen tarvittavia teoreettisia ja metodisia tietoja sekä työelämää tukevia taitoja
- soveltaa logopedista osaamistaan asiantuntijana toimimiseen
- seurata kansallisia ja kansainvälisiä muutoksia, jotka vaikuttavat oman alan kehitykseen

[Official course record: 694844S](#)

694845S | Expertise and working life skills in Logopedics 3

1-5 ECTS | Logopedics | Advanced Studies | Finnish, English

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

- arvioida omia ammatillisia vahvuuksiaan ja muodostaa omia oppimistavoitteita ammatillisen osaamisen kehittämiseksi
- analysoida ja soveltaa asiantuntijaksi kasvamiseen tarvittavia teoreettisia ja metodisia tietoja sekä työelämää tukevia taitoja
- soveltaa logopedista osaamistaan asiantuntijana toimimiseen
- seurata kansallisia ja kansainvälisiä muutoksia, jotka vaikuttavat oman alan kehitykseen

Official course record: [694845S](#)

694846S | Expertise and working life skills in Logopedics 4

1-5 ECTS | Logopedics | Advanced Studies | Finnish, English

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

- arvioida omia ammatillisia vahvuuksiaan ja muodostaa omia oppimistavoitteita ammatillisen osaamisen kehittämiseksi
- analysoida ja soveltaa asiantuntijaksi kasvamiseen tarvittavia teoreettisia ja metodisia tietoja sekä työelämää tukevia taitoja
- soveltaa logopedista osaamistaan asiantuntijana toimimiseen
- seurata kansallisia ja kansainvälisiä muutoksia, jotka vaikuttavat oman alan kehitykseen

Official course record: [694846S](#)

694847S | Expertise and working life skills in Logopedics 5

1-5 ECTS | Logopedics | Advanced Studies | Finnish, English

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Learning outcomes [Finnish source]

Opintojakson suoritettuaan opiskelija osaa:

- arvioida omia ammatillisia vahvuuksiaan ja muodostaa omia oppimistavoitteita ammatillisen osaamisen kehittämiseksi
- analysoida ja soveltaa asiantuntijaksi kasvamiseen tarvittavia teoreettisia ja metodisia tietoja sekä työelämää tukevia taitoja
- soveltaa logopedista osaamistaan asiantuntijana toimimiseen
- seurata kansallisia ja kansainvälisiä muutoksia, jotka vaikuttavat oman alan kehitykseen

Official course record: 6948475

OH00AU23 | Expertise in research activities

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Heidi Siira, Anne Oikarinen, Heli Kuivila

Content

Multidisciplinary research. Research permit process. Data protection notice. Risk assessment. Ethics committee statement. Scientific reporting and communication. Legislation related to research activities. National and international research activities. GDPR data protection regulation.

Learning outcomes

After completing the course, the student:

Is able to work as a member of multidisciplinary research teams, plan interdisciplinary health science research, and act in the role of a nursing science expert within a research group.

Can identify and consider the specific characteristics of health science research in its planning and implementation.

Understands the different stages of the research permit process, can apply for research permits, and is able to prepare a data protection notice and risk assessment.

Can define the legislation related to research activities and incorporate legal requirements into the planning and implementation of research.

Recognizes the importance of ethical review and assess the need for an ethical approval in health sciences research.

Understands the basic principles of scientific research reporting and is capable of conducting science communication.

Can build professional networks nationally and/or internationally.

Is able to organize the planning of a nursing science conference.

Is able to explain artificial intelligence, its subfields, and the basics of machine learning, as well as apply their use in research and related decision-making.

Official course record: OH00AU23

DR00AI56 | FACS cell sorting and primary cell culture from endometrial tissue

1 ECTS | Medicine, Obstetrics and Gynaecology | Post-graduate Studies | English

Person in charge: Riikka Arffman

Content

The course includes the following:

1. Lecture: Different cell types in the endometrium and their function -Riikka Arffman
2. Lecture: Endometrial stem cells - Masuma Khatun
3. Lecture: Endometrial biopsy sample collection -Terhi Piltonen
4. Lecture: Isolation of endometrial cells -Riikka Arffman
5. Video: Isolation of endometrial cells in practise
6. Lecture: FACS separation of endometrial cells -Riikka Arffman
7. Learning material on FACS
8. Video: FACS separation of endometrial cell populations in practise

In addition, the student needs to pass a short test after each lecture/section before moving on to the next. The course also includes some reading assignments and mandatory activity on the discussion board.

Learning outcomes

The course introduces different cell types of the endometrium, their isolation from human endometrial biopsy samples and separation by FACS. Method: Lectures, Videos, Quizzes, reading assignments.

After completion of this course, the student knows the cells of the endometrium and their roles. The students are familiar with isolation and culture methods for different endometrial cell types.

Official course record: [DR00AI56](#)

351212P | Finnish Social and Health Care System

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Iina Nerg, Jonna Juntunen

Content

Objectives of Finnish social, health and wellbeing policy, social and health service system, social and health care organizations, service providers and authorities, health services, social service and rehabilitation, political and administrative guidance on social and health care, legislation and strategies governing social and health services, status and rights of the patient and professionals in the social and health service system.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the goals and future prospects of Finnish social and health policy
- describe and analyze the goals and values of Finnish social, health and wellbeing policy
- describe the roles and responsibilities of key authorities and actors in the social and health care system
- define the principles governing the legislation governing social and health services and professionals
- analyze and evaluate client/patient status and rights in the social and health care system

Official course record: [351212P](#)

AY351212P | Finnish Social and Health Care System (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Jonna Juntunen

Content

Objectives of Finnish social, health and wellbeing policy, social and health service system, social and health care organizations, service providers and authorities, health services, social service and rehabilitation, political and administrative guidance on social and health care, legislation and strategies governing social and health services, status and rights of the patient and professionals in the social and health service system.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the goals and future prospects of Finnish social and health policy
- describe and analyze the goals and values of Finnish social, health and wellbeing policy
- describe the roles and responsibilities of key authorities and actors in the social and health care system
- define the principles governing the legislation governing social and health services and professionals
- analyze and evaluate client/patient status and rights in the social and health care system

[Official course record: AY351212P](#)

MD00AX88 | Fixed prosthodontics II

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Ritva Näpänkangas, Kirsi Sipilä

Content

Indications/contraindications and treatment phases of indirect restorations, digital restorative treatment

Learning outcomes

Upon completion of the course the student will have skills to treat the patient with indirect restorations and inform the patient about the treatment. Student is able to apply the principles of cavity preparation for an indirect restoration. The student can perform computer-aided scanning procedures and can tell about the computer-aided designing of fixed prostheses.

[Official course record: MD00AX88](#)

MM00AS88 | Gastroenterological surgery

4 ECTS | Surgery | Intermediate Studies | English

Person in charge: Professor

No description supplied in the collected record.

[Official course record: MM00AS88](#)

OH00BB53 | Generating and Evaluating Health Care Management Knowledge

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Outi Kanste

Content

- health management science knowledge and its generation within multidisciplinary social and health care, as well as public administration
- key research approaches in generating and evaluating knowledge in health management science and their relationship to methods used in related disciplines
- application and significance of health management science knowledge nationally and internationally

Learning outcomes

Upon completion of the course, the student will be able to:

- critically evaluate health management science knowledge and its generation within multidisciplinary social and health care, as well as public administration
- describe and analyse different research approaches used in generating and evaluating knowledge in health management science
- conclude critically on national and international research related to health management science and its significance
- apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines

Official course record: [OH00BB53](#)

OH00AM26 | Generating and Evaluation Scientific Knowledge in Nursing Science

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Tarja Pölkki, Heidi Siira, Heli Kuivila

Content

1. Extensive knowledge and research in nursing science.
2. Application and evaluation of evidence in nursing science.

Learning outcomes

Upon completion of the course the student will be able to:

critically evaluate evidence in nursing science and justify its significance from the scientific, societal, and social and healthcare perspective

solve demanding challenges independently and collaboratively based on evidence

make generalizations and draw conclusions about activities in social and healthcare

to promote interprofessional collaboration and represent the expertise of their own discipline in multidisciplinary and multi-professional groups

evaluate personal and groups' development of expertise and continuous learning.

Official course record: [OH00AM26](#)

551310S | Genetic and molecular epidemiology

5 ECTS | Epidemiology and Biomedical Data Science, Biomedicine | Advanced Studies | English

Person in charge: Eeva Sliz

Content

The basic theoretical concepts of

- genetics and inheritance
- genome-wide association studies
- key omics layers
- Mendelian randomization and causality in epidemiology

Learning outcomes

Upon completion of the course, students

- will be familiar with genetic and molecular methods and data commonly used in current epidemiological studies
- can understand the basics and background of genetics and inheritance, genome-wide association studies, key omics layers, and Mendelian randomization and causality in epidemiology
- can assess the advantages and limitations of applying molecular data in epidemiological studies
- can communicate the central concepts of molecular epidemiology in sound academic written style

Official course record: 5513105

091756A | Geriatric Dentistry

3 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Antti Tiisanoja, Paula Tegelberg

Content

Lectures:

- Gerontology (theories of aging, demography, age related biological changes)
- Geriatrics (diseases and use of drugs in old age)
- Gerodontology (oral changes in old age, epidemiology of oral diseases and challenges in old age, dental treatment plan in old age, prevention and treatment of oral diseases in old age, and oral palliative care)
- Online tasks: Tasks related to medication assessment in Terveysportti
- Theme day of lectures: Teaching of geriatric dentistry by various disciplines in dentistry

Participation in the applicable geriatric education directed to dental students

Learning outcomes

Upon completion of the course the student will

- know general traits related to aging and special features of dental diseases and dental treatment among the older people.
- will be able to notice oral changes related to aging
- will be able to diagnose oral diseases of the older people
- will be able to evaluate how functional ability and diseases effect on dental planning and care
- will be able to take into account the effect of aging on the medical treatment of the older people
- will be able to manage principles of oral palliative care

Generic learning outcomes:

- will be able to independently make analytical and critical conclusions based on the patient's medical history and clinical findings, and to creatively apply this knowledge in the implementation of patient care
- will be able to develop professional competence to meet the needs of an ageing society
- will be able to recognize the physical risks associated with geriatric dental patient work (work ergonomics)
- will be able to take into account linguistic and cultural diversity in the ageing population
- will be able to reflect on ethical issues encountered in geriatric dentistry
- will be able to utilize knowledge and methods from medicine, gerontology, and dentistry in the planning and implementation of care for older patients
- will be able to work as part of a multidisciplinary team, take into account communication challenges encountered with older patients, and use various digital databases to support patient care

Official course record: 091756A

OH00BA90 | GeroDigiLead - Managing the digital transformation process in older adults care within restorative care

3 ECTS | Health Sciences | Other Studies | Finnish

Person in charge: Sinikka Lotvonen, Jonna Juntunen, Mari Parkkila

Content

- Digitalization in work with older adults
- Restorative care utilizing digital solutions
- Data-driven leadership and change management in digital restorative care
- Integration and establishment of digital restorative care practices

Learning outcomes

Upon completion of the course, the student will be able to:

- Support and promote employees' digital skills within the context of restorative care in services for older adults.
- Describe the significance of digitalization in services for older adults within the social and healthcare sector.
- Recognize that employees possess varying levels of digital competence.
- Describe restorative care for older adults and the factors influencing it.
- Explain the concepts of data-driven leadership and change management, and apply them in the digital transformation process of restorative care.
- Support employees in utilizing various digital and technological solutions to enhance restorative care for older adults.
- Lead the integration and establishment of digital restorative care practices.

[Official course record: OH00BA90](#)

AY00BA91 | GeroDigiLead - Managing the digital transformation process in older adults care within restorative care (OPEN UNI)

3 ECTS | Health Sciences | Other Studies | Finnish

Person in charge: Sinikka Lotvonen, Jonna Juntunen, Mari Parkkila

Content

- Digitalization in work with older adults
- Restorative care utilizing digital solutions
- Data-driven leadership and change management in digital restorative care
- Integration and establishment of digital restorative care practices

Learning outcomes

Upon completion of the course, the student will be able to:

- Support and promote employees' digital skills within the context of restorative care in services for older adults.
- Describe the significance of digitalization in services for older adults within the social and healthcare sector.
- Recognize that employees possess varying levels of digital competence.
- Describe restorative care for older adults and the factors influencing it.
- Explain the concepts of data-driven leadership and change management, and apply them in the digital transformation process of restorative care.
- Support employees in utilizing various digital and technological solutions to enhance restorative care for older adults.
- Lead the integration and establishment of digital restorative care practices.

[Official course record: AY00BA91](#)

OH00AK45 | GeroUnic

5 ECTS | Health Sciences, Nursing Science | Basic Studies |

Person in charge: Heidi Siira

Content

1. Individual ageing and changing society
2. Functional ability of older adults
3. Comprehensive restorative care
4. Multi-professional co-operation in supporting successful aging

Learning outcomes

Upon completion of the course, the student will be able to:

recognize individual aging in changing society

understand the concept of functional ability holistically and identify related factors

understand the principles of restorative care

recognize the meaning of multi-professional co-operation in supporting successful aging

Official course record: [OH00AK45](#)

090641A | Glass fibers in periodontal and prosthetic treatment

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Meeri Ojala, Ritva Näpänkangas

Content

Glass fibers in periodontal and prosthetic treatment (Stick Tech)

Learning outcomes

Upon completion of the course, student knows basic principles of using glass fibers in periodontal and prosthetic treatment (Stick Tech).

Official course record: [090641A](#)

551308S | Global Public Health

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Saranya Palaniswamy

Content

Global health (morbidity and mortality) is strongly associated with the availability and allocation of resources, the undisturbed development of societies and functionality of political systems.

This course introduces the multidisciplinary field of public health in a global context. The students will get an overview of the social, environmental, and ethical contexts of public health which are intrinsically connected to sustainable developmental goals (SDGs) (For example: SDG 3: Good Health and Well-being, SDG 5: Gender Equality, SDG 13: Climate Action).

The course includes the basic concepts of non-communicable and infectious diseases, environment and health, global occupational health, universal health coverage, gender in health, ethical and human rights, migration, and citizen science in the context of global public health.

Learning outcomes

After completing the course, the student will be able to:

Recognize the main challenges in the field of global public health.

Develop research skills by investigating global health topics, gathering and evaluating relevant information from diverse sources.

Construct evidence-based arguments demonstrating critical thinking.

Present arguments clearly and persuasively in written essays and thematic presentations, using appropriate academic conventions.

Apply communication skills to engage in meaningful discussions on global health issues and propose practical solutions.

[Official course record: 5513085](#)

MD00AX82 | Growing Identity as a Dentist Part 1

0 ECTS | Dentistry | Basic Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

The structure and aim of the education in dentistry (BD, DDS), personal study plan, the University of Oulu and the Faculty of Medicine as a study and research community, the social network during the studies, growing as a dentist. Participation in the Finnish Dental Congress and Exhibition organized by the Finnish Dental Society Apollonia.

Learning outcomes

Upon completion of the course the student will

- know of the structure and the aim of the dental undergraduate studies.
- get acquainted with the University of Oulu and the Faculty of Medicine as an educational and scientific society.
- be able to plan the progression of their studies and manage their time.
- develops their professional identity and understands the importance of continuous learning.

[Official course record: MD00AX82](#)

MD00AX87 | Growing identity as a Dentist part 2

0 ECTS | Dentistry | General Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

University of Oulu and Faculty of Medicine as a study and research community, the social network during the studies, growing as a dentist, evidence-based medicine, Apollonia Symposium

Learning outcomes

Upon completion of the course the student will

- be able to make a roadmap of his studies and realize the identity as a dentist and growing expertise.
- develop their professional identity and understands the importance of continuous learning.
- realize the meaning of evidence-based medicine for the work as a dentist and is able to find answers to research questions.

[Official course record: MD00AX87](#)

MD00AZ74 | Hammaslääketieteen opintoihin kuuluvat muut suoritteet

0 ECTS | Dentistry | | Finnish

Person in charge: Ritva Näpänkangas

Content [Finnish source]

Joka toinen vuosi järjestettävät teemapäivät ja luennot:

1. Pediatrician teemapäivä (seuraava toteutuskerta kevät 2027)
2. Oikeushammaslääketieteen päivä (seuraava toteutuskerta kevät 2027)
3. Suukirurgia V kiputeemapäivä (seuraava toteutuskerta kevät 2026)
4. Potilasvahinkoluento Terveystieteiden tutkimuskeskus (seuraava toteutuskerta kevät 2026)

Official course record: [MD00AZ74](#)

OH00BB47 | Health Care Management as a Field of Science

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Outi Kanste

Content

- health care management as a field of science, its research areas, and its relationship to other scientific fields
- the significance of knowledge of health care management in social and health care, as well as in public administration
- competence needs in working life for management and expert roles in social and health care
- competence in health management science and professional development as a manager and expert

Learning outcomes

Upon completion of the course, the student will be able to:

- describe and analyse health care management as a field of science, its research areas, and its relationship to other scientific fields
- evaluate the significance of knowledge of health care management in social and health care, as well as in public administration
- evaluate competence needs in working life for management and expert roles in social and health care based on scientific research
- critically assess their own competence and development needs as a manager and expert in health care management science

Official course record: [OH00BB47](#)

AY00BB48 | Health Care Management as a Field of Science (OPEN UNI)

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Iina Nerg, Outi Kanste

Content

- health care management as a field of science, its research areas, and its relationship to other scientific fields
- the significance of knowledge of health care management in social and health care, as well as in public administration
- competence needs in working life for management and expert roles in social and health care
- competence in health management science and professional development as a manager and expert

Learning outcomes

Upon completion of the course, the student will be able to:

- describe and analyse health care management as a field of science, its research areas, and its relationship to other scientific fields
- evaluate the significance of knowledge of health care management in social and health care, as well as in public administration
- evaluate competence needs in working life for management and expert roles in social and health care based on scientific research
- critically assess their own competence and development needs as a manager and expert in health care management science

Official course record: [AY00BB48](#)

351213P | Health Care System in Multicultural Societies

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Heidi Siira, Jonna Juntunen

Content

Key concepts related to internationalization and cultural competence, international mobility, the model of cultural competence, multiculturalism and ethics in health care, cultural differences, legislation and future perspectives on cultural and multiculturalism.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the importance of international mobility and globalization in social and health care.
- identify concepts related to international mobility, globalization, and cultural competence.
- identify the effects of legislation on cultural knowledge.
- identify internationally influential health organizations and explains their policies.
- analyze the significance of international and cultural competence in social and health care.
- explain the effects of cultural diversity on social and health care and to follow international developments.
- explain cultural differences and is able to cooperate with people of different cultures
- * recognises the diversity of cultures and the problematic nature of stereotypes related to different linguistic, national and ethnic groups, and is able to identify stereotypical ways of thinking
- * is able to work in multicultural teams and to act openly in international and multinational situations with people from different cultural backgrounds

Official course record: [351213P](#)

AY351213P | Health Care System in Multicultural Societies (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Jonna Juntunen

Content

Key concepts related to internationalization and cultural competence, international mobility, the model of cultural competence, multiculturalism and ethics in health care, cultural differences, legislation and future perspectives on cultural and multiculturalism.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the importance of international mobility and globalization in social and health care.
- identify concepts related to international mobility, globalization, and cultural competence.
- identify the effects of legislation on cultural knowledge.
- identify internationally influential health organizations and explains their policies.
- analyze the significance of international and cultural competence in social and health care.
- explain the effects of cultural diversity on social and health care and to follow international developments.
- explain cultural differences and is able to cooperate with people of different cultures
- * recognises the diversity of cultures and the problematic nature of stereotypes related to different linguistic, national and ethnic groups, and is able to identify stereotypical ways of thinking.
- * is able to work in multicultural teams and to act openly in international and multinational situations with people from different cultural backgrounds.

Official course record: [AY351213P](#)

351211P | Health Promotion and Health Coaching

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Krista Hylkilä, Jonna Juntunen

Content

Concepts, principles, values, and approaches related to health promotion, national health strategies and global health programs, health literacy, digitization in health promotion and digital well-being, sustainable development principles in health promotion, planetary health, and the impacts of climate change on human health and well-being.

Learning outcomes

Upon completion of the course, the student will be able to:

- define key concepts, principles, values, and approaches to well-being and health promotion
- identify national health strategies and global health programs
- recognize the impacts of digitalization on health and well-being
- understand the importance of digital well-being and health literacy
- understand the connection between sustainable development and health promotion
- understand the impacts of digital health care on sustainable development and for the functioning of the health care system
- identify the mechanisms of planetary health and the effects of climate change on health

Official course record: [351211P](#)

AY351211P | Health Promotion and Health Coaching (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Jonna Juntunen

Content

Concepts, principles, values, and approaches related to health promotion, national health strategies and global health programs, health literacy, digitization in health promotion and digital well-being, sustainable development principles in health promotion, planetary health, and the impacts of climate change on human health and well-being.

Learning outcomes

Upon completion of the course, the student will be able to:

- define key concepts, principles, values, and approaches to well-being and health promotion
- identify national health strategies and global health programs
- recognize the impacts of digitalization on health and well-being
- understand the importance of digital well-being and health literacy
- understand the connection between sustainable development and health promotion
- understand the impacts of digital health care on sustainable development and for the functioning of the health care system
- identify the mechanisms of planetary health and the effects of climate change on health

Official course record: [AY351211P](#)

351214A | Health Sciences in Society and Effect of It on Social Influence

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kerimaa, Iina Nerg, Jonna Juntunen

Content

The course examines the position of nursing science and health management science within the broader field of health sciences. The content includes an exploration of current research and development themes, along with the monitoring and critical analysis of societal discussions related to the health sciences. In addition, the course addresses various forms and channels of science communication and the popularization of scientific knowledge from the perspective of making health science research accessible to wider audiences.

Learning outcomes

Upon completion of the course, the student will be able to:

- critically examine health-related discourse within the health sciences
- identify the societal roles and opportunities of the health sciences
- recognize different forms and channels of science communication
- understand the significance of science communication in making one's own discipline accessible and in supporting the popularization of scientific knowledge

Official course record: [351214A](#)

351208P | Human Health and Well-Being, Part 1

2 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Saara Kukkohovi, Jonna Juntunen

Content

Life-course thinking, human health and well-being, functional ability, lifestyles, public health, Finnish national diseases, Finnish population, health inequalities

Learning outcomes

Upon completion of the course, the student will be able to: understand the concepts of health, well-being and functional ability, understand the life course perspective in human health and well-being, identify the basis of public health, explain the Finnish population and the most common national diseases, name the main causes of differences in human health, discuss the state of health and well-being and lifestyles of the Finnish population and the associated risk factors.

Official course record: [351208P](#)

AY351208P | Human Health and Well-Being, Part 1 (OPEN UNI)

2 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Saara Kukkohovi, Jonna Juntunen

Content

Life-course thinking, human health and well-being, functional ability, lifestyles, public health, Finnish national diseases, Finnish population, health inequalities

Learning outcomes

Upon completion of the course, the student will be able to: understand the concepts of health, well-being and functional ability, understand the life course perspective in human health and well-being, identify the basis of public health, explain the Finnish population and the most common national diseases, name the main causes of differences in human health, discuss the state of health and well-being and lifestyles of the Finnish population and the associated risk factors

[Official course record: AY351208P](#)

351209P | Human Health and Well-Being, Part 2

3 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Saara Kukkohovi, Jonna Juntunen

Content

Basics of information searching and research paper planning; Monitoring and researching health, well-being, and functional capacity; Basics of assessing the reliability of information; Writing a paper; Report structure and progression; Preparing and giving an oral presentation

Learning outcomes

Upon completion of the course, the student will be able to: gains skills in searching for information related to health and well-being, brainstorming ideas for research, and collecting data, form an understanding of how health and well-being can be monitored, searched and reported, evaluate the reliability of the information collected, is able to do a written assignment and to give an oral presentation of a completed assignment.

[Official course record: 351209P](#)

AY351209P | Human Health and Well-Being, Part 2 (OPEN UNI)

3 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Saara Kukkohovi, Jonna Juntunen

Content

Basics of information searching and research paper planning; Monitoring and researching health, well-being, and functional capacity; Basics of assessing the reliability of information; Writing a paper; Report structure and progression; Preparing and giving an oral presentation.

Learning outcomes

Upon completion of the course, the student will be able to: gains skills in searching for information related to health and well-being, brainstorming ideas for research, and collecting data, form an understanding of how health and well-being can be monitored, searched and reported, evaluate the reliability of the information collected, is able to do a written assignment and to give an oral presentation of a completed assignment.

[Official course record: AY351209P](#)

OH00BB60 | Hybrid teaching competence at education

2 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kuivila

Content

Module 1: Orientation to the course:

Personal aims, the concept of hybrid education, the advantages/challenges of hybrid teaching, the role of the student in hybrid teaching, the application of hybrid education into different teaching contents, support material for hybrid education.

Module 2: Pedagogical approaches:

Designing a pedagogical plan, the role of the teacher, supporting the learning process of the student in hybrid teaching

Module 3: Technological aspects:

Technological aspects of hybrid teaching, solutions/applications, tools and support for students' competences, technological plan for hybrid teaching

Module 4: Teaching methods in interactive hybrid education:

Social interaction and its role in learning, methods to support socio-emotional interaction in hybrid teaching/education.

Module 5: Teaching methods in collaborative hybrid learning:

The concept of collaborative learning, the benefits and challenges of collaborative learning, different methods of collaborative learning in hybrid learning, supporting students' learning in collaborative learning.

Module 6: Assessment and feedback in hybrid education:

The importance of assessment, self-assessment, peer assessment, teacher assessment in hybrid teaching, continuous learning

Learning outcomes

Upon completion of the course the student:

is able to assess the pedagogical and technological bases for the implementation of hybrid teaching

is able to plan hybrid teaching for different learning situations

is able to apply technology to support the learning process in hybrid learning

is able to apply appropriate teaching methods to support student interaction and collaborative learning in hybrid teaching/learning

is able to assess students' competence in a hybrid learning environment and provide feedback on students' learning in hybrid teaching

[Official course record: OH00BB60](#)

AY00AM79 | Hybrid teaching competence at education (OPEN UNI)

2 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kuivila

Content

Module 1: Orientation to the course:

Personal aims, the concept of hybrid education, the advantages/challenges of hybrid teaching, the role of the student in hybrid teaching, the application of hybrid education into different teaching contents, support material for hybrid education.

Module 2: Pedagogical approaches:

Designing a pedagogical plan, the role of the teacher, supporting the learning process of the student in hybrid teaching

Module 3: Technological aspects:

Technological aspects of hybrid teaching, solutions/applications, tools and support for students' competences, technological plan for hybrid teaching

Module 4: Teaching methods in interactive hybrid education:

Social interaction and its role in learning, methods to support socio-emotional interaction in hybrid teaching/education.

Module 5: Teaching methods in collaborative hybrid learning:

The concept of collaborative learning, the benefits and challenges of collaborative learning, different methods of collaborative learning in hybrid learning, supporting students' learning in collaborative learning.

Module 6: Assessment and feedback in hybrid education:

The importance of assessment, self-assessment, peer assessment, teacher assessment in hybrid teaching, continuous learning

Learning outcomes

Upon completion of the course the student:

is able to assess the pedagogical and technological bases for the implementation of hybrid teaching

is able to plan hybrid teaching for different learning situations

is able to apply technology to support the learning process in hybrid learning

is able to apply appropriate teaching methods to support student interaction and collaborative learning in hybrid teaching/learning

is able to assess students' competence in a hybrid learning environment and provide feedback on students' learning in hybrid teaching

[Official course record: AY00AM79](#)

092123S | Implant Dentistry I

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Ritva Kuoppala, Petri Iso-Kungas, Pekka Ylöstalo

Content

Basics of implant treatment

Learning outcomes

Upon completion of the course the student will

- have sufficient theoretical knowledge of implant treatment
- be able to assess the indications and contraindications of implant treatment
- be able to tell about different prosthetic treatment options when planning the implant treatment
- know how to make the treatment plan and procedures in outline
- be able to assess additional examinations needed for the treatment (e.g. X-rays or other imaging)
- be able to evaluate the effect of implant treatment on oral health and maintenance
- can do the examination of peri-implant soft tissue, understand the signs of inflammation and infection and can fulfill the maintenance treatment needed

[Official course record: 0921235](#)

092145S | Implant Dentistry II

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Petri Iso-Kungas, Ritva Kuoppala, Pekka Ylöstalo

Content

Prosthetic management in advanced cases
Basics of implant treatment

Learning outcomes

Upon completion of the course the student

- can tell the patient about the prosthetic management in advanced cases
- is able to recognize demanding implant treatment situations
- knows the principles of augmentation procedures and 3d-planning
- can do the examination of peri-implant soft tissue, understand the signs of inflammation and infection and can fulfill the maintenance treatment needed

[Official course record: 092145S](#)

OH00AU24 | Implementation of evidence

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Miia Jansson, Heli Kuivila

Content

1. Support structures for evidence-based practice
2. Key frameworks for implementation research
3. Model for developing and implementing evidence-based practice
4. Implementation plan
5. Impact evaluation

Learning outcomes

Upon completion of the course the student will be able to:

- Identify and assess development needs in current practices
- Utilize key support structures and frameworks for evidence-based practice
- Identify and evaluate barriers and facilitators related to implementation
- Develop, plan, and implement evidence-based practices
- Monitor and evaluate the implementation process and its outcomes
- Understand the challenges and opportunities of using real-world data for research, development, innovation, and leading by knowledge
- Describe real-world data interoperability challenges and the role of standards
- Promote multidisciplinary cooperation and lead multidisciplinary and multiprofessional teams

402956P | Improving Health Through Nutrition

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Improving Health Through Nutrition - course is part of the Basic studies in Health Education. The course covers the following content areas:

- * Nutrition recommendations for different age groups and food choices that promote health
- * The school's possibilities as an increaser of health-promoting nutrition
- * Special issues of nutrition; exercise, eating disorders, vegetarian diet, key special diets, additives, environmental effects

Learning outcomes

Upon completing the course, the student:

- * Knows the principles of health-promoting nutrition and can apply them in teaching different age groups
- * Understand the psychological, social and economic individual and societal factors related to eating and nutrition
- * Knows the principles of prevention and nutritional treatment of the most common nutritional and public health problems
- * Knows the special features of the most common special diets and knows the special issues of nutrition related to the present
- * Understand the environmental meanings related to nutrition and relate them to health-promoting food choices
- * Understands the importance of health education literacy and media criticality in processing nutrition-related information and maintaining one's own expertise
- * Knows where to look for reliable additional information and discusses nutrition-related questions with justification

Official course record: 402956P

AY402956P | Improving Health Through Nutrition (OPEN UNI)

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Improving Health Through Nutrition - course is part of the Basic studies in Health Education. The course covers the following content areas:

- * Nutrition recommendations for different age groups and food choices that promote health
- * The school's possibilities as an increaser of health-promoting nutrition
- * Special issues of nutrition; exercise, eating disorders, vegetarian diet, key special diets, additives, environmental effects

Learning outcomes

Upon completing the course, the student:

- * Knows the principles of health-promoting nutrition and can apply them in teaching different age groups
- * Understand the psychological, social and economic individual and societal factors related to eating and nutrition
- * Knows the principles of prevention and nutritional treatment of the most common nutritional and public health problems
- * Knows the special features of the most common special diets and knows the special issues of nutrition related to the present
- * Understand the environmental meanings related to nutrition and relate them to health-promoting food choices
- * Understands the importance of health education literacy and media criticality in processing nutrition-related information and maintaining one's own expertise
- * Knows where to look for reliable additional information and discusses nutrition-related questions with justification

Official course record: AY402956P

353306S | Information Literacy and Data Analysis

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Hannu Vähäniikkilä, Tanja Nordström

Content

Types of publications in health sciences; key bibliographic databases in health sciences; literature retrieval methods and principles of systematic literature retrieval; AI tools in information searching; evaluation of the reliability of information sources; reference management tools.

Scientific journals and stages of the publication process, ethics of scientific communication, approaches and question layouts in different fields of medicine and health sciences, structure of a scientific article. Critical reading of a scientific article.

General features of scientific research, relevance of research data, research ethics, research methods from different perspectives.

Objectives and phases of statistical research, from research plan to practice, formation of observational data, principles of statistical reasoning, study designs, possible biases in the study, presentation of results, statistical significance and clinical significance. Systematic reviews and meta-analyses.

Learning outcomes

After completing the course, the student is able to:

Evaluate various health science publications and channels from the perspective of the discipline

Critically evaluate and use information sources.

Knows the basics of research integrity and responsible conduct of research.

Use the key reference databases of health sciences in research

Critically evaluate search results and publications

Apply reference management programs independently

Plan the research and publication process in health science research

Compare quantitative research designs in health science research.

Assess the role of different types of statistical bias and chance in health science research.

Plan the implementation of quantitative research

Collect quantitative data in health science research

Apply the principles and basic methods of statistical reasoning.

Critically evaluate research publications that apply statistical methods.

Interpret and report quantitative research results in health science research

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Official course record: 3533065

AY353306S | Information Literacy and Data Analysis (OPEN UNI)

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: vastuhenkilö, opettaja, opettaja, opettaja

Content

Types of publications in health sciences, electronic journals and books; health sciences reference databases; evaluation and reference management software based on scientific publications.

Scientific journals and stages of the publication process, ethics of scientific communication, approaches and question layouts in different fields of medicine and health sciences, structure of a scientific article. Critical reading of a scientific article.

General features of scientific research, relevance of research data, research ethics, research methods from different perspectives.

Objectives and phases of statistical research, from research plan to practice, formation of observational data, principles of statistical reasoning, study designs, possible biases in the study, presentation of results, statistical significance and clinical significance. Systematic reviews and meta-analyses.

Learning outcomes

After completing the course, the student is able to:

Evaluate various health science publications and channels from the perspective of the discipline

Critically evaluate and use information sources.

Knows the basics of research integrity and responsible conduct of research.

Use the key reference databases of health sciences in research

Critically evaluate search results and publications

Apply reference management programs independently

Plan the research and publication process in health science research

Compare quantitative research designs in health science research.

Assess the role of different types of statistical bias and chance in health science research.

Plan the implementation of quantitative research

Collect quantitative data in health science research

Apply the principles and basic methods of statistical reasoning.

Critically evaluate research publications that apply statistical methods.

Interpret and report quantitative research results in health science research

[Official course record: AY353306S](#)

AY694840P | Interaction, voice, language and speech - work field of a speech and language therapist (OPEN UNI), 2 ECTS cr

2 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Kerttu Huttunen

Content

Content of the training

- the roots of Logopedics and its connections to other sciences
- information about the study possibilities to become a speech and language therapist
- information about where speech and language therapists work
- getting acquainted with the different phenomena and disorders of interaction, voice, speech, and language of people of different ages
- getting acquainted with the content of the speech and language therapist's work in the prevention, evaluation, and rehabilitation of communication disorders

Learning outcomes

After completing the course, the participant

- recognizes the development of Logopedics as its own discipline and its connections to other disciplines as well as the work of a speech and language therapist
- recognizes the field of activity of a speech and language therapist in different sectors of social and health care
- recognizes the features of interaction at different stages of the life cycle
- recognizes the different features of interaction disorders and rehabilitation

[Official course record: AY694840P](#)

OH00AU53 | Internship in expert positions

10 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Saara Kukkohovi, Heli Kerimaa, Krista Hylkilä, Heli Kuivila

Content

The training is completed in a social and healthcare organization or other organization operating in the social and health care sector according to a personal plan.

The training is also possible to complete abroad in student exchange.

Writing a training plan and an competence portfolio and promoting awareness of health science.

Learning outcomes

Upon completion of the course the student will be able to:

- is able to work effectively in multidisciplinary expert teams and in diverse professional working environments
- is able to develop competence related to their area of expertise and their capacity for managing change
- is able to apply evidence-based decision-making in their own practice
- is able to evaluate and analyse the development of their personal competence
- is able to assess their own development needs as well as future development challenges and directions in social and health care within expert roles in nursing science
- is able to act as an expert in changing working life situations and to apply creative problem-solving skills and innovative thinking

Official course record: [OH00AU53](#)

OH00BB56 | Internship in Management and Expert positions

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- the training is completed according to an individual plan in social and health care organization or another organization that operates in a social and health care environment
- the training is also possible to complete abroad in student exchange
- writing assignments

Learning outcomes

Upon completion of the course, the student will be able to:

- reflect and critically evaluate one's competence and expertise in the field of administration, management or research in social and health care
- reflect on self-leadership competencies within practical managerial or professional tasks
- evaluate one's competence in health management science and one's development as a leader or expert
- apply one's field-specific and scientific skills independently and in various work groups in practical training in accordance with the requirements of the duties in the chosen training job
- demonstrate by using a assignment one's development and competence in leadership, management or expert tasks, and ability to apply scientific knowledge in expert, coordination, planning and/or organizing tasks

Official course record: [OH00BB56](#)

356014J | Intervention research

1-5 ECTS | Health Sciences | Post-graduate Studies | English

Person in charge: Tarja Pölkki

Content

The developing process of the complex intervention. Evaluation of the interventions. The statistical fundamentals of the intervention research. Reporting of the intervention studies and evaluating its validity.

Learning outcomes

After completion of the course, a student will be able to:

- explain the meaning of developing complex interventions
- describe and evaluate the process of complex intervention development (i.e. planning, feasibility/piloting, evaluation, and implementation)
- evaluate critically complex interventions, and to assess the external and internal validity of intervention studies
- develop multidisciplinary and multi-professional solutions to global challenges, combining expertise from different fields in an innovative way

Official course record: [356014J](#)

OH00AU88 | Introduction to academic studies

2 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Miia Halonen

Content

The course introduces the University of Oulu as a learning environment, focusing on the study structures and practices in the Epidemiology and Biomedical Data Science Master's Programme.

Key Contents:

- Study practices in higher education
- Information literacy
- Academic writing- and presentation skills

Learning outcomes

Upon completion of the course, the student will be able to:

- Describe the principles of studying at the university level and adapt to the academic culture at the University of Oulu.
- Navigate the University of Oulu's study environment and use its resources effectively.
- Recognise the linguistic and cultural diversity of the study group.
- Recognise the importance of their physical, mental, and social well-being.
- Develop self-management skills relevant to university studies.
- Create a personal study plan.
- Locate, evaluate, and use scientific information relevant to the field of study critically.
- Explain the concept of plagiarism and apply proper citation practices.
- Use the reference management tool (Mendeley) to organize and cite references in academic work.
- Demonstrate proficiency in academic writing and presentation styles appropriate to the discipline of epidemiology and biomedical data science.

Official course record: [OH00AU88](#)

092112A | Introduction to Clinical Work

2 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Jussi Leppilähti, Tarja Tanner, Saujanya Karki, Ritva Näpänkangas

Content

Communication skills in health care, basics in ergonomics

Learning outcomes

Upon completion of the course, the student will be able to

- apply interaction skills with patients and other health care professionals and recognize his/her own limitations
- construct a good patient-dentist relationship
- knows basics of ergonomic work and apply them on her / his own working conditions

[Official course record: 092112A](#)

694824P | Introduction to Disorders in the Communication, Language and Speech of Children and Youth

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Leena-Kaisa Kolu

Content

The underlying factors of disorders in the communication, language and speech of children and youth.

Learning outcomes

Upon completion of the course student

- * will be able to identify, define, describe and classify different diagnoses behind the disorders in the communication, language and speech of children and youth, and to identify and define the underlying factors behind them.
- * knows how to set study goals for themselves

[Official course record: 694824P](#)

AY694824P | Introduction to Disorders in the Communication, Language and Speech of Children and Youth (OPEN UNIV)

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Terhi Hautala

Content

The underlying factors of disorders in the communication, language and speech of children and youth

Learning outcomes

Upon completion of the course, students will be able to identify and define different diagnoses behind the disorders in the communication, language and speech of children and youth, and to identify and define the underlying factors behind them.

[Official course record: AY694824P](#)

402960P | Introduction to Health Education Studies

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Introduction to Health Education Studies - course is part of the Basic studies in Health Education. The course covers the following content areas:

- * health and related concepts
- * health promotion, ethics and philosophy of healthpromotion
- * research in health promotion
- * national health promotion strategies

Learning outcomes

Upon completion the student should be able to:

- * explain the multidimensional nature of health and sickness
- * display an understanding of the essential concepts related to health
- * analyse health promotion and its possibilities from the health educational point of view
- * explains the causes and regionality of health differences both in Finland and globally

Official course record: 402960P

AY402960P | Introduction to Health Education Studies (OPEN UNI)

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Introduction to Health Education Studies - course is part of the Basic studies in Health Education. The course covers the following content areas:

- * health and related concepts
- * health promotion, ethics and philosophy of healthpromotion
- * research in health promotion
- * national health promotion strategies

Learning outcomes

Upon completion the student should be able to:

- * explain the multidimensional nature of health and sickness
- * display an understanding of the essential concepts related to health
- * analyse health promotion and its possibilities from the health educational point of view
- * explains the causes and regionality of health differences both in Finland and globally

Official course record: AY402960P

353231A | Introduction to Health Pedagogy

5 ECTS | Nursing Science | Intermediate Studies | Finnish, English

Person in charge: Heli Kerimaa, Mira Rajala, Heli Kuivila

Content

Evidence-based teaching. Perspectives and viewpoints of learning. Learning strategies. Learning processes. Teaching methods. Learning environments: physical, social and digital. Collaborative learning practices and online interaction. Pedagogical use of digital learning materials. Diverse learners. Accessibility and universal design in education. Inclusive pedagogical approaches in health sciences education. Digitalisation and artificial intelligence in teaching and learning research. AI applications in education. Critical evaluation of AI and digital solutions: safe, responsible and purposeful use, impact assessment and key regulatory frameworks. Roles of teachers and supervisors in health and social care education. Teacher ethical principles. Development of one's own teaching and supervision philosophy through reflection and self-assessment.

Learning outcomes

Upon completion of the course, the student will be able to:

- design evidence based education and instruction, analyze and evaluate key learning theories, learning strategies, learning processes and teaching methods, and critically examine their own conception of learning.
- evaluate different learning environments, apply appropriate working methods in online settings, and use digital learning materials in a pedagogically grounded manner.
- to identify and apply the key regulatory frameworks that guide the adoption of artificial intelligence and the use of digital solutions in healthcare and education.
- critically evaluate and utilize digital solutions and AI technologies within their own field of expertise in a purposeful, safe and responsible way, and recognize their implications for research, working life and society.
- evaluate and develop their teaching practice based on ethical principles and their own value, teaching and guidance philosophy.
- evaluate and consider the effects of increasing ethnic and cultural diversity in social, health and rehabilitation systems as well as in educational contexts.
- critically assess their own outputs within the online course and use reflection to support the development of their pedagogical competence.

[Official course record: 353231A](#)

351217A | Introduction to Innovations and Entrepreneurship

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kuivila, Eeva Vuorivirta-Vuoti, Jonna Juntunen

Content

Entrepreneurship as an activity and a career option, career stories; Meetings and meeting practices to support the innovation process; Innovation in the social and health field, Innovation process (design sprint, pitching), development of health innovation.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the importance of entrepreneurship and career opportunities in the social and health sector
- can create a business plan
- understand the concept of innovation and the principles of innovation
- identifies a problem or challenge in the social and health field
- creatively apply the innovation process to solve an identified problem or challenge
- present the innovation to different target groups
- know how to act in different roles in meetings
- is able to describe the basic significance of data and accessibility in digital and other innovative solutions

[Official course record: 351217A](#)

OH00BB90 | Introduction to Literature Retrieval in Health Science

1 ECTS | Health Sciences | General Studies | Finnish

Person in charge: Sirpa Grekula

Content

Library services, online library catalogue and e-book services. Analyzing research topic and defining search words. Basic literature retrieval methods. Most important databases and publication types of the discipline.

Learning outcomes

Upon completion of the course, the student is able to use key library services and able to find necessary books and articles.

The student can use the most important databases of the discipline and basic literature retrieval methods. The student understands how to use the introduced methods in evaluation of the reliability of information sources.

Official course record: [OH00BB90](#)

694700P | Introduction to Logopedics

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Kerttu Huttunen

Content

Development of Logopedics as a science, connections to other disciplines, the duties of a speech and language therapist in the prevention and assessment of communication disorders and (re)habilitation.

As a part of this course, [information retrieval course](<https://libguides oulu.fi/694700p>) will be completed.

Learning outcomes

Upon completion of this course, students

- will be able to explain the development of Logopedics into its own discipline and
- what connections it has to other disciplines.

Students will also

- identify key areas of research within the field of Logopedics,
- be able to use various methods of information retrieval to search for Logopedic information content,
- identify features of key literature in the field
- critically review what one has read
- express in written form what one has read

Additionally, the students will be able to describe the field of work of speech and language therapists in the different sectors of Social and Health Care Services and the therapist's role in multi-professional co-operation.

In addition, the aim of this course is to adopt an intellectual and ethical foundation in one's own field, to develop gradually built-up professional self-awareness and to develop interaction and communication skills.

Official course record: [694700P](#)

AY694700P | Introduction to Logopedics (OPEN UNIV)

6 ECTS | Logopedics | Basic Studies | Finnish

Person in charge: Kerttu Huttunen

Content

Development of Logopedics as a science, connections to other disciplines, the duties of a speech and language therapist in the prevention and assessment of communication disorders and rehabilitation.

It is recommended to complete the Information retrieval course together with this course.

Learning outcomes

Upon completion of this course, students will be able to explain

- the development of Logopedics into its own discipline and
- what connections it has to other disciplines.

Students will also

- identify the key areas of research in the field of Logopedics,
- be able to use various methods of information retrieval to search for logopedic information content,
- identify features of key literature in the field
- are able to critically review what they have read
- are able to express in written form what they have read

Additionally, they will be able to describe the field of work of speech and language therapists in the different sectors of Social and Health Care Services and their role in multi-professional co-operation. In addition, the aim is to adopt an intellectual and ethical foundation in one's own field and to develop interaction and communication skills.

Official course record: AY694700P

AY043001Y | Introduction to Medicine (OPEN UNI)

2 ECTS | Medicine | General Studies | Finnish

Person in charge: Nina Rautio, Henna Hyrkäs-Palmu

Content

- Work Life Skills: study skills, ethics
- Medical Psychology: tips for stress management
- General Medicine: professional growth in medical profession, the work and interaction of a doctor, the core of being a doctor, humane encounters and scientific thinking, the healthcare system
- First Aid: emergency first aid, unconscious patient and medical emergencies, injuries and poisonings, lifeless patient

Learning outcomes

Upon completion of the course, the student will be able to:

- use their time and stress management skills
- recognize multiple roles and duties in medical profession and understand what collegiality means in studies and in professional life
- know ethical principles in medical profession
- understand how the service system works in health care
- understand the importance of communicational skills in studies and in professional life
- operate in situations when first aid is needed

Official course record: AY043001Y

MD00AX81 | Introduction to Oral Health I

4 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Saujanya Karki, Virpi Harila

Content

- 1) Introduction to Orthodontics
 - 2) Oral health care personnel and main collaborators, organizations and providers of oral care in Finland, principles of health promotion, main oral diseases and oral self-care.
- Part of the teaching is integrated at C1 with the teaching of Department of Public Health Science and General Practice.

Learning outcomes

Upon completion of the course,

1) Student can observe normal craniofacial growth and development. Student can consider different factors effecting the development of the occlusion.

2) Student will be able to:

- discuss oral health care personnel and main collaborators, organizations and providers of oral health care services in Finland

- explain the principles and importance of health promotion

- identify the common oral diseases and basic principles of oral self-care

3) After completing the course, the student:

- is able to draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material.

- is able to follow the development of scientific and professional knowledge in their field.

- is able to reflect on their thoughts, feelings and actions in international environments

- is able to take into account other students and teachers of the course and treat them with respect

- is able to work effectively in multidisciplinary teams, utilizing expertise from different fields and promoting common goals

Official course record: [MD00AX81](#)

090170P | Introduction to Oral Health II

1 ECTS | Dentistry | Basic Studies | Finnish

Person in charge: Anna Pelkonen, Päivi Rajavaara

Content

Promoting oral health among primary school children

Lectures: most common non-communicable oral diseases, basics on prevention in individual and population levels.

Designing and implementation of event on oral health promoting targeted to primary school children.

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Learning outcomes

Upon completion of the course, the student will be able to

- recognise main oral health promoting and threatening factors (caries, periodontal diseases, erosive tooth wear)

- to design and implement oral health promotion among primary school children

- know procedures at the City of Oulu, Dental Teaching Clinic

- know basic information on the organization of specialized dental care

Official course record: [090170P](#)

090636A | Introduction to orthodontics

3 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Virpi Harila, Matti Hannula

Content

Introduction to orthodontics

Official course record: [090636A](#)

352254A | Introduction to Research Methodology and Philosophy of Sciences

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Jonna Juntunen, Iina Nerg

Content

Definition and tasks of science and scientific knowledge, philosophical traditions behind science and research methods (including quantitative and qualitative research methodologies), history and development of health sciences, nursing science and health management science as part of health sciences, scientific publishing, basic research, basic and applied research differences

Learning outcomes

Upon completion of the course, the student will be able to:

describe what science is and its functions

describe the stages of scientific development and the breakdown of disciplines that have shaped the foundations of health science research and expertise

explain the position of nursing science and health management science within the broader field of health sciences and identify their core research areas

define the characteristics and importance of scientific knowledge

describe the key philosophical underpinnings of quantitative and qualitative research as well as key research methods

[Official course record: 352254A](#)

OH00AJ38 | Introduction to Social and Healthcare management

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Mira Hammarén, Jonna Juntunen

Content

Theoretical and practical basics of health management, duties of health leader, different job descriptions and management environments.

Learning outcomes

Upon completion of the course, the student will be able to:

- define and implement basic concepts of health management and leadership in social and healthcare
- describe and evaluate the multi-professional field of work and work responsibilities in social and health management
- analyze and discuss the current challenges of social and health leadership in a work-oriented way

[Official course record: OH00AJ38](#)

352709P | Knowledge and Effectivity as part of the Management of Health and Welfare Promotion

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- the concept of knowledge management and effectiveness evaluation
- identifying the need for knowledge, collecting, sharing and utilising quantitative and qualitative information in support of health and well-being promotion and various assessment methods
- the identification of knowledge-based management and evaluative information in an organisation's activities

Learning outcomes

After completing the course, the student is able to:

- define the basic concepts related to knowledge management in health and well-being promotion
- outline the importance of knowledge management in the organization`s operations
- identify and compare different assessment methods in support of health and well-being promotion
- analyze and utilize well-being information as part of management, decision-making, service development and effectiveness assessment

Official course record: [352709P](#)

AY00AU35 | Knowledge Management in Social and Health Care (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- the basic principles of knowledge-based management in social and health care
- the use of information and communication technology in social and health care management
- the basic principles of knowledge-based decision-making
- basics of the leadership of evidence-based practice

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the basic concepts related to knowledge management
- understand the significance of information and communication technology as a tool for knowledge management
- understand the principles of knowledge-based decision-making in social and health care
- recognize the importance of evidence-based practice and its principles in healthcare management
- apply the principles of knowledge management in the practical management of social and healthcare services e the basic concepts of leadership in social and health care

Official course record: [AY00AU35](#)

OH00BB49 | Knowledge-Based Decision Making and Management in Social and Health Care

4 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Suvi Kuha, Outi Kanste

Content

- key concepts, theories, and foundations of knowledge-based management
- the information management process
- leadership of evidence-based practices in social and health care
- implementation leadership in social and health care
- utilisation of healthcare data flows in decision making

Learning outcomes

Upon completion of the course, the student will be able to:

- analyse and apply theories, practices, and diverse approaches related to knowledge-based management, information management, leadership of evidence-based practices, and implementation leadership in social and health care
- critically evaluate the implementation of information management processes and the principles of information management, and utilise the information generated by these processes in knowledge-based decision-making and management in social and health care
- analyse and creatively utilise the opportunities offered by digitalisation and new technologies in social and health care knowledge management (e.g., from the perspective of healthcare infrastructure interoperability and standards)
- lead evidence-based practice in social and health care and utilise evidence in decision-making and managerial work
- apply research-based knowledge and methods related to implementation leadership in managerial work, and analyse one's own role and actions as part of the implementation process
- critically evaluate the foundations for utilising healthcare data flows in decision making

[Official course record: OH00BB49](#)

353332S | Leadership and Management Training

10 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

The training is completed according to an individual plan in social and health care organization or another organization that operates in a social and health care environment.

The training is also possible to complete abroad in student exchange.

Writing a training plan, a final report and promoting awareness of the discipline.

Learning outcomes

Upon completion of the course, the student is able to:

- reflect and critically evaluate one's competence and expertise in the field of administration, management or research in social and health care
- apply one's field-specific and scientific skills independently and in groups in practical training in accordance with the requirements of the duties in the chosen training job
- demonstrate by using an assignment one's development and competence in leadership, management or expert tasks, and ability to apply scientific knowledge in expert, coordination, planning and/or organizing tasks

[Official course record: 353332S](#)

551305S | Life-course Epidemiology

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Eero Kajantie

Content

The course discusses basic theories and concepts in life-course epidemiology, for example regarding the history of life-course epidemiology, Developmental Origins of Health and Disease (DOHaD) theory, and important early life exposures as well as research methods used in life-course epidemiology. During this course you will also be able to gain hands-on experience in Finnish health register data.

Learning outcomes

After successfully completing the module, the student will be able to:

- summarise key theories and concepts of life-course epidemiology, including Developmental Origins of Health and Disease Theory, Predictive Adaptive Responses Theory, accumulation of risk, critical and sensitive periods.
- discuss the history of life-course epidemiology and birth cohort studies
- describe relevant issues in inferring causation from observational designs in life-course epidemiology and use directed acyclic graphs in designing statistical analysis and causal inference.
- discuss basic concepts of statistical methods in life-course epidemiology and select appropriate statistical methods according to study questions
- identify important early life exposures and explain their long-term impacts on health and wellbeing.
- identify and describe type of research questions asked and answered in life-course epidemiology
- determine exposures, mediators and outcomes from a life-course perspective
- recognise the key types of datasets in life-course epidemiology available to researchers and compare their strengths and weaknesses
- apply creative problem-solving skills to manage and organize register-based data and answer questions based on the data.
- demonstrate oral and written scientific communication skills.

[Official course record: 5513055](#)

OH00AK43 | Life-course modelling

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Priyanka Choudhary

Content

Basic understanding of lifecourse modelling and approaches, their general concepts and principles.
Introduction to structural equation modelling analysis including exploratory and confirmatory factor analysis with practical exercises

Learning outcomes

Upon completion of the course, the student will be able to:
Gain knowledge of lifecourse approaches and their applications
Conduct complex statistical analyses
Analyse and interpret measurement models
Practical application of structural equation modelling
Familiarize with Mplus
Work effectively in a multidisciplinary team

[Official course record: OH00AK43](#)

090637A | Light curing technique for dental exchange students

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Tarja Tanner, Päivi Havela

Content

Light curing and polymerization of composites

Learning outcomes

Upon completion of the course, the student will be able to know light curing techniques and how it effects for polymerization.

[Official course record: 090637A](#)

090643A | Literature exam: Fixed prosthodontics

2 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Ritva Näpänkangas, Kirsi Sipilä

Content

Principles of fixed prosthetic treatment phases in tooth-based restorations

Learning outcomes

Upon completion of the course, student knows the principles of fixed prosthetic treatment phases.

[Official course record: 090643A](#)

090625A | Literature exam: Prosthetic treatment of edentulous patient

3 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Ritva Kuoppala, Kirsi Sipilä

Content

The principles of prosthetic treatment of edentulous patients.

Learning outcomes

Upon completion of the course, student knows the principles of prosthetic treatment of edentulous patients.

[Official course record: 090625A](#)

090626A | Literature exam: Stomatognathic physiology part I

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Kirsi Sipilä, Ritva Näpänkangas

Content

The functional anatomy, physiology and biomechanics of the masticatory system.

Learning outcomes

Upon completion of the course, student knows the functional anatomy, physiology and biomechanics of the masticatory system.

[Official course record: 090626A](#)

090644A | Literature exam: Stomatognathic physiology part II

2 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Kirsi Sipilä, Ritva Näpänkangas

Content

Epidemiology, etiology, diagnosis and treatment of temporomandibular disorders.

Learning outcomes

Upon completion of the course, student knows epidemiology, etiology, diagnosis and treatment of temporomandibular disorders.

[Official course record: 090644A](#)

694803S | Literature Overview for Master's Thesis

10 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Kerttu Huttunen

Content

The student, with the support of supervision, will conduct a literature review of his/her own thesis using scientific literature and scientific writing methods.

Learning outcomes

On completion of the course, the student

- can work on projects in a long-term and responsible manner, independently and as a member of a community,
- will be able to evaluate different sources of information and scientific texts critically,
- know a great deal about the phenomenon they are working on for their thesis,
- master the basics of scientific writing and argumentation and
- can produce understandable and fluent scientific text.

[Official course record: 694803S](#)

AY00AM20 | Management in digital health and social services (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish, English

Person in charge: Jonna Juntunen,

Content

1. The specific features of digital health and social care management and managerial competence.
2. Leadership in changing digital health and social services.
3. Digital competence management in digitalized social and health care.

Learning outcomes

Upon completion of the course, the student will be able to

identify the specific features of management in digitalized social and healthcare.

identify the opportunities and challenges of digital health and social services in management.

[Official course record: AY00AM20](#)

OH00BB52 | Management Theories in Social and Health Care Environment

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- key concepts, theories, and principles of social and health care management
- core management tasks in social and health care
- management competence in social and health care
- management of multidisciplinary and interdisciplinarity
- the functioning and management of individuals and groups in social and health care organizations

Learning outcomes

Upon completion of the course, the student will be able to:

- interpret key concepts, theories, and principles of social and health care management
- analyse the core tasks of social and health care management, combine and evaluate the latest international and domestic scientific information, and apply the information to practical management in the multidimensional operating environment of social and health care
- critically evaluate social and health care management competence
- lead multidisciplinary and multi-professional teams in social and health care
- evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

Official course record: [OH00BB52](#)

694812S | Master's Thesis (Logopedics)

30 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Sari Kunnari

Content

Independent work as instructed, a written Master's Thesis

Learning outcomes

The student can work both independently and as part of a working community to conduct a long-term, creative and responsible project. In so doing, they will develop their professional expertise. They are able to take initiative in planning their work and time and are able to prioritise the tasks.

The student can collect, manage and analyse a substantial set of research materials independently. They can assess different sources of knowledge and scholarly texts critically and distinguish between relevant and irrelevant information in relation to the project as a whole.

The student can engage in analytical and critical thinking as well as in advanced problem-setting and solving. They are familiar with theories and methodologies in their own field and can apply them in practice. The student knows the ethical code of conduct and good scientific practice in their field.

The student has the capability to advance to postgraduate studies and produce new knowledge independently. They understand how scholarly knowledge is produced, and are able to apply research-based knowledge in professional work and decision-making.

The student knows the conventions of academic writing and argumentation. They can produce clear and fluent scholarly texts. They can prepare analytical reviews and reports based on a substantial set of materials.

The student can engage in scholarly communication. They can represent their field in varied groups, and give and receive constructive feedback. They can express themselves orally and assume an expert role.

Official course record: [694812S](#)

OH00BB57 | Master's Thesis and Research Seminar, Health Care Management

30 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Outi Kanste

Content

- searching for, critically evaluating, and applying scientific knowledge in one's own field of science, considering the interfaces between different fields
- drafting a research plan, selecting a work-life-oriented research topic and assessing its significance, and building networks and cooperation
- selecting, justifying, and applying research methods, as well as demonstrating analytical thinking and problem-solving skills
- data collection and analysis, and reporting results in accordance with good scientific practice
- conclusions and providing reasoned arguments
- critical and constructive scientific discussion on the thesis and performing a peer review
- thesis or scientific article that meets academic standards
- communication as an expert in Finnish and a foreign language about your own research

Learning outcomes

Upon completion of the course, the student will be able to:

- search, evaluate and apply scientific knowledge independently and creatively, and prepare a research plan
- critically justify, based on research evidence, the significance of a work-life-oriented research topic
- critically evaluate and justify different methodological choices
- carry out data collection and analysis, and report the results by justifying the decisions made and in accordance with good scientific practice
- justify and demonstrate proficiency in the research methods used, as well as analytical thinking and problem-solving skills
- make sound conclusions, justify decisions made in the thesis, and contribute to scientific discussion
- analyse and critically evaluate, both independently and in small groups, your own and other group members' research processes
- prepare a thesis or a scientific article that meets academic standards
- analyse arguments and argue appropriately
- apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- communicate as an expert in a way suitable for the target audience, also in a foreign language, and to build professional networks
- promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

Official course record: OH00BB57

353334S | Master's Thesis and Research Seminar, Health Management Science

35 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Outi Kanste

Content

Drafting an idea paper and a research plan and agreement of supervision. Group supervision, individual supervision and cooperation with the supervisor, peer group work, self and peer assessment, independent work, conference, and conference arrangements. Working on web-based learning environment.

International scientific literature and research articles related to the topic and research methods of the master's thesis. Producing a thesis or article that meets the scientific criteria. Critical and constructive scientific discussion on thesis and presentation of results and conclusions.

Learning outcomes

Upon completion of the course, the student is able to:

- search, use, evaluate and apply scientific information independently and on that basis, produce an acceptable written research plan in Finnish or in English
- justify critically and plausibly one's research topic with working life relevance
- evaluate, apply, and justify methodological decisions in different phases of a research process
- analyze and give feedback on peer research plan using information and communication technology
- present and justify chosen topic and methodological decisions in different phases of a research process
- analyze orally, evaluate critically, independently and in small groups, one's own and other group members' research process and its different phases
- use digital learning solutions and demonstrate one's own performance skills and information and communication technology skills while presenting research plan
- apply one's own competence on research methodology when preparing independently or as a member of a research group a thesis or scientific article
- based on one's expertise, produce a thesis with working life relevance on schedule agreed on in agreement of supervision
- justify and master research methods she/he has used in her/his thesis, analytical reasoning, and problem-solving skills
- evaluate critically and draft conclusions critically and justify decisions made within one's thesis as well as during the small groups
- get readiness for participate in scientific discussions and postgraduate studies

Official course record: 3533345

353305S | Master's Thesis and Research Seminars, Nursing Science

25 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Anne Oikarinen, Heli Kuivila

Content

- 1) Completing a personal research plan. Procedures and regulations related to research permissions, obtaining research permissions, ethical perspectives/ethical committee approval.
- 2) Report on data collection that meets scientific criteria. Critical discussion on thesis and data collection methods that have been chose related to the research topic/phenomena.
- 3) Report on data collection and analysis that meets scientific criteria. Critical discussion on thesis and data collection methods that have been chose related to the research topic/phenomena.
- 4) International literature related to thesis topic and methods. Thesis or article that that meets scientific criteria. Critical discussion on the thesis, research results, conclusions, and presentation of further research ideas. Report on data collection and analysis that meets scientific criteria. Critical discussion on thesis and data collection methods that have been chose related to the research topic/phenomena.

Learning outcomes

Upon completion of the course the student will be able to:

Recognise the interdependencies between the dimensions of sustainability (social, environmental, economic, and cultural) within one's own field of expertise, and assess the impacts of disciplinary practices on these dimensions.

Apply the United Nations Sustainable Development Goals in one's professional activities, and identify ways to contribute to societal dialogue and decision-making within one's field

Complete scientific data collection either independently or as a member of a research project according to the agreed timetable and critically discuss the thesis and selected data collection methods in relation to the research topic/phenomenon.

Collect research data as planned, critically evaluate methodological decisions, one's own actions and choices that have been made, draw conclusions at different stages of data collection and justify solutions that have been made during data collection.

Critically evaluate methodological decisions, one's own actions and choices that have been made, and draw conclusions at different stages of data analysis. Report data analysis, present research results and argue solutions that have been made during data collection.

Produce a scientific thesis or article independently or as a member of a research project, manage the use of those research methods that have been utilized. Critically evaluate, draw conclusions and argue decisions that have been made and manage scientific discussion.

Communicate as an expert to a target audience in an appropriate manner also in a foreign language, engage in scientific discussion, and build professional networks.

Promote constructive collaboration with people from diverse backgrounds, develop language proficiency, and demonstrate the ability to critically reflect on and challenge one's own stereotypical assumptions

Official course record: [3533055](#)

551313S | Master's thesis

35 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Jouko Miettunen

Content

The research content and the data will be defined together with the supervisors. It will include literature search, data analysis and report writing.

The student will explore his/her personal interest within epidemiology and identify potential topics of interest. The supervisor can assist in narrowing down potential topics based on data availability, time frame, and resources available. The student will then conduct a thorough literature review to understand the current state of the chosen area of interest, identify gaps in knowledge and propose research questions or hypotheses. The student will then address these research questions by analysing available data and reporting the results in a coherent scientific style in their thesis dissertation. The student will write a dissertation that includes the sections listed in the EBDS instructions for a master's thesis.

Learning outcomes

Upon completion of this module the students will be able to: Plan and implement an epidemiologic study; Apply and appraise the knowledge in a field and identify the knowledge and technical gaps; Answer a research question independently by applying relevant epidemiological analyses; Gather and apply expert feedbacks; Construct/synthesise their research into a scientific report following the STROBE checklist (Strengthening the reporting of observational study in epidemiology).

OH00AL82 | Master's thesis seminar I

1 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Miia Halonen

Content

The course offers an introduction to planning and executing a master's thesis in Epidemiology and Biomedical Data Science Degree Programme.

Learning outcomes

Upon completion of the course, the student will be able to:

- Describe the purpose and structure of a master's thesis, including its key components and requirements.
- Communicate with academic experts to find a thesis topic and a supervisor.

Official course record: OH00AL82

OH00AL83 | Master's thesis seminar II

4 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Anna Pulakka

Content

Planning the master's thesis is crucial for conducting successful research and producing a high-quality master's thesis. Thesis planning includes formulating research questions and describing methods to address these questions. In this course, students will develop their master's thesis research plan and engage in discussions and critical appraisals of their own and other students' plans during master's thesis seminars.

Learning outcomes

Upon the completion of the course, the student will be able to:

- Formulate a research question, create a research plan targeting the question and present it to an international group of experts.
- Utilise peer-review in thesis process by giving and receiving constructive feedback.
- Apply guidelines of ethical conduct of research, data security and master's thesis instructions.
- set a timeline for the master's thesis, take responsibility of the thesis project, set goals and progress with the execution of the thesis.

Official course record: OH00AL83

091603S | Maturity exam (native language)

0 ECTS | Dentistry | Advanced Studies | Finnish

Content

Writing a maturity exam

Learning outcomes

With maturity exam the student demonstrates their knowledge of their field of study and their command of the Finnish or Swedish language. The student can express in written form main findings of the thesis comprehensively and analytically.

The essay written for the maturity test discusses the topic of the thesis.

Generic skills, student is able to:

- present results from their thesis research in a written form and answer questions related to it

Official course record: 0916035

352514A | Maturity test

0 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Anne Oikarinen, Minna Ylisirniö, Jonna Juntunen

Content

Maturity test connected to the field of student's Bachelor thesis

Learning outcomes

In accordance with the Government Decree on University Degrees (794/2004) issued by the Council of State, the student must demonstrate that he/she has attained the objectives set for the degree, studies and thesis, and the language proficiency. The student must write a maturity essay, which demonstrates conversance with the topic of the thesis and skills in the use of Finnish or Swedish.

Official course record: 352514A

551315S | Maturity Test

0 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Jouko Miettunen

Content

Contents of the Maturity Test correspond to the topic of the thesis.

Learning outcomes

In the Epidemiology and Biomedical Data Science programme, the abstract of the student's thesis serves as a maturity test.

The thesis abstract is a part of the dissertation and approved by the Programme Director in Peppi after the Master's Thesis has been accepted. The abstract is written in English.

Official course record: 551315S

694724A | Maturity Test (for Bachelor's Degree/Logopedics)

0 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Aija-Riitta Kotila

Content

Essay on the topic of the bachelor's thesis

Learning outcomes

Based on the assignment, the student is able to write a finalized essay in terms of language and content, in which they can critically present the theoretical and methodological background of their thesis as well as its key findings.

Official course record: 694724A

694737S | Maturity Test (for Master's Degree/Logopedics)

0 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Learning outcomes

The student is able to explain the main concepts, methods, results and conclusions of her/his thesis in professional style. The aim is also to demonstrate scientific thinking and argumentation skills.

Official course record: 6947375

OH00AK39 | Measuring health: Introduction of epidemiological study designs, biases and confounding

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Marko Kantomaa

Content

Topics in the course include:

Introduction to epidemiology
Measuring health and disease
Introduction to epidemiological study designs and their purpose
Recognising study design and their purpose
Confounding and measurement error
Association and causation

Learning outcomes

Overall learning outcomes:

Understand the basic principle in epidemiology
Explore the parameters defining the characteristic of a studied population
Identify different type of study designs, their strengths and limitations
Understand the sources of bias and confounding
Recognize basics of causal thinking

Generic skills learning outcomes:

Analytical: identify and describe different types of study designs, their strengths and limitations
Multidisciplinary: understand the basic principles and multidisciplinary aspects in epidemiology
Communication and multidisciplinary combined: understand and discuss the basic principles and multidisciplinary aspects in epidemiology

Official course record: OH00AK39

MD00AZ39 | Medical Specialities I

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Kaisa Tasanen-Määttä, Venla Lohi, Janne Liisanantti, Paula Tegelberg

Content

Dermatology and Venereology

- Recognize the most common dermatological and venereological diseases, diagnostic methods in allergology.

Otorhinolaryngology

- The contents of the course includes basic diseases of ear, nose, mouth, pharynx, larynx, salivary glands, facial and neck area and their epidemiology, diagnostics and treatment.

Anaesthesiology

Different modes of anesthetic emergency situations, cannulation

Learning outcomes

This course includes

1. Dermatology and Venereology
 - Person in charge Professor Kaisa Tasanen-Määttä
2. Otorhinolaryngology
 - Person in charge Venla Lohi
3. Anaesthesiology
 - Person in charge professor Janne Liisanantti

Dermatology and Venereology

- After the course the student is able to recognize the most common dermatological and venereological diseases relating to oral and dental diseases. The student is able to take these disease into account in his/her work and/or redirect the patient to appropriate care.

Otorhinolaryngology

- Learning outcome is to familiarize student to ear, nose and throat diseases as specialty in the field of medicine. Upon completion of the course, student will be able to evaluate ear, nose and throat diseases from a dental medicine's perspective.

Anaesthesiology

The aim is to get understanding in different types of anesthesia and handling of emergency situations

Official course record: [MD00AZ39](#)

MD00AX92 | Medical Specialities II

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Olavi Ukkola, Mikko Kärppä, Miia Turpeinen, Juha Veijola, Paula Tegelberg

Content

Internal Medicine

- Cardiovascular diseases: coronary heart disease, general arrhythmias, hypertension and endocarditis, especially its prophylaxis. Lung diseases: asthma, COPD, lung cancer, sleep apnea, tuberculosis and sarcoidosis. Endocrinology: diabetes, overview of other endocrinological diseases such as acromegaly, Addison's disease, Cushing's disease, thyroid and parathyroid diseases. Renal and urinary disorders: causes and treatment of chronic renal failure, specific features of dental care in transplant and immunosuppressed patients and treatment planning. Gastroenterology: an overview of gastroenterological diseases, gastroesophageal reflux, ulcers, ulcerative colitis, Crohn's disease, celiac disease, pancreas, cirrhosis of the liver, lactose intolerance and special diets. Blood disorders: general anemia, leukemias, haemophilia and other factors associated with increased bleeding, dental planning and characteristics in the above patients, and anticoagulant therapy. Infectious diseases: Hepatitis and HIV. Rheumatology: generalized rheumatoid arthritis and connective tissue rheumatic diseases, oral mucosal symptoms / findings, LED (cortisone, cytostat, NSAIDs).

Neurology

- Examination of the neurological patient, neurological patient in dental office, headache, sleep disorders and most common neurological diseases.

Clinical Pharmacology

- Factors affecting drug selection, dosage and therapy will be discussed applying knowledge of basic pharmacology. Furthermore, the common problem cases of drug therapy will be discussed. Use of major classes of drugs and special treatment situations will also be discussed.

Psychiatric

- Most common psychiatric diseases, aetiology, treatment and medication and significance in dentistry. Also, facing a psychiatric patient and young people, patients with alcohol and drug abuse problems.

Forensic Dentistry

- Basics of forensic dentistry

Learning outcomes

Course includes:

1. Internal Medicine
2. Neurology
3. Clinical Pharmacology
4. Psychiatric
5. Forensic Dentistry

Learning objectives:

Internal Medicine

- The student becomes acquainted with the most common and most important internal diseases for the dentist. The student will gain an understanding of internal medicine and learn to detect the intersections between internal medicine and dentistry.

Neurology

- After the course the student has knowledge on the background and more brief examination need for the neurological symptoms of the cranial nerves and head. Student is able to consult neurologist and take into account special features with the neurological patients in dentistry.

Clinical Pharmacology

- After passing the course the student should have ability to safe, efficient and cost-effective drug therapy. The student should understand the basis for drug therapy from the point of view of dentist.

Psychiatric

- Aim of the course is that a student knows special features of the psychiatric patients, young people and addicts. A student is able to find the proper approach and treatment decisions based on psychiatric patients, and patients with alcohol and drug abuse problems. In addition, a student knows the psychological meaning of the oro-dental environment.

Forensic Dentistry

- Upon completion of the course, the student will be able to get acquainted with forensic dentistry.

Anaesthesiology

- Upon completion of the course, the student will get understanding in different types of anesthesia and handling of emergency situations

[Official course record: MD00AX92](#)

352252S | Methods of Statistical Analysis in Health Sciences

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Hannu Vähänikkilä, Tanja Nordström

Content

Basic concepts of statistics. Use of statistical software. Formation of observation data and examination of distributions of variables. Selection of analysis methods. Comparison of groups. Repeated measurements. The study of addiction. Multivariate methods, Regression models, Reliability. Reporting results.

Learning outcomes

After completing the course, the student is able to:

Plan data collection in health science research
Prepares the observation data in a computer-processed format
Independently use statistical software in the processing and analysis of observation data.
Uses basic statistical reasoning methods to analyse health science research problems.
Apply multivariate and statistical special methods in data analysis.
Interpret and report quantitative research results in health science research.

Official course record: 3522525

AY00AM18 | Multidisciplinary cooperation, interaction and communication in digital health and social services (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish, English

Person in charge: Jonna Juntunen

Content

1. Multidisciplinary cooperation in digital health and social services.
2. Customer orientation and involvement at the heart of developing multidisciplinary cooperation.
3. Interaction and communication in digital health and social services.
4. Digital counseling environments as enablers of multidisciplinary cooperation.

Learning outcomes

Upon completion of the module, the student will be able to:

define the objectives and conditions for multidisciplinary cooperation in digital health and social services.

understand the importance of multidisciplinary cooperation, customer orientation and involvement in digital health and social services and their development.

identify various digital solutions that support multidisciplinary cooperation in social and health care services.

identify the special features of interaction in multidisciplinary digital health and social services.

Official course record: AY00AM18

352707P | Multiprofessional Cooperation, Management and Networks in the Management of Health and Welfare Promotion

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- phenomena underlying multidisciplinarity
- management of a multidisciplinary network and cooperation
- prerequisites and challenges for multidisciplinary cooperation and management
- core areas of management in promoting multidisciplinary cooperation in the context of health and well-being promotion

Learning outcomes

After completing the course, the student is able to:

- explain and utilize concepts and models related to multidisciplinary management and cooperation in health and well-being promotion
- identify backgrounds, prerequisites and challenges related to multidisciplinary management in health and well-being promotion
- identify the actors in the multidisciplinary network and lead the cooperation between the different actors
- seek solutions to the challenges of multidisciplinary management and networks
- to link phenomena related to multidisciplinary to the context of health and well-being promotion

Official course record: [352707P](#)

351216A | Multiprofessional Expertise

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Jonna Juntunen

Content

Professional groups working in social and healthcare environments
Interprofessional expertise in social care, healthcare and health promotion
Common diseases in the context of interprofessional collaboration and public health
A human-centred approach to interprofessional activities
Evaluation and development of interprofessional collaboration
Multidisciplinary cooperation in health sciences

Learning outcomes

Upon completion of the course, the student will be able to:

Define the key concepts and forms of interprofessional expertise within social care, healthcare and health promotion operating environments.

Examine phenomena in the social and health sectors, particularly major public health diseases, from an interprofessional perspective, identifying the roles of different stakeholders in their prevention, treatment, rehabilitation, and service system development.

Determine the social, behavioural and societal determinants of major public health diseases, recognising their significance for population health, the service system and the promotion of wellbeing.

Evaluate the implementation of person-centredness in interprofessional collaboration, particularly in the context of chronic diseases and health promotion.

Identify and analyse opportunities for multidisciplinary collaboration in health sciences research, development, and expert work.

Be open to the perspectives of representatives from other fields, recognising the potential for multidisciplinary approaches to promote the development of one's own field and encourage collaboration.

Work in multidisciplinary and interprofessional teams, valuing expertise from different fields.

Official course record: [351216A](#)

044301A | Neurology

2 ECTS | Neurology | Intermediate Studies | Finnish

Person in charge: Mika Martikainen

Content

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Learning outcomes

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[Official course record: 044301A](#)

060706A | Neurosurgery

3 ECTS | Medicine, Neurosurgery | Other Studies | English

Person in charge: Sami Tetri, Mikael Von Und Zu Fraunberg

Content

The management of neurosurgical trauma and diseases with special emphasis on the clinical competence required of a general practitioner.

Learning outcomes

The student knows the clinical presentation, diagnostics and treatment of neurosurgical diseases and trauma. The student can evaluate the urgency of treatment of neurosurgical conditions and understands their debilitating and often life-threatening nature. The roles of prevention and rehabilitation are also stressed.

[Official course record: 060706A](#)

356018J | Nursing Science and Health Management Research Seminar

1 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Kristina Mikkonen, Maria Kääriäinen

Content

National and international research topics in health sciences. Presenting of own research

Learning outcomes

After completing the course, students will be able to:

clearly explain their own research, justify their methodological choices, and examine the ethical issues involved in their research

critically discuss the significance of their own research in health sciences, healthcare, and society

constructively ask questions to other students about their research and participate in scientific discussion

act responsibly and proactively in accordance with professional ethics and good scientific practice, and take

into account the impact of their actions on stakeholders and the environment

promote the UN's sustainable development goals in their own field of research and development

[Official course record: 356018J](#)

OH00AU26 | Nursing Science in Evidence-Based Healthcare and Social Services

4 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Maria Kääriäinen, Heidi Siira, Heli Kuivila

Content

1. Social and healthcare reform, current national and international research areas nursing science.

2. Model of evidence-based healthcare.

3. Systematic review and critical appraisal.

4. Evidence synthesis, transfer and implementation

Learning outcomes

Upon completion of the course the student will be able to:

orientate himself/herself towards the scientific community and academic learning

explain the model of evidence-based healthcare

choose a key information gap at the national and international level related to social and healthcare, education or leadership

search for current, reliable, and summarized information in nursing science and evaluate its quality

design an evidence summary based on systematic review

use innovative/digital methods to disseminate evidence in working life

evaluate the activities of individuals and groups, such as the achievement of goals, group dynamics, communication and work atmosphere, is able to provide constructive feedback, guidance and development suggestions to others and lead a team

evaluate development of nursing science expertise and continuous learning

Official course record: OH00AU26

353301S | Nursing Science in the Field of Sciences

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Tarja Pölkki, Heli Kuivila

Content

Development of nursing science, trends in research, research priorities, topics and theories, significance of nursing science evidence in the development of expertise in social and healthcare.

Learning outcomes

Upon completion of the course the student will be able to:

describe the development of nursing science and trends in research, research priorities and topics, and theories

discuss the significance of nursing science in social and healthcare

to analyse arguments and to argue appropriately

analyse and evaluate their own and groups' development in expertise and continuous learning using the Action Model of Expertise along with nursing science evidence and concepts

Official course record: 353301S

AY353301S | Nursing Science in the Field of Sciences (OPEN UNI)

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Heli Kuivila

Content

1. development of nursing science, trends in research, research priorities and topics,
2. significance of nursing science evidence in the development of expertise in social and healthcare.

Learning outcomes

Upon completion of the course the student will be able to:

describe the development of nursing science and trends in research, research priorities and topics, and theories.

discuss the significance of nursing science in social and healthcare.

analyse and evaluate their own and groups' development in expertise and continuous learning using the Action Model of Expertise along with nursing science evidence and concepts.

[Official course record: AY353301S](#)

OH00AU18 | Nursing science orientation and mentoring

1 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Omaopettajat

Content

Orientation to university studies in the Master's program and integration into the academic community. Planning and assessment of one's learning, guidance discussions with personal academic advisors, and organizing and participating in departmental events.

Examination of health sector professional networks and innovations.

Analyzing and developing one's own well-being

Mentoring.

Learning outcomes

After completing the course, the student is able to:

- plan their Master's studies and assess themselves and their activities as a learner.
- understand the relationship between education and working life in supporting one's professional development.
- build and develop multidisciplinary, cross-sectoral, and interprofessional collaboration networks to advance working life, education, and societal development.
- self-management, managing tasks and people, as well as mentoring and coaching colleagues.
- act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of working, and promote a sense of community and interaction to support well-being
- promote their own well-being, develop self-leadership skills, build their professional identity, and maintain their competence in a goal-oriented manner

[Official course record: OH00AU18](#)

060710A | Oncology and radiotherapy

3 ECTS | Oncology and Radiotherapy | Other Studies | English

Person in charge: Jussi Koivunen

Content

The diagnostics, oncological therapeutic modalities and monitoring of adult solid malignancies and lymphomas.

Learning outcomes

Upon completion of this curricular unit, student should be able to understand principles of cancer etiology, diagnosis, therapeutic modalities and their adverse events, and palliative care.

[Official course record: 060710A](#)

OH00AU89 | Optional internship

5-7 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Miia Halonen

Content

Optional internship course provides an opportunity to apply academic knowledge and skills in a real-world professional setting. The student will gain hands-on experience, develop practical competencies, and enhance their understanding of workplace dynamics. Student is responsible for finding the internship placement.

Learning outcomes

Upon completion of the course, the student will be able to:

- Integrate into a professional working environment by demonstrating adaptability and professional conduct.
- Collaborate and communicate effectively within the working environment.
- Manage tasks independently while adhering to the expectations of the workplace, such as meeting deadlines, delivering presentations, or producing technical reports.
- Reflect on developing professional role and responsibilities within the workplace.

[Official course record: OH00AU89](#)

694854S | Optional Studies 1

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

[Official course record: 694854S](#)

694855S | Optional Studies 2

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

[Official course record: 694855S](#)

694856S | Optional Studies 3

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

[Official course record: 694856S](#)

694857S | Optional Studies 4

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Official course record: [694857S](#)

694858S | Optional Studies 5

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Opiskelija kokoaa itseään kiinnostavia opintoja eri tieteenaloilta, jotka tukevat logopedisen asiantuntijuuden kasvua ja syventämistä sekä työelämätaitoja.

Official course record: [694858S](#)

090618A | Oral and maxillofacial pathology, literature exam

3 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Tuula Salo, Ritva Näpänkangas

Content

The functional anatomy and biomechanics of the masticatory system.

Learning outcomes

Upon completion of the course, student knows the functional anatomy and biomechanics of the masticatory system.

Official course record: [090618A](#)

092140A | Oral and Maxillofacial Surgery I

4 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

- Theoretical and practical teaching how to examine the patient
- Theoretical and practical teaching in local anesthetic
- Theoretical and practical teaching in aseptics
- Theoretical and practical teaching in tooth extractions
- Theoretical and practical teaching in suturing technique

Learning outcomes

Upon completion of the course the student will be able to

- perform anamnesis and examination of a surgical patient.
- be aware of the risks of general diseases and medication to surgical treatment.
- perform independently conventional local anaesthetic measures and should be able to perform tooth extractions.
- examine the oral surgical patient and do the anamnesis
- study the essentials of general diseases and medication of the patients
- to give local anesthetics
- do uncomplicated tooth extractions

Generic learning objectives:

- be able to take into account other students and teachers in the course and treat them with respect
- be able to evaluate and use information sources critically. Be able to evaluate the contribution of different types of statistical bias and chance in health research
- be able to verbally describe their professional skills and competencies

Official course record: 092140A

092131S | Oral and Maxillofacial Surgery II

4 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

- Wound healing
- Incisions and flap technique
- Operative extractions
- Biopsies
- Odontogenic tumors

Generic learning objectives:

- can critically evaluate and use data sources. Can evaluate the contribution of different types of statistical bias and chance in health research
- can verbally describe their professional skills and competencies
- can take into account the linguistic and cultural diversity of their study group and utilize them as part of their learning process
- can take into account other students and teachers in the course and treat them with respect

Learning outcomes

After completion of the course the student will

- know the basics principles of dentoalveolar surgery and have skills to perform the most common surgical procedures in dental practise.
- be able to find and identify abnormal patterns in the clinical and diagnostic image such as cysts, benign tumors, other bone diseases, systemic diseases, and malignant diseases.
- understand the benefits and limits of dental basic imaging films and advanced imaging (CBCT) for the detection of disease or other abnormalities.

Official course record: 092131S

092133S | Oral and Maxillofacial Surgery III

3 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

- Dental trauma
- Jaw fractures
- Craniofacial injuries
- Soft and hard tissue injuries
- Odontogenic infections
- Common infections
- Pericoronitis
- Rare infections
- Actinomycosis
- Osteomyelitis
- Periodontal abscesses, endo perio lesions

Learning outcomes

Upon completion of the course the student will

- be familiar with the first aid and treatment principles of dental traumas and maxillofacial traumas.
- be able to perform dental splinting of traumatized teeth.
- know the diagnosis and treatment principles of odontogenic infections and also understands the diagnosis and management of various types of osteomyelitis.
- knows the clinical features of inflammatory lesions of the jaws including periapical inflammatory lesions, pericoronitis, osteomyelitis, osteoradionecrosis, bisphosphonate-related osteonecrosis of the jaws; as well as features of traumatic injuries and fractures of the teeth, facial bones and monitoring the healing of fractures.
- be able to diagnose and treat periodontal abscesses and endo-perio lesions.

Generic learning objectives:

- can critically evaluate and use data sources. Can evaluate the contribution of different types of statistical bias and chance in health research
- can be open and respectful towards the perspectives of other disciplines and recognize their potential impact on the development of one's own field
- can work effectively in a group and negotiate and distribute tasks

Official course record: [0921335](#)

092140S | Oral and Maxillofacial Surgery IV

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

General diseases, oral cancer, sleep apnea, surgical occlusal rehabilitation.

Learning outcomes

Upon completion of the course the student

- will deepen the understanding about general diseases,
- have the basic principles of treating oral cancer and sleep apnea,
- have the special features required in treating patients under radiation and chemotherapeutic treatment.
- will deepen the knowledge about surgical occlusal rehabilitation.

Learning objectives for generic skills:

- can critically evaluate and use data sources. Can evaluate the contribution of different types of statistical bias and chance in health research
- can verbally describe their professional skills and competencies
- can take into account other students and teachers in the course and treat them with respect

Official course record: [092140S](#)

092102A | Oral and Maxillofacial Surgery, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Riitta Lithovius, Petri Iso-Kungas

Content

092140A Oral and Maxillofacial Surgery I (4 credits)
092131S Oral and Maxillofacial Surgery II (4 ECTS credits)
092133S Oral and Maxillofacial Surgery III (3 ECTS credits)
092140S Oral and Maxillofacial Surgery IV (2 ECTS credits)

Surgical care and management of the outpatient.

Learning outcomes

Learning outcomes include the blending of knowledge from various courses in surgery to demonstrate a mastering of the discipline.

The student is expected to master safe considerate surgical technique and demonstrate a solid surgical knowledge base by the end of the course in order to receive a passing grade.

[Official course record: 092102A](#)

091520A | Oral and Maxillofacial Surgery, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 091520A](#)

092107A | Oral Development and Orthodontics, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Virpi Harila, Matti Hannula

Content

All theoretical courses in Orthodontics including clinical practice.

Learning outcomes

Goals (1.-4 yrs):

1) Examination of occlusion

- The student knows the emergency and developmental timetable of dentition
- The student can describe the characteristics of occlusion during examination
- The student can recognize malocclusions and refer the patient for appropriate follow-up or treatment
- The student is able to recognize harmful extrinsic factors related to occlusal development like persistent oral habits and to guide the patient in these issues.

2) Clinical performance

- The student is able to perform first aid in orthodontics like to cement or fix broken fixed orthodontic appliances or parts of it.
- The student can bond and insert simple orthodontic appliances in regionally related, less severe malocclusions
- The student is able to take care of oral hygienic issues during orthodontic treatment (like risks and prophylactic means).

Goals/graduating dentist, in addition:

- Knows the normal development of dentition and occlusion and morphologic aberrations in them.
- Can recognize those malocclusions that need follow-up and treatment during different developmental stages of dentition
- The student is able to refer the patients with appropriate timing for screening or treatment both during the growth and after the growth period.
- The student is able to perform simple orthodontic treatments or parts of it, under supervision.
- The student knows the modern treatment methods and techniques in orthodontics.
- Is able to independently make analytical inferences and critically examine materials
- Is able to follow the development of scientific and professional knowledge in their field.
- Is able to work in a multicultural group toward a shared goal.
- Recognizes ethical questions and perspectives related to different situations and is able to seek information and answers to them.
- Is able to work effectively in multidisciplinary teams, making use of expertise from different fields and promoting shared goals.
- Is able to work effectively in a group and to negotiate and share tasks, when necessary

[Official course record: 092107A](#)

091570A | Oral Development and Orthodontics, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 091570A](#)

402962A | Oral Health

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Oral Health - course is part of the Intermediate Studies of Health education. The contents of the course include:

- Development and care of the dentition
- The significance of oral diseases for general health
- Oral and dental diseases and other key challenges
- Prevention of oral and dental diseases and the promotion of oral health across the life span
- Organization of oral health services

Learning outcomes

After completing the course, the student will be able to:

- Identify factors that promote or threaten oral health
- Explain the importance of oral health for general health
- Describe the impact of oral diseases and other challenges on oral health, identify preventive measures, and provide examples of key elements of treatment
- Describe the main principles of promoting oral health across different age groups and in various settings, such as in schools and in health education

[Official course record: 402962A](#)

AY402962A | Oral Health (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Oral Health - course is part of the Intermediate Studies of Health education. The contents of the course include:

- Development and care of the dentition
- The significance of oral diseases for general health
- Oral and dental diseases and other key challenges
- Prevention of oral and dental diseases and the promotion of oral health across the life span
- Organization of oral health services

Learning outcomes

After completing the course, the student will be able to:

- Identify factors that promote or threaten oral health
- Explain the significance of oral health for general health
- Describe the impact of oral diseases and other challenges on oral health, identify preventive measures, and give e-examples of the main principles of treatment
- Describe the key principles of promoting oral health across different age groups and in various settings, such as in schools and in health education

[Official course record: AY402962A](#)

092141A | Oral Health Care I

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Saujanya Karki, Ritva Näpänkangas

Content

Essential legislation and ethical principles in health care

Learning outcomes

Upon completion of the course, the student will be able to

- identify essential ethical principles in health care, legislation, and the contemporary laws applicable to the practice of dentistry
- explain the ethical responsibilities involved in the provision of care to individual patients and populations
- produce accurate patient records
- draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material
- review their activities and apply for support if necessary
- Recognize the importance of their physical, mental and social well-being and care for themselves compassionately
- deal with the challenges of work and workload, uncertainty and change
- identify ethical questions and perspectives related to different situations and are able to search for information and answers to them. Identify the consequences of policy options.

Official course record: [092141A](#)

092142A | Oral Health Care II

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Saujanya Karki, Paula Tegelberg

Content

Special issues in oral health and oral health care among children and adolescents, scientific method and evaluation of evidence.

Diagnostics and treatment of periodontal diseases of young and adolescents

Learning outcomes

Upon completion of the course, the student will be able to

- outline the special issues in oral health and oral health care among children and adolescents
- understand special features of periodontal tissues among children and adolescents
- identify early signs of periodontal diseases among children and adolescents, risk individuals and make a treatment plan
- critically appraise scientific literature and generate and interpret research-based evidence
- draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material
- follow the development of scientific and professional knowledge in their field
- reflect on their thoughts, feelings and actions in international environments
- identify ethical questions and perspectives related to different situations and are able to search for information and answers to them. Identify the consequences of policy options.
- perform the tasks required for the course in accordance with the HTK Guide.

Official course record: [092142A](#)

092143S | Oral Health Care III

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Saujanya Karki, Ritva Näpänkangas

Content

Oral health promotion among individuals and populations, health policy, public oral health care

Learning outcomes

Upon completion of the course, the student will be able to

- illustrate the strategies in oral health promotion and prevention of oral diseases
- promote oral health in individual- and population-level
- debate oral diseases as public health problems
- interpret the key issues and current topics in health policy
- explain the practices in Finnish public oral health care system and judge when, how and where to refer a patient for treatment.
- draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material
- follow the development of scientific and professional knowledge in their field
- develop their professional skills to meet the needs of a changing society.
- reflect on their thoughts, feelings and actions in international environments
- perform the tasks required for the course in accordance with the HTK Guide
- take into account the environmental impacts of digital and other tools in their own operations and make sustainable choices
- work effectively in multidisciplinary teams, utilizing expertise from different fields and promoting common goals
- utilize and critically evaluate the AI application in accordance with the objectives of the course

Official course record: [0921435](#)

092144A | Oral Health Care, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish, English

Person in charge: Saujanya Karki, Ritva Näpänkangas

Learning outcomes

This study module contains:

092110A Organization and Providers of Oral Health Care Services (0,5 ECTS)

092114A Oral Healthcare I (1 ECTS)

092112A Introduction to Dental Healthcare System II (0.5ECTS)

092118A Oral Healthcare III (1 ECTS)

091781S Oral Healthcare IV (2 ECTS)

092116S Team Leadership in Oral healthcare (1 ECTS) and

092117S Acting as a Dentist in the Oral Health Care System (1 ECTS)

091580A-02 Healthcare, Clinical Training, grade (0 Credits)

091701A Clinical Training DC5

091702A Clinical Training DC6

091703A Clinical Training DC7

091704A Clinical Training DC8

091705A Clinical Training DC9

091706A Clinical Training DC10

Official course record: [092144A](#)

MD00AQ99 | Oral healthcare, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish, English

Person in charge: Saujanya Karki

No description supplied in the collected record.

Official course record: [MD00AQ99](#)

091791S | Oral pathology

5 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Tuula Salo, Ritva Näpänkangas

Content

Clinical and histological findings in oral mucosal diseases, odontogenic, salivary gland, soft tissue and bone tumors. Inflammatory and autoimmune diseases of oral cavity and jaws. Diagnostics and treatment of oral cancers.

Learning outcomes

Upon completion of the course, the student:

- knows the basic anatomy and histology of oral cavity, teeth and jaws
- knows the normal variations of oral cavity and jaws
- knows the phases of histopathological diagnosis of different oral diseases
- is able to interpret histopathological results
- understands the characteristics of diagnosis and treatment of oral cancer patients
- understands theoretical knowledge and scientific results, in order to follow, analyze and use new research based information.
- is able, with guidance, to make analytical inferences, critically examine data, and identify the need for creative solutions based on a relatively limited dataset
- is able to reflect on their own actions and seek support when necessary
- recognizes the fundamentals of professional ethics in their field and is able to act in accordance with them

[Official course record: 091791S](#)

091590A | Oral Pathology, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 091590A](#)

091761A | Oral Radiology I

4 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Annina Sipola, Anne-Maria Kärki

Content

- Basic principles underlying of dental imaging, panoramic (and other extraoral imaging) and intraoral imaging and perform a dental X-ray examination.
- Radiological referral and report.
- Normal anatomy, paranasal sinuses and temporomandibular joints
- Dental anomalies
- Dental caries, resorptions
- Periodontal disease
- Periapical inflammatory lesions

-Analytical, Critical, and Creative Thinking: student is able to independently analyze extensive and multidimensional material and draw well reasoned, critical conclusions.

-Skilled at evaluating information from multiple perspectives and assessing its reliability.

-Uses creative thinking to generate new knowledge, develop insights, and apply them in practical contexts.

-Ability to Articulate Professional Skills and Competencies

-Capable of clearly describing professional strengths, expertise, and areas of competence in a structured and audience appropriate way.

-Able to justify skills and experience with concrete examples and communicate them effectively in professional settings.

-Ethical Awareness and Responsible Decision Making: Recognizes ethical questions and perspectives in different situations and knows how to seek relevant information to address them. Understands the potential consequences of different courses of action and evaluates them thoughtfully.

Learning outcomes

Upon completion of the course the student will be able to:

- understand the basic principles underlying of dental imaging, panoramic (and other extraoral imaging) and intraoral imaging and perform a dental X-ray examination.
- write radiological referral and report.
- understand essential legislation, safety regulations and guidelines related to use of radiation.
- know the importance of accurate diagnosis for successful treatment and radiographic appearances of normal anatomy, paranasal sinuses and temporomandibular joints, dental anomalies, dental caries, resorptions, periodontal disease, and periapical inflammatory lesions.

Official course record: [091761A](#)

092132S | Oral Radiology II

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Annina Sipola, Anne-Maria Kärki

Content

Most common cysts, benign tumors, other bone diseases, systemic diseases, and malignant diseases.

Radiological findings of impacted canines.

Findings in radiographs that may indicate complications during removal of the tooth.

Learning outcomes

Upon completion of the course, the student will be able to

- find and identify abnormal patterns in the diagnostic image such as cysts, benign tumors, other bone diseases, systemic diseases, and malignant diseases.
- understand the benefits and limits of dental basic imaging and advanced imaging (CBCT) for the detection of disease or other abnormalities.

-Analytical, Critical, and Creative Thinking: student is able to independently analyze extensive and multidimensional material and draw well reasoned, critical conclusions.

-Skilled at evaluating information from multiple perspectives and assessing its reliability.

-Uses creative thinking to generate new knowledge, develop insights, and apply them in practical contexts.

-Ability to Articulate Professional Skills and Competencies

-Capable of clearly describing professional strengths, expertise, and areas of competence in a structured and audience appropriate way.

-Able to justify skills and experience with concrete examples and communicate them effectively in professional settings.

-Ethical Awareness and Responsible Decision Making: Recognizes ethical questions and perspectives in different situations and knows how to seek relevant information to address them. Understands the potential consequences of different courses of action and evaluates them thoughtfully.

[Official course record: 0921325](#)

092134S | Oral Radiology III

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Annina Sipola, Anne-Maria Kärki

Content

Imaging features of odontogenic infections, osteomyelitis, dental traumas, maxillofacial traumas in radiographs.

Learning outcomes

Upon completion of the course, the student will

- know the imaging features of inflammatory lesions of the jaws (periapical inflammatory lesions, pericoronitis, osteomyelitis, osteoradionecrosis, bisphosphonate-related osteonecrosis of the jaws);
- know the radiological features of traumatic injuries and fractures of the teeth, facial bones and monitoring the healing of fractures.

-Analytical, Critical, and Creative Thinking: student is able to independently analyze extensive and multidimensional material and draw well reasoned, critical conclusions.

-Skilled at evaluating information from multiple perspectives and assessing its reliability.

-Uses creative thinking to generate new knowledge, develop insights, and apply them in practical contexts.

-Ability to Articulate Professional Skills and Competencies

-Capable of clearly describing professional strengths, expertise, and areas of competence in a structured and audience appropriate way.

-Able to justify skills and experience with concrete examples and communicate them effectively in professional settings.

-Ethical Awareness and Responsible Decision Making: Recognizes ethical questions and perspectives in different situations and knows how to seek relevant information to address them. Understands the potential consequences of different courses of action and evaluates them thoughtfully.

[Official course record: 0921345](#)

MD00AQ76 | Oral Radiology, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Annina Sipola, Anne-Maria Kärki

Content

Oral Radiology, final examination

Oral Radiology , Clinical Training, grade:

091701A Clinical Training DC5

091702A Clinical Training DC6

091703A Clinical Training DC7

091704A Clinical Training DC8

091705A Clinical Training DC9

091706A Clinical Training DC10

Positive input of the thesis in the field.

Learning outcomes

The student will

- understand the basic principles underlying of dental imaging, panoramic (and other extraoral imaging) and intraoral imaging and perform a dental X-ray examination.
- know how to write radiological referral and report.
- have basic knowledge of the health effects of ionizing radiation and of the exposure of the patient to radiation based on which one can assume the responsibility for the justification and optimization of the procedure.
- know the importance of accurate diagnosis for successful treatment
- understand the benefits and limits and guidelines for the use of of dental basic imaging (dental panoramic, intraoral intraoral imaging), lateral cephalogram, extraoral projections and advanced imaging (CBCT) for the detection of disease or other abnormalities.

The student will know the radiographic appearances of

- normal anatomy, paranasal sinuses and temporomandibular joints
- dental anomalies
- dental caries, resorptions
- periodontal disease
- periapical inflammatory lesions
- infections (pericoronitis, osteomyelitis, osteonecrosis)
- findings in radiograph that may indicate complications during removal of the tooth
- most common cysts, benign tumors
- radiology of dental and facial traumas
- radiological features of malignant diseases

-Analytical, Critical, and Creative Thinking: student is able to independently analyze extensive and multidimensional material and draw well reasoned, critical conclusions.

-Skilled at evaluating information from multiple perspectives and assessing its reliability.

-Uses creative thinking to generate new knowledge, develop insights, and apply them in practical contexts.

-Ability to Articulate Professional Skills and Competencies

-Capable of clearly describing professional strengths, expertise, and areas of competence in a structured and audience appropriate way.

-Able to justify skills and experience with concrete examples and communicate them effectively in professional settings.

-Ethical Awareness and Responsible Decision Making: Recognizes ethical questions and perspectives in different situations and knows how to seek relevant information to address them. Understands the potential consequences of different courses of action and evaluates them thoughtfully.

Official course record: [MD00AQ76](#)

MD00AQ97 | Oral Radiology, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Annina Sipola

No description supplied in the collected record.

[Official course record: MD00AQ97](#)

090633A | Organisation of oral health care in Finland

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Saujanya Karki, Ritva Näpänkangas

Content

The administration, financing and regulations of (oral) health care services in Finland, organisation of primary and specialised oral health care.

Learning outcomes

Upon completion of the course, the student will be able to

- discuss implementation of oral health care services in Finland
- explain regulations of oral health care
- develop their professional skills to meet the needs of a changing society.
- reflect on their thoughts, feelings and actions in international environments
- perform the tasks required for the course in accordance with the HTK Guide

[Official course record: 090633A](#)

OH00BB46 | Orientation and Mentoring

1 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Minna Ylisirniö, Outi Kanste

Content

- orientation to university studies in the Master's program and integration into the academic community
- planning and assessment of one's learning, guidance discussions with personal academic advisors
- organizing and participating in departmental events
- examination of health sector professional networks and innovations
- promote and maintain own well-being
- collective mentoring

Learning outcomes

Upon completion of the course, the student will be able to:

- orientation into the academic community and to university studies in the Master's program
- plan their master's degree studies and critically reflect on themselves and their actions as a learner
- understand the relationship between education and working life in supporting ones professional development
- promote and maintain their own well-being, as well as the well-being of their work community and students
- the student can plan opportunities related to internships, theses, and employment
- build and develop multidisciplinary, cross-sectoral, and interprofessional collaboration networks to advance working life, education, and societal development
- self-management, managing tasks and people, as well as mentoring and coaching colleagues
- work in international cooperation and take the international operating environment into account in their activities
- promote constructive cooperation with people from different backgrounds, develop their language skills and be able to challenge their own stereotypical thinking patterns

[Official course record: OH00BB46](#)

091773S | Orthodontics II

3 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Virpi Harila, Matti Hannula

Content

Normal and abnormal development in craniofacial region. Normal dental and occlusal development. The pathogenesis of malocclusions and the most usual orthodontic treatment of them is brought up especially from the viewpoint of growth. The retention of orthodontic treatment and growth. Screening in orthodontics. The course includes the pathogenesis of the most frequent syndromes and developmental aberrations in the orofacial area and the orthodontics in cleft children. In addition, dental features of some groups of individuals with developmental abnormalities are discussed. Treatment protocols with the aid of documentation of treated patient cases; give a summary on research articles.

Learning outcomes

Upon completion of the course the student will

- understand the concepts the normal growth of the craniofacial region and expands the understanding towards growth deviations.
 - understand how the tooth develops and erupts and the occlusion is formed.
 - be able to assess the developing occlusion and determine the treatment need.
 - Is able to make analytical inferences, critically examine materials, and apply creative methods within the scope of the course.
 - Is able to follow the development of scientific and professional knowledge in their field.
 - Is able to work in a multicultural group toward a shared goal.
 - Recognizes ethical questions and perspectives related to different situations
 - Is able to apply knowledge and methods from different disciplines
 - Is able to work purposefully within a tea
- has knowledge and skills to assess the timing of the treatment and treatment options and can consider between orthodontic devices in different stages of occlusal development with the help of patient documentation and published research.
- be aware of the possibilities and limitations in modifying occlusal development.

[Official course record: 091773S](#)

092115S | Orthodontics III

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Virpi Harila, Matti Hannula

Content

1) Tutorial teaching deepens the knowledge of the variation and treatment options of a developing occlusion. Student prepares presentation of the treatment goals, procedures and results of treated orthodontic patients; in a theoretical seminar presentation is made of given materials/subject. After each seminar student writes structured reflection in learning environment.

2) Pathology in occlusal development and basic items of adult orthodontics

Learning outcomes

1) After the seminar student is capable to assess the meaning of the occlusal variation and understand the treatment need. He can assess between different treatment options and in that the timing of treatment. Student is capable to look for new knowledge and assess it critically.

2) To be able to make diagnosis of malocclusions in adult patients, to refer the case to the orthodontist, to be familiar with the risks of treatment and nontreatment.

With guidance, is able to make analytical inferences, critically examine materials, and recognize the need for creative solutions.

Is able to follow the development of scientific and professional knowledge in their field.

Develops general and field-specific language skills in a foreign language.

Recognizes the foundations of professional ethics in their field and is able to act in accordance with them.

Is able to critically evaluate the solutions and perspectives offered by different disciplines, and creatively integrate them into the context of their own field.

Is able to work effectively in a group and to negotiate

Official course record: 0921155

091607A | OSCE

0 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Näpänkangas, Virpi Harila

Content

Studies during the first four years

Learning outcomes

A student shows the ability to work in the clinical context in different specialties in Dentistry during OSCE assessment. To pass the exam a student needs to adapt theory in clinical situations. The student is able to communicate clearly and in a patient-centred manner. The student is able to work aseptically. The student is able to use clinical methods and instruments in accordance with professional principles. The student is able to utilise clinical reasoning and make well-justified diagnostic or treatment decisions based on clinical findings.

Official course record: 091607A

090617A | Other studies given by the Dental disciplines within the Erasmus-project

0-60 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Ritva Näpänkangas, Saujanya Karki

Content

Studies related to Erasmus-project

Learning outcomes

Learning outcomes related to the specific studies

Official course record: 090617A

061001A | Paediatrics

14 ECTS | Paediatrics, Medicine | Intermediate Studies | English

Person in charge: Terhi Ruuska-Loewald

Content

The course includes the following topics: growth and development, medical history, and clinical examination of a child, allergology, endocrinology, diabetology, gastroenterology, hematology, infectious diseases, cardiology, pediatric surgery, pediatric neurology, nephrology, neonatology, oncology, emergency medicine.

Learning outcomes

Upon completion of the course the student:

- can diagnose and treat the most common pediatric diseases as a general practitioner or as a first-year resident in a hospital.
- can provide acute care to acutely and critically ill children.
- understands pediatric preventive health care and health education.

Official course record: 061001A

352230A | Pedagogical Processes and Teaching

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Mira Rajala, Heli Kuivila

Content

Theories associated with curricula and the curriculum as a basis for teaching (goals, learning criteria, learning content, curriculum process).

Fundamentals and forms of assessment.

Assessment of healthcare teaching and education and its effectiveness.

Creating learning outcomes.

Assessment of students' competence and learning.

Healthcare education and ethics.

Cultural diversity networking and communication.

Strengthening of the visibility of teacher education and influential practice at the societal level.

Learning outcomes

Upon completion of the course the student:

Is able to strategically plan, implement, evaluate, and continuously develop competence-based curricula in the social-, healthcare and/or rehabilitation field.

Is able to adhere to the principles of competence identification, recognition and personalization.

Is able to plan, implement, evaluate, and renew learning, teaching and mentoring in social-, healthcare, and/or rehabilitation from the perspective of students, the larger phenomenon in question, and working life.

Is able to develop, evaluate and use one's ethical thinking and attitudes for promoting learning, teaching, student, work community, practice and society.

Is able to evaluate cultural differences in interaction and communication and to work on solving interactive barriers in teaching and working environments.

Is able to collaboratively plan and implement communication efforts that enhance the visibility of health science teacher education in educational organizations, companies, or in the third sector, using different communication channels.

Is able to constructively evaluate one's own and other students' outputs and / or teaching situations during the course.

Official course record: 352230A

090620A | Pediatric Dentistry for Erasmus Exchange Students

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Päivi Rajavaara, Anna Pelkonen

Content

Paediatric Dentistry Welbury, Duggal, Hosey, Oxford University 2018; 5th edition, e-book

Learning outcomes

Paediatric Dentistry Welbury, Duggal, Hosey, Oxford University 2018; 5th edition, e-book

[Official course record: 090620A](#)

092119A | Pedodontics

4 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Päivi Rajavaara, Anna Pelkonen

Content

How to deal with and treat a child in dental care: growth and development of a child, how to deal with children of different age and developmental stage, dealing with the family, dental fear and sedation, ECC and riskfactors, control of caries and oral health promotion in children, restorative dentistry, endodontic treatment of deciduous and permanent developing teeth, developmental anomalies of teeth, dental treatment of medically compromised and mentally retarded children. In simulation laboratory, fissure sealant, restoration, pulpotomy and stainless steel crown.

Learning outcomes

The course includes 4 different parts:

1. Pediatric Dentistry

Upon completion of the course, the student will be able to:

- deal with the child and his/her family while doing dental treatment
- be familiar with the child's growth and development and most common disorders in it
- be aware of developmental tooth disorders
- have knowledge and skills for controlling dental caries at individual level
- be aware of the basic methods for controlling and preventing dental fear using local anesthetics and sedation for children
- be competent of using relevant non-invasive and invasive methods in treating caries
- be competent of endodontic treatment of deciduous and developing permanent teeth
- be competent to carry out child's acute dental care
- be aware of the principles in treating medically compromised children and most common syndromes

2. Paediatrics

Upon completion of the course, the student will be able to:

- know child's normal mental development as well as factors associated with it
- be aware of the most common acute and chronic pediatric diseases
- be aware how to deal with child's infections and pain.

3. Periodontology in pedodontics

Upon completion of the course, the student will be able to:

- understand special features of periodontal tissues on children and adolescents
- be aware of early signs of periodontal diseases
- identify risk individuals and make a treatment plan

4. Abnormal eruption patterns of permanent teeth

Upon completion of the course, the student will be able to:

- explain the abnormalities in the eruption of the permanent teeth (except third molar)
- is able to assess between follow-up and guiding the patient for proper treatment
- knows what to do as early treatment option
- will remit the patient to properly timed treatment

Official course record: [092119A](#)

090640A | Periodontal instrumentation, phantom training

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Anna-Maija Syrjälä, Antti Tiisanoja

Content

Power-Point presentation about periodontal instrumentation and guided exercise

Learning outcomes

Upon completion of the course the student knows general traits of periodontal instrumentation and can use instruments tentatively.

Official course record: [090640A](#)

092125S | Periodontal Surgery I

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Jussi Leppilahti, Paula Tegelberg

Content

General principles of periodontal surgery, surgical anatomy and different techniques of periodontal surgery. Periodontal wound healing and regeneration, post surgical patient care and follow-up.

Practical training

Learning outcomes

Upon completion of the course the student will

- know indications for the main techniques of periodontal surgery and patient related post operative follow up;
- understand biological background of periodontal wound healing.
- understand possibilities of regenerative and reconstructive periodontal surgery.
- be able to search for and use academic information critically

recognizes the foundations of professional ethics in their field and is able to act in accordance with them applies and develops professional communication skills

- be able to work effectively in interprofessional teams, making use of the expertise of different disciplines
- approach the perspectives of different fields with openness and respect, and recognizes their potential impact on the development of their own profession

Official course record: [092125S](#)

091753S | Periodontal Surgery II

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Jussi Leppilahti, Paula Tegelberg

Content

Minimally invasive periodontal therapy.
Periodontal reconstructive and plastic surgery.
Exercises, teamwork.

Learning outcomes

Upon completion of the course the student will

- understand his/her knowledge about the possibilities how to enhance periodontal prognosis for individual tooth and the whole dentition as compared to nonsurgical periodontal therapy by reconstructive and periodontal plastic surgical procedures.
- know indications of reconstructive and periodontal plastic surgical procedures, and understands biological principles of post operative wound healing and post operative care.
- know the principles and possibilities of the surgical treatment of peri-implantitis
- be able to search for and use academic information critically

recognizes the foundations of professional ethics in their field and is able to act in accordance with them -apply and develops professional communication skills

- be able to work effectively in interprofessional teams, making use of the expertise of different disciplines
- approach the perspectives of different fields with openness and respect, and recognizes their potential impact on the development of their own profession

Official course record: [091753S](#)

092105A | Periodontology and Geriatric Dentistry, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Pekka Ylöstalo, Jussi Leppilahti, Meeri Ojala

Content

All courses and clinical practising demands from the 3th to 5th years studies in Periodontology and Geriatric Dentistry.

Learning outcomes

1) Periodontology

- The anatomy and physiology of periodontium
- Clinical, radiological and microbiological diagnostics
- Etiology, pathogenesis, risk factors and classification of periodontal diseases
- Epidemiology of periodontal diseases
- Periodontal health promotion
- Periodontal treatment methods and equipments
- Periodontal aspects in occlusal rehabilitation of periodontally reduced dentition
- Relation between periodontal diseases and management with comprehensive dental treatment and general health.
- Surgical treatment modalities and their indications
- Immunological and non-immunological defence mechanisms associated with periodontal tissues during disease and healing
- Systemic effects of periodontal infections
- Diagnostics and treatment of peri-implant disease conditions

2) Geriatric Dentistry

- Biological changes in cell, oral cavity, organs during aging
- Psychological and social changes during aging
- Special features of geriatric dentistry, complication risks in dental health care among older patients
- Diseases, medications and functional ability in treatment planning and patient care among older patients
- Demography, epidemiology oral diseases and non-oral diseases of older patients
- Nutrition
- Aging theories

[Official course record: 092105A](#)

091550A | Periodontology and Geriatric Dentistry, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 091550A](#)

091751A | Periodontology I

5 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Jussi Leppilahti, Meeri Ojala, Pekka Ylöstalo

Content

Anatomy and physiology of periodontium, aetiology and basic pathology of gingivitis and chronic periodontitis. Classification of clinical phenotypes concerning chronic gingivitis and periodontitis. Hygienic phase periodontal treatment.

Basics in periodontology and periodontal treatment, Part 1:

Lectures: Anatomy and physiology of periodontium, aetiology and basic pathology of gingivitis and chronic periodontitis.

Basics in periodontology and periodontal treatment, Part 2:

Clinical examination and diagnosis of gingivitis and periodontitis. Evaluation of prognosis and treatment plan. Oral hygiene and plaque control agents. Periodontal hand instruments and instrumentation.

Practical work: Phantom- and Simulation training.

Learning outcomes

- Upon completion of the course the student:
- will reach basic knowledge and skills to give periodontal therapy
- Is able to search for and use academic information critically
- applies and develops their professional interaction skills

Official course record: [091751A](#)

091751S | Periodontology II

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Jussi Leppilahti, Pekka Ylöstalo

Content

Ultrasonic and air-pressure devices in periodontal treatment. Individual and population based preventive periodontal therapy, Motivational interview. Epidemiology and risk factors of periodontal diseases. Classification of periodontal diseases and periodontal case definitions. Clinical microbiology and antibiotics in periodontal therapy. Treatment of residual deep periodontal pockets and furcation lesions. Periodontal supportive maintenance treatment.

Exercises, teamwork.

Learning outcomes

The aim is to enhance students basic knowledge and skills to give periodontal therapy.

Upon completion of the course the student will

- be able to give a personalized gingivitis and periodontitis diagnosis and case definition.
- be able to estimate individually disease risk and treatment needs.
- be aware of the role of oral periopathogens and dysbiosis as an etiological factor for periodontal diseases.
- have skills to use safely hand instruments, ultrasonic and air-polishing instruments during subgingival instrumentation.
- be able to perform the diagnosis and non-surgical treatment of peri-implant diseases
- be able to implement an individual preventive treatment plan.
- be able to search for and use academic information critically
- apply and develop professional communication skills
- be able to work effectively in interprofessional teams, making use of the expertise of different disciplines
- approach the perspectives of different fields with openness and respect, and recognizes their benefits in clinical care

Official course record: [091751S](#)

092117A | Periodontology III

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Jussi Leppilahti, Meeri Ojala

Content

Occlusal aspects in diagnostics and treatment of periodontally destructed dentition, occlusal rehabilitation in periodontally destructed dentition.

Practical training.

Learning outcomes

Upon completion of the course the student will get clinical know-how for occlusal rehabilitation of periodontally destructed dentition.

Official course record: [092117A](#)

MD00AK60 | Periodontology IV

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Jussi Leppilahti, Pekka Ylöstalo, Paula Tegelberg

Content

Lectures: Systemic diseases, disorders and medications as a risk for periodontal diseases. Interaction between periodontal infection and individual systemic health. Periodontal medicine, molecular biology of inflammation, genetic aspects of periodontal diseases.

Seminars: Periodontal treatment protocols based on scientific evidence.

Learning outcomes

The student:

- understands the infectious nature of gingivitis and periodontitis
- is able to explain the connections between these conditions and general health, and knows how to take them into account in periodontal diagnosis and treatment
- enhances their ability to read scientific articles and to apply information critically in clinical patient care
- recognizes the foundations of professional ethics in their field and is able to act in accordance with them
- applies and develops professional communication skills
- is able to work effectively in a group, negotiate, and share responsibilities
- is able to critically evaluate the solutions and perspectives offered by different disciplines, and to integrate them creatively into the context of their own field

Official course record: [MD00AK60](#)

090628A | Periodontology: Clinical diagnosis, risk assessment, prognosis and treatment plan, literature exam

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Pekka Ylöstalo, Jussi Leppilahti

Content

The course offer basic knowledge on clinical diagnosis, risk assessment, prognosis and treatment plan of periodontal patients.

Learning outcomes

After completing the course, the student have sufficient knowledge for make clinical diagnosis, risk assessment, and determine prognosis and make treatment plan.

Official course record: [090628A](#)

090639A | Periodontology: Periodontal surgery, literature exam

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Pekka Ylöstalo, Jussi Leppilahti

Content

The course offer basic theoretical knowledge on periodontal surgical treatment and periodontal-restorative interrelationships.

Learning outcomes

After completing the course, the student have knowledge of periodontal surgical treatment and periodontal-restorative interrelationships.

[Official course record: 090639A](#)

090629A | Periodontology: Periodontal therapy, literature exam

1 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Pekka Ylöstalo, Jussi Leppilahti

Content

The course offers basic knowledge on non-surgical periodontal treatment.

Learning outcomes

After completing the course, the student have theoretical knowledge of non-surgical periodontal treatment.

[Official course record: 090629A](#)

402958A | Physical Exercise in Promoting Health

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Physical Exercise in Promoting Health - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * the meaning of physical activity and physical condition to psychological, physical and social health
- * movement recommendations for different age groups and recommendations for reducing sitting
- * endurance fitness and muscle fitness
- * methods for measuring physical activity and physical condition
- * physical activity and fitness of Finns
- * means to promote physical exercise in different contexts

Learning outcomes

Upon completion of the course students should be able to:

- * explains the importance of exercise from the point of view of health promotion and disease prevention, taking into account the aspects of health
- * explains the health-enhancing factors and mechanisms of exercise
- * explains immobility and an inactive lifestyle as a health risk factor (a consuming factor)
- * describe movement recommendations for different age groups
- * describe the measurement methods of physical activity and fitness and the current situation in Finland
- * look at exercise as a health promoter from the perspective of the individual, community and society

[Official course record: 402958A](#)

AY402958A | Physical Exercise in Promoting Health (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Physical Exercise in Promoting Health- course is part of the Intermediate Studies of Health education. The contents of the course include:

- * the meaning of physical activity and physical condition to psychological, physical and social health
- * movement recommendations for different age groups and recommendations for reducing sitting
- * endurance fitness and muscle fitness
- * methods for measuring physical activity and physical condition
- * physical activity and fitness of Finns
- * means to promote physical exercise in different contexts

Learning outcomes

Upon completion of the course students should be able to:

- * explains the importance of exercise from the point of view of health promotion and disease prevention, taking into account the aspects of health
- * explains the health-enhancing factors and mechanisms of exercise
- * explains immobility and an inactive lifestyle as a health risk factor (a consuming factor)
- * describe movement recommendations for different age groups
- * describe the measurement methods of physical activity and fitness and the current situation in Finland
- * look at exercise as a health promoter from the perspective of the individual, community and society

Official course record: [AY402958A](#)

AY353307S | Planning and Conducting Scientific Research (OPEN UNI)

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Erika Jarva

Content

Planning the research process, preparing an exercise research plan, reviewing the reliability, ethics and data protection of the research.

Learning outcomes

Upon completion of the course the student will be able to:

- apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- critically justify the choice of research topic and identify the key concepts related to the studied phenomenon
- evaluate his/her research topic in relation to nursing or health administration science and societal debate
- seek and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- evaluate and apply methodological solutions in nursing or health management scientific research
- assess the reliability of quantitative and qualitative research and systematic literature review and apply them in the planning and implementation of one's own research
- assess the significance and application of multi-methods in research
- prepare the final exercise research plan clearly and creatively, and can answer questions about it
- critically discuss your own and other students' research topics and plans
- understand the importance of responsible science and research data management
- assess ethical and data protection issues related to conducting research

Official course record: [AY353307S](#)

092130A | Prescriptions

1 ECTS | Medicine | Intermediate Studies | Finnish

Person in charge: Antti Tiisanoja, Paula Tegelberg

Content

Laws and rules regarding prescribing. The construction of a prescription. The information to be entered to the prescription. The authoritative regulations concerning the prescription and delivery of pharmaceuticals. The role of pharmacy in drug delivery, pharmaceutical forms, the quality control and storage of pharmaceuticals.

Learning outcomes

Upon completion of the course, the student will be able to understand an appropriate way to write prescriptions. The student knows authoritative regulations and restrictions concerning the prescription and delivery of pharmaceuticals. In addition the student understands the role of pharmacy in delivering the drugs.

[Official course record: 092130A](#)

092103A | Prosthetic Dentistry and Stomatognathic Physiology, final examination

1 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Kirsi Sipilä, Ritva Näpänkangas

Content

Courses on stomatognathic physiology, fixed prosthodontics (onlays, veneers, tooth-supported crowns and fixed dental prostheses), removable prosthodontics (partially and totally edentulous jaw), implant dentistry

Learning outcomes

Learning objectives:

- Students will know the normal anatomic structures and the abnormalities of the stomatognathic system.
- Student will be able to perform the clinical examination and conservative stomatognathic treatment based on the diagnosis.
- Student will be able to perform the prosthetic treatment using tooth-supported fixed prostheses and removable prostheses.
- Student will know the dental materials used in prosthodontics and will be able to perform simple prosthetic repairs.
- Student will know the possibilities of the prosthetic rehabilitation in advanced cases, including restorations supported on implants.
- Student will have an understanding of different pain conditions in head and face, will understand the need for multidisciplinary collaboration in diagnostics and treatment of pain patient and will be able to refer the patient to consultation for other medical specialty when necessary.
- is able to follow the development of scientific and professional knowledge in their field

[Official course record: 092103A](#)

091530A | Prosthetic Dentistry and Stomatognathic Physiology, final grade

0 ECTS | Dentistry | Intermediate Studies | Finnish

No description supplied in the collected record.

[Official course record: 091530A](#)

402103P | Psychological Development of Children and Adolescents

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Psychological Development of Children and Adolescents - course is part of the basic studies in health education. The course covers the following content areas:

- *an examination of key concepts and developmental psychological theories relevant to the psychological development of children and adolescents
- * stages and special features of psychological development in childhood and adolescence
- * key challenges and disorders in psychosocial development
- * the importance of sleep for the development and well-being of children and adolescents
- * supporting the psychological development and well-being of children and adolescents at home, in early childhood education, in schools, and in health education teaching

Learning outcomes

Upon completion of the course the student:

- * has become familiar with the key concepts and theories of developmental psychology
- * knows how to view the psychological development of children and young people from various perspectives
- * is able to recognize and name the challenges that appear in the psychosocial development of children and adolescents
- * is able to describe the significance of various social environments and sleep for the psychological development and well-being of children and adolescents

Official course record: [402103P](#)

AY402103P | Psychological Development of Children and Adolescents (OPEN UNI)

5 ECTS | Health Education | Basic Studies | Finnish

Person in charge: Karoliina Takalo

Content

Psychological Development of Children and Adolescents - course is part of the basic studies in health education. The course covers the following content areas:

- *an examination of key concepts and developmental psychological theories relevant to the psychological development of children and adolescents
- * stages and special features of psychological development in childhood and adolescence
- * key challenges and disorders in psychosocial development
- * the importance of sleep for the development and well-being of children and adolescents
- * supporting the psychological development and well-being of children and adolescents at home, in early childhood education, in schools, and in health education teaching

Learning outcomes

Upon completion of the course the student:

- * has become familiar with the key concepts and theories of developmental psychology
- * knows how to view the psychological development of children and young people from various perspectives
- * is able to recognize and name the challenges that appear in the psychosocial development of children and adolescents
- * is able to describe the significance of various social environments and sleep for the psychological development and well-being of children and adolescents

Official course record: [AY402103P](#)

092130S | Radiation Safety in Dentistry

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Annina Sipola, Anne-Maria Kärki

Content

Radiation protection, radiation safety procedures in working environment, radiation use in dentistry.

Learning outcomes

Upon completion of the course, the student will

- know appropriate radiation safety requirements and guidelines.
- know how to arrange quality assurance procedures for dental X-ray appliances.
- understand that the use of radiation is monitored to ensure the radiation exposure of patients and staff is as low as possible.

-Analytical, Critical, and Creative Thinking: student is able to independently analyze extensive and multidimensional material and draw well reasoned, critical conclusions.

-Skilled at evaluating information from multiple perspectives and assessing its reliability.

-Uses creative thinking to generate new knowledge, develop insights, and apply them in practical contexts.

-Ability to Articulate Professional Skills and Competencies

-Capable of clearly describing professional strengths, expertise, and areas of competence in a structured and audience appropriate way.

-Able to justify skills and experience with concrete examples and communicate them effectively in professional settings.

-Ethical Awareness and Responsible Decision Making: Recognizes ethical questions and perspectives in different situations and knows how to seek relevant information to address them. Understands the potential consequences of different courses of action and evaluates them thoughtfully.

Official course record: 0921305

MM00AX38 | Radiation Safety in Medicine

2 ECTS | Medicine | Basic Studies | Finnish

Person in charge: Miika Nieminen

Content

Basics of radiation physics, basics of radiation biology, decree of radiation protection, radiation safety procedures in working environment, the use of radiation in medicine.

Learning outcomes

After the course the student can describe different forms of radiation and their application in medicine, explain the biological effects and mechanisms of radiation, define the decrees pertaining to the use of radiation and describe the radiation safety measures in the hospital working environment. The student can apply knowledge in practice and guide others to safe working practices.

Official course record: MM00AX38

356015J | Register Based Research

1-5 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Outi Kanste

Content

- Register-based data related to social and health care, health and well-being
- The use of registers and register-based data in health sciences and related fields of research
- The significance and potential of register-based research in generating new knowledge and solving problems
- The research process in register-based research, data collection, data combination, data analysis, and ethical and legal issues

Learning outcomes

After completing the course, students will be able to:

- identify register-based data related to social and health care, health and well-being
- critically discuss the possibilities and challenges of register-based research as well as methodological, ethical, and legal issues
- design a feasible research plan for register-based research
- utilise analytical, critical and creative thinking across disciplines in producing new knowledge and solving problems

Official course record: 356015J

HL00AL60 | Rehabilitation of Communication, Language and Speech of Adults with Hearing Loss

1 ECTS | Logopedics | Finnish

Person in charge: Terhi Hautala

Content

The assessment of communication abilities and difficulties of adults with varying degrees of hearing loss, as well as the specific features of their rehabilitation.

Learning outcomes

After completing the course, the student

- can analyse the communication difficulties of adults who are deaf or hard-of-hearing,
- is familiar with the specific features of their rehabilitation,
- can apply relevant rehabilitation methods of adults who are deaf or hard-of-hearing in speech and language therapy,
- has developed his/her interaction and communication skills through group works and discussions,
- has developed his/her problem-solving skills through case examples that are solved together, which is important for the clinical work of a speech and language therapist.

Official course record: HL00AL60

HL00BA84 | Rehabilitation of Communication, Language and Speech of Adults with Hearing Loss

1 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Taina Välimaa

Content

The assessment of communication abilities and difficulties of adults with varying degrees of hearing loss, as well as the specific features of their rehabilitation.

Learning outcomes

After completing the course, the student

- can analyse the communication difficulties of adults who are deaf or hard-of-hearing,
- is familiar with the specific features of their rehabilitation,
- can apply relevant rehabilitation methods of adults who are deaf or hard-of-hearing in speech and language therapy,
- has developed his/her interaction and communication skills through group works and discussions,
- has developed his/her problem-solving skills through case examples that are solved together, which is important for the clinical work of a speech and language therapist.

Official course record: HL00BA84

HL00AI50 | Rehabilitation of Communication, Language and Speech of Children and Youth with Hearing Loss

1 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Krista Tuohimaa

Content [Finnish source]

Kuulovammoihin liittyvät lasten ja nuorten kommunikoinnin, kielen ja puheen häiriöiden ja niiden kuntoutuksen erityispiirteet sekä kuntoutusmenetelmät.

Learning outcomes [Finnish source]

Opintojakson jälkeen opiskelija osaa analysoida lasten ja nuorten kommunikoinnin, kielen ja puheen häiriöiden sekä niiden kuntoutuksen erityispiirteitä liittyen kuulovammoihin. Lisäksi opiskelija osaa soveltaa kuntoutusmenetelmiä puheterapeuttisessa kuntoutuksessa.

[Official course record: HL00AI50](#)

HL00BA83 | Rehabilitation of Communication, Language and Speech of Children and Youth with Hearing Loss

1 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Krista Tuohimaa

Content [Finnish source]

Kuulovammoihin liittyvät lasten ja nuorten kommunikoinnin, kielen ja puheen häiriöiden ja niiden kuntoutuksen erityispiirteet sekä kuntoutusmenetelmät.

Learning outcomes [Finnish source]

Opintojakson jälkeen opiskelija osaa analysoida lasten ja nuorten kommunikoinnin, kielen ja puheen häiriöiden sekä niiden kuntoutuksen erityispiirteitä liittyen kuulovammoihin. Lisäksi opiskelija osaa soveltaa kuntoutusmenetelmiä puheterapeuttisessa kuntoutuksessa.

[Official course record: HL00BA83](#)

694825A | Rehabilitation of the Disorders in the Communication, Language and Speech of Children and Youth 1

8 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Reetta Baldin

Content

The principles and methods of the rehabilitation of the disorders in the communication, language and speech of children and youth, as well as Augmentative and Alternative Communication (AAC).

Learning outcomes

Upon completion of the course, the student should be able to

- explain the principles and methods of rehabilitation of communication, language and speech disorders in children and adolescents
- describe the different methods of Augmentative and Alternative Communication (AAC) and the basic principles of their use
- compare the level of evidence for research on different rehabilitation methods and interpret the credibility of the theoretical basis
- design a rehabilitation goal to improve, compensate and/or maintain functional ability and to promote or maintain a good quality of life for the patient
- take into account the specificities of the patients in their interactions and to support the patient in communicating on an equal footing
- recognize the importance of prevention of speech and language disorders
- use basic concepts and terminology of speech and language therapy in an appropriate and relevant way
- communicate clearly with experts in their field and with the general public
- consciously use his/her interpersonal skills in a constructive, respectful and collaborative manner.

Official course record: [694825A](#)

694826A | Rehabilitation of the Disorders in the Communication, Language and Speech of Children and Youth II

6 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Reetta Baldin

Content

The principles and methods for rehabilitating communication, language, and speech disorders in children and adolescents, with a focus on their special features.

Key topics

- developmental disability
- prematurity
- cleft lip and palate
- cerebral palsy and dysarthria
- pediatric feeding disorders

Learning outcomes

Upon completion of the course, the student should be able to

- explain the special features of rehabilitation of communication, language and speech disorders in children and adolescents in relation to developmental disabilities, prematurity, cleft lip and palate, Cerebral palsy and dysarthria
- describe the principles and methods of rehabilitation of feeding disorders in children and adolescents
- design a rehabilitation goal to improve, compensate and/or maintain functional capacity and to promote or maintain a good quality of life for the patient
- take into account the specificities of the patient in his/her interactions and to support the patient in communicating on an equal footing
- use basic concepts and terms of speech and language therapy in an appropriate manner
- communicate in writing both to experts in his/her own field and to the general public
- use their interpersonal skills in a constructive, respectful and collaborative manner.

Official course record: [694826A](#)

694837A | Rehabilitation of the Disorders in the Communication, Language and Speech of Children and Youth III

6 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Seila Pihanurmi

Content

Special characteristics of communication, language, and speech disorders in children and youth and their rehabilitation, as well as rehabilitation methods related to sensory impairments, autism spectrum disorders, situational speech difficulties, activity and attention disorders, and speech fluency disorders.

Learning outcomes

Upon completion of the course student

* will be able to describe and analyze the characteristics of communication, language, and speech related to sensory impairments, autism spectrum disorder, situational speech difficulties, activity and attention disorders, and speech fluency disorders in children and youth, as well as the related speech therapy rehabilitation

* will be able to apply assessment and rehabilitation methods related to speech therapy work in relation to the above-mentioned client groups

* will be able to engage in professional discussion related to the above-mentioned client groups in group situations

[Official course record: 694837A](#)

092116A | Removable Prosthodontics I

3 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Ritva Kuoppala, Kirsi Sipilä

Content

Examination of the removable-prosthesis patient; indications for treatment, pre-prosthetic treatment; clinical stages of treatment; laboratory techniques (main principles); design exercises and demonstrations.

Learning outcomes

After completing the course, the student

- is able to identify and diagnose changes in the masticatory system caused by tooth loss and take them into account in occlusal rehabilitation
- is able to perform a clinical examination of the masticatory system and create a treatment plan for a removable prosthesis patient
- is able to explain the indications for treatment and knows the types and structures of partial dentures
- masters the design principles and clinical procedures of conventional acrylic partial dentures and cast metal framework dentures
- is able to assess and carry out preparatory procedures related to removable prosthodontic treatment
- is able to combine fixed and removable prosthodontics as part of the patient's comprehensive occlusal rehabilitation
- is able to assess the prognosis of the treatment and plan the patient's maintenance and follow-up care

[Official course record: 092116A](#)

092121S | Removable prosthodontics II

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Ritva Kuoppala, Kirsi Sipilä

Content

Introduction to complete dentures, changes in masticatory system caused by edentulousness and tooth extractions, pre-prosthetic preparation of the mouth, impressions, relationship of edentate jaws, shape of the dentures - retentive, phonetic and hygienic aspects, occlusion in complete dentures, controls and recall procedures, immediate dentures

Learning outcomes

After completing the course, the student

- is able to assess and take into account the need for preparatory and pre-prosthetic procedures related to complete denture treatment
- is able to perform the prosthetic treatment of an edentulous patient
- understands the laboratory procedures involved in complete denture treatment
- is able to evaluate and guide the patient's follow-up and maintenance care
- knows and is able to carry out the common repair procedures for removable dentures

Official course record: 0921215

AY00AU37 | Renewing Management in Social and Health Care (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- human-centered change management
- renewing leadership and organizational renewal
- promoting participation through leadership practices
- future-oriented leadership and sustainable social and health care management

Learning outcomes

Upon completion of the course, the student will be able to:

- define the key factors in change management from a human-centered leadership perspective
- identify factors that promote and hinder renewal in the organization and in leadership
- identify the skills needed for future management and the need to develop them
- identify the challenges and prerequisites for sustainable management and renewal in the social and health care sector in a changing operating environment
- apply renewing leadership methods in social and health care management

Official course record: AY00AU37

694861A | Research in Logopedics I: Basic Seminar and Bachelor's Thesis, part 1/2

2 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Krista Tuohimaa

Content [Finnish source]

Tutkimusprosessin vaiheet, kandidaatintutkielman suunnittelu

Learning outcomes [Finnish source]

Opiskelija osaa:

- suunnitella ohjatusti pienimuotoisen projektin
- asettaa tavoitteet ja suunnitella keinot niiden saavuttamiseksi yhdessä ohjaajansa kanssa
- aikatauluttaa tehtävät ja toteuttaa projektin suunnitelman mukaisesti
- tieteellisen kysymyksenasettelun perusteet
- tieteen alansa eettisten periaatteiden perusteet
- hankkia tehtävän kannalta relevanttia aineistoa ja tarkastella sitä analyttisesti
- erottaa tehtävän kannalta olennaisen epäolennaisesta
- analysoida kriittisesti tieteellistä tietoa
- ratkaista tieteelliseen työhön liittyviä perusongelmia
- käyttää oman tieteenalansa kieltä tieteellisessä keskustelussa
- toimia asianmukaisessa vuorovaikutuksessa ryhmätilanteissa, joissa käydään tieteellistä keskustelua
- kirjoittaa selkeän tutkimussuunnitelman

Opiskelijalla on valmiudet kirjoittaa kandidaatintutkielma.

Official course record: [694861A](#)

694862A | Research in Logopedics I: Basic Seminar and Bachelor's Thesis, part 2/2

8 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Kandidaatintutkielman toteutus. Seminaarityöskentely, tutkielman esitys ja opponointi (suullinen ja kirjallinen).

Learning outcomes

The student can carry out a small project under guidance. They can set appropriate goals and plan the means to achieve them in collaboration with their supervisor. They can schedule the tasks and carry out the project as planned.

The student can acquire relevant research materials for their project and examine them analytically. They can distinguish what is relevant and what is irrelevant in terms of the aims of the thesis.

The student knows the basics of academic writing, can express themselves clearly and can produce fluent, scholarly text. They can report on their materials as well as on the working process and the results.

The student can work in a group and present their work orally. They can assess others' work and give and receive constructive feedback. They can use field-specific language in scholarly communication.

The student has developed their critical and analytic thinking and practiced setting problems and solving them. They are familiar with some methodology in their field and with the basics of research ethics and good scientific practice. They have the capability to continue to a master's thesis.

Official course record: [694862A](#)

694810A | Research in Logopedics I: Methodology and Ethics I

3 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Aija Kotila

Content

Basics of scientific research, scientific standards, research designs and methods, and ethics of research

Learning outcomes

After completing the course, the student will be able to:

- explain and analyse the principles and norms of scientific research
- compare and illustrate different research designs and methods
- explain and evaluate general research ethical considerations
- communicate the main content of a research article

Official course record: 694810A

694802S | Research in Logopedics II: Advanced Seminar

6 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Kerttu Huttunen

Content

A seminar on scientific research practices, the structure of a thesis, the principles of writing a research plan and research ethics. During the seminar, students will plan their thesis's content and research design and write a research plan for their thesis. The work on the thesis will begin alongside the seminar under the guidance of the student's thesis supervisor.

Learning outcomes

Upon completion of this course, the student

- understands the general structure of a thesis and knows what the different parts of the thesis contain,
- can define the key concepts of his/her own thesis,
- identify the characteristics of a good research question,
- will be able to develop a research plan for a thesis,
- recognise the methodological and research ethics principles that influence speech and language therapy research and apply this knowledge to his/her own thesis,
- will be able to work in different teams,
- acquires skills of analytical and critical thinking,
- will be able to give and receive constructive and critical feedback and
- has acquired the skills to carry out a thesis using scientific methods.

Official course record: 694802S

694811S | Research in Logopedics II: Methodology and Ethics II

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Aija-Riitta Kotila

Content

Lectures/teaching, where you will learn about research strategies and research ethics in speech and language therapy/pathology.

Learning outcomes

On completion of the course, the student

- recognises the diversity of research strategies in speech and language therapy/pathology,
- understands the interdisciplinary and multidisciplinary nature of speech and language therapy/pathology research,
- is able to design a research strategy for his/her own thesis,
- identifies the methods appropriate to the research strategy in speech-language pathology,
- is able to work in different teams,
- is able to reflect analytically on research strategy choices and their implications,
- can combine different research methods analytically and creatively to support the objectives of the thesis.

Official course record: [6948115](#)

352253A | Research Methods in Health Science

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kerimaa, Suvi Kuha, Jonna Juntunen

Content

Characteristics and main phases of qualitative and quantitative health sciences research; formulation of the research aim, purpose and research question; data collection and analysis methods; ethical principles and practices in accordance with TENK; key principles of data protection, data security and data management (including GDPR and FAIR); evaluation of research reliability; and the preparation of a research plan and research report.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the key characteristics of qualitative and quantitative health sciences research and the main phases of the research process
- formulate the aim, purpose, and research task or research question of a health sciences study
- describe data collection and analysis methods appropriate for the chosen research topic
- describe the ethical principles of health sciences research and the procedures required by good scientific practice (TENK), and explain how these are addressed in different phases of the research process
- recognizes the key principles related to data protection, information security, and data governance, including the GDPR and the FAIR principles, as well as the relevant regulatory frameworks and design approaches, and is able to take them into account in the production, processing, and use of data
- evaluate essential questions related to the reliability of qualitative and quantitative research from a health sciences perspective
- outline the basic structure of a health sciences research plan and research report from the perspective of the research process

Official course record: [352253A](#)

353316S | Research Methods in Nursing and Health Management Science

5 ECTS | Nursing Science, Health Management | Advanced Studies | Finnish, English

Person in charge: Kristina Mikkonen, Mira Hammarén

Content

Familiarisation with various scientific research data collection and analysis methods, and research implementation.

Various research designs, research processes, data collection and analysis methods, and reliability in qualitative research.

Research ethics and data protection in research (European health data principles, healthcare systems and data flows, GDPR, FAIR, reliability of artificial intelligence and analytics, data infrastructures, data security, and data protection).

Planning and drafting a research plan for a selected research topic, as well as planning the research process and justifying choices.

Presentation of the research plan.

Learning outcomes

Upon completion of the course the student will be able to:

- apply methods from their own field of study and recognise the strengths and limitations of methods from other fields
- compare and interpret the acompare and interpret the methodological starting points of nursing science and health management research.
- evaluate and apply various data collection and analysis methods in nursing science and health management research
- plan and combine the research process into a logical whole
- assess the reliability of the study
- assess ethical and data protection issues related to conducting research
- communicate in accordance with responsible conduct of research and principles
- draw up a research plan

Official course record: 353316S

AY353316S | Research Methods in Nursing and Health Management Science (OPEN UNI)

5 ECTS | Health Sciences | Advanced Studies | Finnish

Person in charge: Heidi Siira

Content

Familiarisation with various data collection and analysis methods for scientific research and the implementation of research.

Different research designs, research processes, data collection and analysis methods, and reliability of qualitative research.

Research ethics and data protection in research.

Planning and drawing up a practice study plan on the selected research topic, planning the research process and justifying the choices..

Learning outcomes

After completing the course, the student is able to:

compare and interpret the acompare and interpret the methodological starting points of nursing science and health management research.

evaluate and apply various data collection and analysis methods in nursing science and health management research

plan and combine the research process into a logical whole

assess the reliability of the study

assess ethical and data protection issues related to conducting research

communicate in accordance with responsible conduct of research and principles

draw up a research plan

DP00AL42 | Research plan seminar

1 ECTS | Archaeology, English, German Language and Culture, History, Information Studies, Literature, Cultural Anthropology, Logopedics, Swedish Language, Saami Culture, Saami Language, Finnish Language, Science Communication, History of Science and Ideas | Post-graduate Studies | Finnish, English

Person in charge: Pentti Haddington, Hannu Heikkinen

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- is able present their research plan to a wider audience
- is able to answer questions and critical comments concerning the research plan
- is able to prepare a scientific presentation

Official course record: DP00AL42

OH00AR10 | Research skills

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Anna Pulakka

Content

What is research work in the field of epidemiology and data science in practise? During this course, we will explore the competencies of researchers and develop these skills through various projects and feedback. The course is based on the active work of the student. We will also discuss the basics of using AI methods in research, general research skills, grant applications, and PhD studies in Finland.

Learning outcomes

Upon completion of the course, the student will be able to:

- Search, interpret and assess scientific research on a specific topic.
- Construct a literature review based on critical appraisal of earlier literature.
- Use and critically evaluate tables and figures to illustrate results from epidemiological research.
- Interpret systematic literature reviews.
- Identify and discuss ways to find PhD placements and research funding. Discuss work cultures and practices of job applications.
- Summarise the main competencies of a researcher and build their professional identity.
- Interpret and evaluate main ethical principles in epidemiological research of sensitive data.
- Apply basic principles of ethical use of artificial intelligence (AI) tools in research and critically evaluate relevant AI tools epidemiological research.

Official course record: OH00AR10

402952A | School Promoting Participation and Life Management

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

School Promoting Participation and Life Management - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * school as a multicultural community
- * the importance of the participation / inclusion of children and young people
- * life management and school means to strengthen it
- * cooperation between school and home as a promoter of the well-being of children and young people
- * identification of factors affecting exclusion and prevention of exclusion from the school's perspective

Learning outcomes

Upon completing the course, the student:

- * knows how to structure and implement school procedures that promote children's and young people's inclusion and equality
- * understand cultural diversity
- * understand individual and social factors affecting life management
- * identify the factors affecting social exclusion and know how social exclusion can be prevented in the school community

[Official course record: 402952A](#)

AY402952A | School Promoting Participation and Life Management (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

School Promoting Participation and Life Management - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * school as a multicultural community
- * the importance of the participation / inclusion of children and young people
- * life management and school means to strengthen it
- * cooperation between school and home as a promoter of the well-being of children and young people
- * identification of factors affecting exclusion and prevention of exclusion from the school's perspective

Learning outcomes

Upon completing the course, the student:

- * knows how to structure and implement school procedures that promote children's and young people's inclusion and equality
- * understand cultural diversity
- * understand individual and social factors affecting life management
- * identify the factors affecting social exclusion and know how social exclusion can be prevented in the school community

[Official course record: AY402952A](#)

OH00BB54 | Science Based Development of Social and Health care

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Mira Hammarén, Outi Kanste

Content

- science-based change management in social and health care
- scientific knowledge and methods in the development of social and health care
- digital transformation in social and health care
- utilising emerging technologies in the transformation of social and health care

Learning outcomes

Upon completion of the course, the student will be able to:

- lead change in a science-based manner, considering the prerequisites for successful change in social and health care
- evaluate the latest scientific information and apply various development methods in the development of the social and health care
- evaluate the prerequisites for successful digital transformation based on scientific research data
- apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- seek for and combine expertise from different fields to find innovative solutions to global challenges as part of a working group
- utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely, and responsibly, and identify their impacts on research, working life, and society

[Official course record: OH00BB54](#)

OH00AM93 | Science communication about Health Sciences

5 ECTS | Health Sciences | Other Studies | Finnish

Person in charge: Krista Hylkilä

Content

The basics of science communication, different types and channels of science communication, social interaction and importance of science communication in a society level.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the different types and channels of science communication.
- understands the importance of science communication of own science field as part of general awareness and popularization.
- explain the differences between scientific writing and popularized communication.
- use science communication methods to point out research and key topics considering own field of science.
- participate in social discussions from the point of own science field.

[Official course record: OH00AM93](#)

OH00AU19 | Science-based project and development

5 ECTS | Nursing Science | Advanced Studies | Finnish

Person in charge: Saara Kukkohovi, Krista Hylkilä, Heli Kuivila

Content

Project plan, different phases of the project, project financing, reporting, project operations, development and innovation in the social and health care sector.

Learning outcomes

Upon completing the course, the student will be able to: identify the different stages of the development process and act as a social and health care expert in them, identify and seek various funding opportunities for projects and initiatives and plan funding applications, write project proposals and reports, apply the opportunities created by digitalization (e.g., artificial intelligence, sensor technology), accessibility guidelines, and statistical data, and visualize data as part of project and development activities, acquire abilities to lead, coordinate, implement, and evaluate project activities and projects, identify various innovation methods and use them as part of innovation activities in the social and health care sector, use phenomenon-based and multidisciplinary co-development models as part of development and innovation activities, participate in and lead project partner negotiations, memorandum of understanding negotiations, and project preparation processes, lead and coordinate development and innovation activities based on evidence.

044114S | Searching skills, finding the evidence

1 ECTS | Medicine | Advanced Studies | English

Person in charge: Outi Uimari

Content

The students read the book Searching Skills Toolkit. Finding the evidence. Second edition. De Brún C, Pearce-Smith N. BMJ Books, 2014 (e-Book in the library) and will take the exam in electronic examination system, EXAM.

EXAM Instructions for students: <https://ict oulu.fi/5330/> .

Learning outcomes

The aim of the course is to give the student ability to make medical literature searches effectively.

Official course record: 044114S

694839A | SLT training I

5 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Heli Huttu

Content

Speech therapy assessment and rehabilitation of different kinds of communication, language and speech disorders.

Learning outcomes

On completion of the course, the student:

- can plan and implement speech therapy assessment and rehabilitation
- can collect relevant information by using approved assessment tools
- can set reasonable goals for rehabilitation period
- is able to use basic interaction skills with clients
- is able to commit to the therapy process with the client
- is able to apply basic knowledge related to speech therapy documentation and professional ethics
- can analyze speech therapy process and working as SLT
- is able to communicate constructively with other students and supervisor

Official course record: 694839A

694841A | SLT training II

5 ECTS | Logopedics | Intermediate Studies | Finnish

Person in charge: Heli Huttu

Content

Speech therapy assessment and rehabilitation of different kinds of communication, language and speech disorders.

Learning outcomes

On completion of the course, the student

- can plan and implement speech therapy assessment and rehabilitation
- can collect information by using approved assessment tools
- can set reasonable goals for rehabilitation period
- can create a good and trusting therapeutic relationship with the client
- is able to commit to the therapy process with the client
- is able to apply knowledge related to speech therapy documentation and professional ethics appropriately
- can analyze speech therapy process and working as SLT
- is able to communicate constructively with other students and supervisor
- is able to plan and implement individual rehabilitation for client, taking into account the client's individual needs and environment, functional capacity, available resources, and factors that may hinder the effectiveness of rehabilitation

Official course record: [694841A](#)

694852S | SLT training III

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Heli Huttu

Content

Speech therapy assessment and rehabilitation of different kinds of communication, language and speech disorders.

Learning outcomes

On completion of the course, the student

- can plan and implement speech therapy assessment and rehabilitation
- can collect information by using approved assessment tools and observe client and his functioning
- can set reasonable goals for rehabilitation period
- can apply various methods to create a good and trusting therapeutic relationship with the client
- is able to commit to the therapy process with the client
- is able to apply knowledge related to speech therapy documentation and professional ethics appropriately
- can analyze speech therapy process and working as SLT
- is able to communicate constructively with other students and supervisor
- is able to plan and implement individual rehabilitation for client, taking into account the client's individual needs and environment, functional capacity, available resources, and factors that may hinder the effectiveness of rehabilitation
- is able to evaluate the effectiveness of rehabilitation analytically and, if needed, adapt their own activities

Official course record: [694852S](#)

HL00AQ77 | SLT training IV

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Heli Huttu

Content

Assessment of communication, voice, language and/or speech and learning of sufficient knowledge of the rehabilitation process, client-oriented and professional interaction in speech and language therapy.

Learning outcomes

On completion of the course, the student

- can assess communication, voice, language and/or speech abilities,
- can observe and analyse the speech and language therapy process and interaction in the implementation of speech and language therapy practice,
- can identify strengths and developmental needs in client-oriented interaction,
- can work as a team member or as a partner in a working group,
- is able to communicate constructively about the strengths and developmental needs of the speech and language therapy process and client-centred interaction.

Official course record: [HL00AQ77](#)

551303S | Statistical Methods in Epidemiology I

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Maryam Nasserinejad

Content

Data organization and management, Descriptive statistics, Estimation and hypothesis testing, Inferential statistics (including statistical methods such as t-tests, chi-square tests, ANOVA, repeated-measures ANOVA, and non-parametric alternatives), Correlation analysis, Confounding, Statistical software.

Learning outcomes

This course introduces the essential statistical tests in epidemiological research. The students will gain practical skills in presenting data and experience in selecting and conducting appropriate statistical analyses. By the end of the course, successful students will be able to:

- Understand fundamental statistical concepts and gain practical skills in data organization and management.
- Summarize data effectively using both numerical methods and visual representations.
- Apply basic statistical tests for formal inference and accurately interpret the results.
- Perform comprehensive statistical analyses using advanced professional software (R).

Official course record: [551303S](#)

551306S | Statistical Methods in Epidemiology II

5 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Ville Vuollo

Content

- The basic principles of the most used statistical methods in epidemiology
- Regression modelling: linear regression, binary logistic regression, Cox's regression

Learning outcomes

- Recognize and apply appropriate statistical methods for the problem at hand
- Gain and apply analytical skills in handling and analysing different types of data
- Be able to interpret and present the results from different types of statistical analyses
- Learn to choose the appropriate regression model for different types of outcome variables

Official course record: [551306S](#)

044116S | Statistics toolkit

1 ECTS | Medicine | Advanced Studies | English

Person in charge: Outi Uimari

Content

The book includes the basic idea of the most usual statistical methods that are used when practicing evidence based medicine.

Learning outcomes

The aim of the course is to give the students basic idea of the most usual statistical methods that are used when practicing evidence based medicine.

Official course record: [0441165](#)

091731A | Stomatognathic Physiology I (orthofunction)

3 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Taina Kankaala, Kirsi Sipilä

Content

Structures of the masticatory system, macro- and microanatomy of temporomandibular joint, structure and function of the masticatory muscles, function of the mandible.

Learning outcomes

After the course the student knows the anatomy, biomechanics, and functional neuroanatomy of the stomatognathic system. The student knows the alignment of the occlusion, mechanics of mandibular movements, criteria for optimum occlusion, and determinants of occlusal morphology.

The aim is also to work effectively in a group, negotiate and share tasks, and, with guidance, make analytical conclusions and examine materials critically

Official course record: [091731A](#)

MD00AX89 | Stomatognathic Physiology III

2 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Kirsi Sipilä, Taina Kankaala, Riikka Hauru

Content

The etiology, diagnostics, differential diagnostics and treatment of TMD

Learning outcomes

Upon completion of the course the student will understand the heterogenous background of temporomandibular disorders (TMD) and to recognize complicated TMD and the need for special care and multidisciplinary treatment in TMD patients. The student is able to critically evaluate the solutions and perspectives offered by different disciplines, and to creatively integrate them into the context of their own field. The student is able to work effectively in a group and to negotiate and distribute tasks.

Official course record: [MD00AX89](#)

AY00AU36 | Strategic Management and Foresight in Social and Health Care (OPEN UNI)

5 ECTS | Health Sciences | Basic Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- basics of strategic management and foresight
- strategic human resource management
- foresight methods and their application in management in social and health care
- systems thinking and the complexity of the operating environment in social and health care

Learning outcomes

Upon completion of the course, the student will be able to:

- define key concepts related to strategic management in social and health care
- define starting points related to foresight in social and health care
- understand the significance of strategic human resource management in social and health care
- anticipate and identify challenges related to human resources and the changing operating environment

[Official course record: AY00AU36](#)

OH00AM05 | Student influence in health science

1-10 ECTS | Health Sciences | Other Studies | Finnish

Person in charge: Jonna Juntunen, Heli Kuivila, Outi Kanste

Content

Student influence and acting as a student representative in institutions and working groups in accordance with the university's strategy.

Learning outcomes

The student works actively and goal-oriented as a student representative in the university's administration or subject organization.

The student develops interaction and teamwork skills.

The student develops project management and leadership skills.

The student develops critical thinking skills.

The student knows how to organize meetings.

[Official course record: OH00AM05](#)

OH00BB92 | Student tutoring

1 ECTS | Epidemiology and Biomedical Data Science | Advanced Studies | English

Person in charge: Jouko Miettunen

Content

The tutor's main responsibilities include:

- introducing students to the university and to university study practices, as well as to other students.
- informing students about study support services.
- introducing student life and leisure activities,
- familiarizing students with the university community and opportunities for student influence and participation.
- guiding students in academic skills required in the degree programme, including study planning and time management.
- supporting new students in taking responsibility for their own studies.

Learning outcomes

Student tutors are second year students from the Epidemiology and Biomedical Data Science Programme who have been selected and trained by the university for their role. Under the guidance of a tutor, new students become familiar with the practices of their own field of study, the faculty, the university as a whole, their fellow students, and the city of Oulu. Tutoring is part of the university's official academic guidance system.

091601S | Study plan

4 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Antti Tiisanoja, Anna Pelkonen

Content

Writing a study plan and making an agreement of supervision.

Learning outcomes

When starting the thesis, a student fills with a supervisor a supervision plan and attaches into it a study plan that includes a short description of background literature, research problems, material and methods, reporting, and preliminary schedule.

The supervisor checks and approves the study plan by signing the supervision plan.

Generic skills, student is able to:

- under supervision, to make analytical conclusions and critically examine data
- to follow developments in scientific and professional knowledge in dentistry
- to prepare an research plan for the thesis, when needed, for an international audience
- to recognize the basic principles of research ethics in dentistry and is able to act in accordance with them
- to critically evaluate solutions and perspectives offered by different disciplines and creatively integrate them into dentistry
- to produce an accessible digital document i.e. study plan

Official course record: 091601S

402959A | Supporting Sexual Growth and Development

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Supporting Sexual Growth and Development- course is part of the Intermediate Studies of Health education. The contents of the course include:

- * sexual growth and development
- * dimensions of sexuality in childhood
- * dimensions of sexuality in adolescence
- * the school as a sexual educator and promoter of sexual health
- * cultural sensitivity in sexual education
- * sexual rights

Learning outcomes

Upon completion of the course the student knows how to

- * explain the special features of sexual growth and development at different ages
- * support sexual behaviour that promotes health at different ages

Official course record: 402959A

AY402959A | Supporting Sexual Growth and Development (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

Supporting Sexual Growth and Development - course is part of the Intermediate Studies of Health education. The contents of the course include:

- * sexual growth and development
- * dimensions of sexuality in childhood
- * dimensions of sexuality in adolescence
- * the school as a sexual educator and promoter of sexual health
- * cultural sensitivity in sexual education
- * sexual rights

Learning outcomes

Upon completion of the course the student knows how to

- * explain the special features of sexual growth and development at different ages
- * support sexual behaviour that promotes health at different ages

Official course record: AY402959A

OH00BB51 | Sustainable Human-Centered Leadership in Theory and Practice

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- sustainable human-centered leadership in social and health care
- approaches to human-centered leadership
- organizational sustainability in social and health care
- UN Sustainable Development Goals

Learning outcomes

Upon completion of the course, the student will be able to:

- analyse sustainable human-centered leadership in social and health care based on scientific research, and apply its principles in practical leadership
- critically evaluate human-centered leadership approaches
- categorise the sustainability of organizations and factors affecting it in social and health care, based on scientific evidence
- apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making in their own field

Official course record: OH00BB51

OH00BB91 | Systematic Literature Retrieval in Health Science

1 ECTS | Health Sciences | General Studies | Finnish

Person in charge: Sirpa Grekula

Content

Principles of systematic literature retrieval. Literature retrieval in key databases of the discipline using various search techniques. AI tools in information searching. Primary publication channels of the discipline, evaluation of the reliability of information sources and reference management tools.

Learning outcomes

Upon completion of the course, the student can conduct a systematic literature retrieval, and knows how to evaluate search results and information sources. The student can use reference management tools. The course develops the students' ethical, responsible, and critical information use as well as their digital and AI skills.

Official course record: [OH00BB91](#)

356012J | Systematic review

3-5 ECTS | Health Sciences | Post-graduate Studies | Finnish

Person in charge: Maria Kääriäinen

Content

Principles of evidence-based healthcare
The process of the systematic review
The systematic review of quantitative evidence
The systematic review of evidence generated by qualitative research
The use of JBI SUMARI-program

Learning outcomes

After completing the course, the student will be able to:

explain the basic principles of evidence-based practice
explain the process of the qualitative and quantitative systematic reviews
conduct systematic review protocol and to report the results of systematic review based on JBI methodology
use the JBI SUMARI-program in the systematic review process from protocol to report
apply methods, practices, and solutions based on digital technology and AI appropriately, safely, and responsibly in research, development work, and in demanding expert tasks in their own discipline

Official course record: [356012J](#)

694835S | Syventävä kirjallisuus

5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Heli Huttu

Content

Examination on advanced literature.

Learning outcomes

In this course, the student advance their expertise in the field of logopedics. Upon completion, they will possess a deeper and more comprehensive understanding of the topics they have selected.

Official course record: [694835S](#)

352238A | Teaching Practice Experience in a Clinical Environment

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Heli Kuivila, Jonna Juntunen

Content

Team teaching.
Multidisciplinary collaboration, competence and learning.
Planning and implementation of teaching in continuing education (for example in social-, health care and/or rehabilitation professional of healthcare organization).
Self- and peer assessment of teaching.
Learning materials and teaching methods.
Entrepreneurship, internationalism, and multiculturalism in the work of a healthcare teacher.
Teaching portfolio.

Learning outcomes

Upon completion of the course the student:

Is able to plan, implement and critically evaluate teaching and learning, produce evidence-based digital learning material and try out different teaching methods in various learning environments in the national and/or in a foreign language.

Is able to lead issues and people and develop and create new approaches in continuing education.

Is able to anticipate future competence needs and develop quality, processes, and performance in social-, healthcare, and rehabilitation education.

is able to promote interprofessional collaboration and lead multidisciplinary and multi-professional teams

is able to foster constructive cooperation with people from diverse backgrounds, develop their language skills, and is capable of challenging their own stereotypical ways of thinking

Is able to evaluate one's own and other students' teaching.

Is able to develop a teaching portfolio and evaluate personal teaching merits according to the principles of developmental evaluation, and identify the significance of continuously monitoring personal development.

Is able to reflect on and apply ethical competence in teaching, counseling, and patient, client, and/or rehabilitee care, to continuously evaluate and develop one's own competence concerning the goals, contents and pedagogical solutions of the curriculum.

Is able to review and develop one's own competence within the varied aspects of the educator's work and regarding organizational strategy.

Is able to develop one's competence in different ways, both in working life and through further and continuing education.

[Official course record: 352238A](#)

352237A | Teaching Practice Experience in an Educational Organisation

10 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Mira Rajala, Heli Kuivila

Content

Collaboration and building a network of working life contacts. Multidisciplinary collaboration, learning and competence development.

Understands the operation of the training institution and comprehends the entirety of the teaching profession. Planning teaching, implementation of teaching in an educational organization. Different learning environments. Learning materials and teaching methods.

Practice in teaching and supervision that is interactive, has a societal influence and adheres to principles of sustainable development.

Future challenges and directions faced by healthcare teachers and in teacher education.

Self- and peer assessment in teaching.

Learning outcomes

After completing the course, the student:

Is able to evaluate and develop the professional competence required in the field in a multidisciplinary manner, considering the characteristics and inclusion of the operating environment and the patient/client/rehabilitation participant.

Is able to draw conclusions based on knowledge from social, health, and/or rehabilitation sciences in education and integrate it into their teaching/practice as a teacher.

Is able to continuously monitor, produce, use, and critically evaluate evidence-based knowledge (e.g., care and rehabilitation guidelines, reviews) in the social, health, and/or rehabilitation field to develop their own, the work community's, and collaboration networks' expertise and/or practices.

Is able to teach and guide student learning by creatively using pedagogically justified learning processes, digital and collaborative teaching methods, and learning environments (e.g., simulation, clinical practice).

Is able to provide culturally competent teaching and student guidance in their work.

Is able to guide students in searching for and using reliable and up-to-date information for client-centered decision-making (e.g., care and rehabilitation guidelines).

Is able to work as part of a work community and recognize aspects of the teaching profession, such as employment terms, curriculum development, thesis supervision, and self-management as part of the work community.

Is able to comprehend the entirety of the teaching profession.

Is able to constructively evaluate their own and other students' teaching in educational institutions (self-/peer assessment).

Official course record: 352237A

092116S | Team Leadership in Oral health Care

1 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Saujanya Karki, Ritva Näpänkangas

Content

Work management, superior and subordinate in oral health care, life-long learning

Learning outcomes

Upon completion of the course, the student will be able to

- discuss concepts and challenges in work management and in the tasks of a superior and a subordinate
- implement leadership qualities in oral health care and work community
- undertake continuing professional development supporting the concept of life-long learning
- draw analytical conclusions, critically examine materials and identify the need for creative solutions based on a limited amount of material
- Recognize the importance of their physical, mental and social well-being and care for themselves compassionately
- follow the development of scientific and professional knowledge in their field
- deal with the challenges of work and workload, uncertainty and change
- reflect on their thoughts, feelings and actions in international environments
- perform the tasks required for the course in accordance with the HTK Guide
- work effectively in multidisciplinary teams, utilizing expertise from different fields and promoting common goals
- work effectively in a group and negotiate and share tasks

Official course record: 0921165

351220A | Technological Solutions and Digitalisation in Health Care

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Saara Kukkohovi, Jonna Juntunen

Content

The current state of ICT technology in healthcare, trends, and opportunities for digitalization; Digital enterprise architecture and key information systems in healthcare; Wellness technology, digital applications, products, services, and devices, robotics, artificial intelligence; Information flow and interoperability; Perspectives related to health data sharing, sustainability, and environmental responsibility; The role of the customer in digitized social and health services; Ethical issues in the digitization of the social and health sector; Work life visit/introduction.

Learning outcomes

Upon completion of the course, the student will be able to: Identify current and future trends in healthcare information and communication technology (ICT) as well as the needs and opportunities of digitalization, describe the key elements of digital enterprise architecture in healthcare (e.g., patient information systems), ICT solutions, and related applications in healthcare services, understand the basics of artificial intelligence and identify the key areas of artificial intelligence and machine learning, identify the key regulatory frameworks that guide the adoption and application of artificial intelligence in healthcare, recognize the potential of the Internet of Things (IoT) in healthcare, such as sensors, wearable devices, and cloud services, recognize key data flows in the healthcare system and understand how standards and interoperability enable the smooth and secure exchange of data, be able to explain the principles of the European Health Data Space (EHDS) and their significance in research and decision-making, identify factors related to data sharing, the sustainability of information infrastructures, and environmental responsibility, assess the role of the customer in digitized social and health services and identify related ethical issues, utilize their expertise in digitalization and technology for the development of healthcare and problem solving.

-Be able to use digital and artificial intelligence applications relevant to their field in an appropriate, safe, and responsible manner in their studies.

Official course record: 351220A

044303A | The growth and development of children and adolescents and their common long-term illnesses

3 ECTS | Paediatrics | Intermediate Studies | Finnish

Person in charge: Terhi Tapiainen, Johanna Uusimaa

Content

The somatic and neurologic development of children and adolescents, special features of examining children at different ages, the most common long-term illnesses of children and adolescents and how they affect children coping and performance (neurologic illnesses, and diabetes, asthma and allergy as examples of long-term illnesses).

Learning outcomes

Upon completion the student:

- understands the somatic and neurologic development of children and adolescents, as well as main characteristics of common long-term illnesses of childhood
- understands how the pediatric long term illnesses affect the coping and performance of children and adolescents and recognizes the symptoms of long-term illnesses
- knows the principles of Finnish health care system including child health centers and health services at schools

Official course record: 044303A

356017J | The International Research Seminar in Collaboration with the University of Oulu

1 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Kristina Mikkonen

Content

National and international research topics in health sciences

Learning outcomes

After completing the course, students will be able to:

- discuss and network with international researchers and present the key methodological solutions and results of their own research in a foreign language at a research seminar
- critically evaluate national and international developments and opportunities in healthcare and health sciences research
- promote international cooperation and build and utilise global networks
- integrate methods from their own field and other fields into their research and evaluate their compatibility and impact in research and practical applications

Official course record: 356017J

090619A | The principles of endodontics, literature exam

2 ECTS | Dentistry | Intermediate Studies | English

Person in charge: Päivi Havela, Tarja Tanner

Content

The Principles of Endodontics. Patel and Barnes (eds.) Oxford university Press, Oxford, United Kingdom.

Learning outcomes

Upon completion of the course, the student will be able to

- master the basics of endodontics (prevention, pathogenesis and diagnosis of pulpal diseases, anatomy of the pulpal space)

Official course record: 090619A

356013J | Theory development

5 ECTS | Health Sciences | Post-graduate Studies | Finnish, English

Person in charge: Kristina Mikkonen

Content

The process of theory development. The content of theory. The validity and reliability of theory. Measurements/instrument developing in part of the theory developing.

Learning outcomes

Student is able to explain and analyze the fundamentals of theory development in health sciences. The student is able to make difference between strategies of theory development. Student is able to plan a process of middle range theory developing including development, evaluating and testing the theory. The student is able to describe the instrument developing and testing as a part of the theory developing process. Student is able to apply gained knowledge on theory development critically in a task of the course.

[Official course record: 356013J](#)

402964A | Thesis

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

The Thesis - course is part of the Intermediate Studies of Health education.

Written a thesis related to health information, health promotion, health education or school health promotion, based on literature or empirical material, and acting as an opponent. Alternatively, the student can plan and implement a development project plan related to the topic.

Learning outcomes

Student reports on a theme or topical issue related to health promotion, health education or a special theme or current issue in health education at a chosen school.

[Official course record: 402964A](#)

MD00AZ31 | Thesis

16 ECTS | Dentistry | Advanced Studies | Finnish

Person in charge: Antti Tiisanoja, Anna Pelkonen

Content

Thesis includes a written thesis (16 ECTS), presentation of thesis, and attendance in research seminars in undergraduate dental education.

Learning outcomes

A DDS thesis is a scientific thesis in which the student demonstrates knowledge and skills of scientific thinking and research principles, as well as the ability to evaluate scientific literature.

Generic skills, student is able to:

- under supervision, to make analytical conclusions, critically examine data, and identify the need for creative solutions based on a relatively limited dataset
- to follow developments in scientific and professional knowledge in dentistry
- to present research results to an international audience
- to recognize the basic principles of research ethics in dentistry and is able to act in accordance with them
- to critically evaluate solutions and perspectives offered by different disciplines and creatively integrate them into dentistry
- to produce an accessible digital document (thesis) in accordance with university guidelines

[Official course record: MD00AZ31](#)

AY402964A | Thesis (OPEN UNI)

5 ECTS | Health Education | Intermediate Studies | Finnish

Person in charge: Karoliina Takalo

Content

The Thesis - course is part of the Intermediate Studies of Health education.

Written a thesis related to health information, health promotion, health education or school health promotion, based on literature or empirical material, and acting as an opponent. Alternatively, the student can plan and implement a development project plan related to the topic.

Learning outcomes

Student reports on a theme or topical issue related to health promotion, health education or a special theme or current issue in health education at a chosen school.

[Official course record: AY402964A](#)

092111A | Tooth Morphology

2 ECTS | Dentistry | Intermediate Studies | Finnish

Person in charge: Anna Pelkonen, Tarja Tanner

Content

Different types of teeth and dentitions, dentition as a part of masticatory organ, anatomy and morphology of teeth

Learning outcomes

Upon completion of the course, the student:

- has basic knowledge on the anatomy and morphology of dentition and teeth
- is able to identify different types of teeth and dentitions

[Official course record: 092111A](#)

351221A | Training in Work-Based Learning

5 ECTS | Health Sciences | Intermediate Studies | Finnish

Person in charge: Jonna Juntunen

Content

Setting learning objectives, professional skills, ethical behavior, applying for and apprenticeships, drafting an internship plan, tailor-made internship in a social or health care organization or third sector, Curriculum Vitae (CV), final report.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize own competence
- define their learning objectives and evaluate their achievement during and at the end of the training, both orally and in writing
- adhere to internship guidelines, work community rules, and ethical principles in the industry
- apply the knowledge and skills they have learned to work and develop in their field
- apply evidence-based knowledge in their own practice
- recognizes the core skills of analytical, critical, and creative thinking and is able to observe and evaluate them in their own action
- can prepare a Curriculum Vitae (CV)

Official course record: [351221A](#)

044117S | Users' guides to the medical literature

2 ECTS | Medicine | Advanced Studies | English

Person in charge: Outi Uimari

Content

The book includes the principles of evidence based medicine (EBM), how to benefit from medical literature and how to differentiate good medical evidence from poor.

Learning outcomes

The aim of the course is that after completion of the course the student knows how to use and appraise data and different sources of information and to perform systematic diagnostic reasoning and make decisions on treatments based on evidence.

Official course record: [044117S](#)

OH00BB55 | Value-Based Approach and Managerial Economics in Social and Health Care

5 ECTS | Health Management | Advanced Studies | Finnish

Person in charge: Eeva Vuorivirta-Vuoti, Outi Kanste

Content

- key concepts and foundations of value-based management and managerial economics
- dimensions of value-based management
- process of financial management
- critical and ethical evaluation of value-based practices and managerial economics in social and health care

Learning outcomes

Upon completion of the course, the student will be able to:

- apply key concepts and foundations of value-based management and managerial economics to the social and health care
- analyse different dimensions of value-based management and critically evaluate the effectiveness of the service system
- evaluate scientific research related to managerial economics and apply it to the analysis and management of social and health care operations
- recognises the dependencies between the dimensions of sustainability (social, ecological, economic, cultural) in their own field of study and is able to assess the impacts of their own field's activities on them
- is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

[Official course record: OH00BB55](#)

694859S | Work Experience 1

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Logopedian alaan liittyvä työkokemus.

Learning outcomes [Finnish source]

Opiskelija hankkii itsenäisesti logopedian alaan liittyvää työelämätaitoa. Lisäksi hän saa käytännön kokemusta kommunikoinnin vaikeuksista.

[Official course record: 694859S](#)

694860S | Work Experience 2

1-5 ECTS | Logopedics | Advanced Studies | Finnish

Person in charge: Terhi Hautala

Content [Finnish source]

Logopedian alaan liittyvä työkokemus.

Learning outcomes [Finnish source]

Opiskelijalla on logopedian alaan liittyvää työelämätaitoa. Lisäksi hän on saanut käytännön kokemusta kommunikoinnin vaikeuksista.

[Official course record: 694860S](#)

353205S | Written maturity test

0 ECTS | Nursing Science, Health Management | Advanced Studies | Finnish

Person in charge: Outi Kanste, Heli Kuivila

Content

Maturity test connected to the field of the student's Master's thesis.

Learning outcomes

The student is able to communicate in Finnish or Swedish and show thorough knowledge of the field of his / her thesis. If the student has taken the maturity test in connection with the Bachelor degree and showed good command in Finnish or Swedish language in it, she/he doesn't have to show it anymore in connection with the Master's degree. However, the student must still take the maturity test and show in it thorough knowledge of the field of her/his thesis.

Official course record: [3532055](#)

Physics & astronomy

761321A | Advanced laboratory exercises in physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Anne-Maaria Ahonen

Content

The laboratory exercises (0.5 - 1.0 ECTS per exercise) train the student in applying measurements to research into different physical phenomena. The exercises include practising how to plan the measurements, learning how to use the measuring instruments, processing and assessing the results, and drawing up scientific reports. Some of the exercises can be chosen according to the student's own interest.

Learning outcomes

After completing the course, the student can rather independently work with the most important measuring instruments used in physics and has experience in planning and conducting different measurements. The student is also able to critically assess her/his own results and report them to a group of peers.

[Official course record: 761321A](#)

NP00AU97 | Advanced laboratory exercises in physics

5 ECTS | Physics | Advanced Studies | Finnish, English

Person in charge: Anne-Maaria Ahonen

Content

The course is a follow up for the Laboratory exercises courses where the methods learned will be used to familiarize oneself with a wide range of physics phenomena in laboratory circumstances. Exercises already included in the earlier physics laboratory courses may not be selected. It is also possible to include a research related exercise to the course (worth 1 ECTS credit/exercise, max. 1 exercise/research group) where students are included in the daily research of a research group. Research related exercises are to be agreed with a supervising researcher and the course responsible.

Learning outcomes

After the course, a student is capable of planning, performing, handling the data and reporting results from physical measurements. Student is able to evaluate the validity of observations and to estimate the error limits and the possible sources of errors.

[Official course record: NP00AU97](#)

NP00AU96 | Advanced laboratory exercises in physics for Subject teachers

4-5 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Anne-Maaria Ahonen

No description supplied in the collected record.

[Official course record: NP00AU96](#)

DP00AL98 | Advanced Quantum Mechanics

5 ECTS | Physics | Post-graduate Studies | English

Person in charge: Gonzalo Martin Vazquez

Content

Discrete symmetries, Time-periodic Hamiltonians, Classical Field Theory, Quantum Field Theory: Canonical and Path integral formalism, Dirac equation, and Quantum electrodynamics.

Learning outcomes

Upon completion of the course, the student will be able to:

- recognize the main discrete symmetries and their applicability in theoretical physics, as well as the properties of periodic Hamiltonians.
- propose equations for the dynamics of classical fields.
- understand the problems of quantum mechanics and why the quantum field theory solves them.
- formulate the quantum mechanics using the path-integral formalism
- quantize a classical field using the canonical and path integral formalism.
- model particles with spin using the Dirac equations.
- understand the interaction of light and matter using Quantum Electrodynamics.

Official course record: [DP00AL98](#)

766674S | Applications of synchrotron radiation

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Samuli Urpelainen

Content

The course deals with synchrotron radiation-based scattering, spectroscopic and imaging methods for materials characterization. Covering nearly 20 different methods, the course aims at providing a big picture of what is possible with synchrotron radiation. Course topics include e.g. structural characterization with scattering methods, composition and quantity characterization with spectroscopic methods, and different types of imaging methods which can provide three-dimensional structural and compositional information. The presented techniques are illustrated with examples from different fields of study.

Learning outcomes

After completing the course, the student:

- knows what kind of information synchrotron radiation-based materials characterization methods can provide, and
- understands on a general level how the presented characterization methods qualitatively function.

Official course record: [766674S](#)

765649S | Astrophysics

10 ECTS | Astronomy | Advanced Studies | English

Person in charge: Vitaly Neustroev

Content

Stellar equilibrium. Theory of polytropes. Radiation transport. Convection. Nuclear reaction. Stellar evolution. Stellar pulsations. White dwarfs, degenerate gas. Supernovae. Neutron stars and black holes. Radiative transfer. Physics of HII regions. Cooling and heating of the gas and dust. Multiphase interstellar medium. Basics of gas dynamics. Shock waves. Evolution of photoionized nebulae. Stellar winds. Supernovae explosions. Star formation. Stellar types, spectra, temperatures. Continuous and line spectra. Spectral analysis. Theory of line formation.

Learning outcomes

The student should understand at the end of the course basic equations that describe the physics of stellar structure and evolution and know how to use them in practice, basics of radiation transport, photoionization physics, gas dynamics, shock waves, physics of spectral line formation, know the main opacity sources in various types of stars, understand the theory of line formation and be able to determine chemical composition from stellar spectra.

[Official course record: 765649S](#)

765642S | Astrophysics of Interacting Binary Stars

5 ECTS | Astronomy | Advanced Studies | English, Finnish

Person in charge: Vitaly Neustroev

No description supplied in the collected record.

[Official course record: 765642S](#)

761313A | Atomic physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Saana-Maija Aho

Content

In the beginning of the course, the historical events which led to the development of the quantum mechanics and the modern atomic model in the early 20th century are discussed. In this context, the interaction processes between matter and electromagnetic radiation, like black-body radiation, the photoelectric effect, and scattering, are examined. In quantum mechanics, particles are usually described with the aid of wave functions. De Broglie wavelength, the group and phase velocities of particles, and Heisenberg uncertainty principle serve as an introduction to the wave properties of particles. The Bohr's atomic model, electronic transitions of atoms, and emission spectra of atoms are also discussed. The first touch to the quantum mechanics is the solutions of wave functions and energies for some simple systems, like hydrogen atom, are described. Additionally, many-electron atoms are discussed briefly. Some modern research methods which are used to study the atomic physics are introduced. Applications which exploit the atom physical phenomena in everyday life are also discussed.

Learning outcomes

Student can explain the development of the atomic model. Student is able to describe some interaction mechanisms of electromagnetic radiation and matter. Student can resolve easy quantum mechanical problems. Student can describe the principles used when the wave functions and energies of some simple systems are determined. Student can take advantage of the periodic table of elements in finding the chemical and physical properties of atoms based on its electronic structure.

[Official course record: 761313A](#)

766384A | B.Sc. seminar

4 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Otto Mankinen

Content

Both written and oral reporting is essential part of the scientific research. During the course, the students participate in the seminars, act as opponents and present a seminar talk and a poster. The course supports writing of the B. Sc. thesis.

Learning outcomes

The student is familiar with the special requirements of a scientific text and is aware of physics' common practices in scientific writing. The student learns important scientific communication skills necessary in scientific research in physics.

Official course record: [766384A](#)

766385A | B.Sc. thesis

6 ECTS | Physics | Intermediate Studies | Finnish

Content

Both written and oral reporting is essential part of the scientific research. In the course, the students write a candidate thesis. The candidate thesis is about 20 pages. Thesis is written about subject given by and under supervision of a senior researcher.

Learning outcomes

The student is able to

- critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems
- perform scientific work and retrieve scientific knowledge
- identify the importance of analytical, critical and creative thinking in scientific activities
- produce fluent text in scientific style.

Official course record: [766385A](#)

761125P | Basic laboratory exercises in physics

5 ECTS | Physics | Basic Studies | Finnish

Person in charge: Anne-Maaria Ahonen

Content

The skill of measuring is important for physicists. This is an introductory course on how to make physical measurements and how to treat the measured data. Laboratory works are made in groups. Laboratory safety is also an essential part of physical measurements. Measurements are made with different instruments. As a result, the most probable value is determined as well as its error. The skills obtained during this course can be applied in the subsequent laboratory courses (intermediate and advanced laboratory exercises in physics).

Learning outcomes

The student can safely make physical measurements, use basic measurement tools, read different scales, handle the data, calculate the error estimations and make a sensible report of the laboratory measurements.

Official course record: [761125P](#)

766355A | Basics of space physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Anita Aikio

Content

This lecture course gives the basic knowledge of the processes taking place in the near-Earth space. In the interplanetary space, the solar wind is a continuous plasma flow emerging from the Sun. It compresses the magnetic field of the Earth into a region with a cometary shape, called the magnetosphere. The solar radiation and charged particles precipitating from the magnetosphere ionise the upper part of the atmosphere thus creating the ionosphere. Bursts of plasma and high-energy particles from the Sun cause disturbances in the surrounding space. These phenomena create the varying space weather. The space weather may affect e.g. telecommunication links, electrical power networks, operation of satellites and safety of astronauts. Northern lights is one form of space weather. This course deals the phenomena described above.

Learning outcomes

The student identifies and is capable of naming the basic concepts and processes of the Sun, solar wind, magnetosphere and ionosphere. She/he can explain the reasons for different phenomena in space physics and apply the theory to solve simple problems.

Official course record: [766355A](#)

761316A | Being a teacher in mathematical subjects

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Saana-Maija Aho

Content

The purpose of the course is to orient subject teacher students to pedagogical studies. The course begins with discussion about teaching and specially teaching of physics. In addition, some physics textbooks are introduced. All the students practice performing giving a speech.

Learning outcomes

The student is oriented towards beginning of pedagogical studies.

Official course record: [761316A](#)

766380A | Circular.now

3-5 ECTS | Physics | Intermediate Studies | Finnish, English

Person in charge: Jussi Malila

Content

In this course you will learn the basics of circular economy, what it is, and why it is needed given the global challenges of sustainability. The course is structured around the strong link of circular economy to systems thinking and shared expertise. These perspectives are covered under four major areas: sustainable food systems, forestry-related cycles, technical cycles, and mobility and the sharing economy.

Learning outcomes

- To develop a general understanding of the circular economy model and its basic principles
- To understand the problematic of the current consumption patterns, the over exploitation of nature and how circular economy can help solving these problems
- To become familiar with approaches that could promote the circular economy
- To create a vision of practical activities that could be undertaken by different sectors to promote the circular economy

Official course record: [766380A](#)

NP00BA95 | Climate communication

2-5 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Jussi Malila

Content

Climate change is a topic that divides opinions. Thus, it is important to pay attention how climate change and related research are communicated. In this course student learns to understand the different forms of climate communication, factors affecting it, the challenges and keys to impactful communication about climate change.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand what are the different forms of climate change communication.
- identify and discuss things that make climate communication a) important, b) challenging
- understand what affects the recipients and messengers of climate change information
- critically analyse climate change messages.

Official course record: [NP00BA95](#)

766383A | Climate.Now

2-5 ECTS | Physics | Intermediate Studies | Finnish, English

Person in charge: Jussi Malila

Content

Climate change as it is taking place affects us all. This course provides the basic information that every student - and each civilized person - should know about the topic: Scientific basis of climate change, mitigation of climate change, effects of climate change and adaptation.

Learning outcomes

Upon completion of the course, student can:

- look at climate change from many different perspectives and create connections between them as well as look for solutions to the climate challenge in a variety of ways
- reflect her or his own role in climate change and apply what has been learned on the course to her or his field of study -
- examine different perspectives, solutions, information sources, and the current debate on climate change critically.

Official course record: [766383A](#)

AY766386A | Climate.Now (OPEN UNI)

2 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Jussi Malila

Content

Climate change is happening and affects us all. This course provides background information relevant for all citizens: Scientific basis of climate change, mitigation of climate, change, effects of climate change and adaptation.

Learning outcomes

Upon completion of the course, student can

- look at climate change from many different perspectives and create connections between them as well as look for solutions to the climate challenge in a variety of ways
- reflect her or his own role in climate change and apply what has been learned on the course
- examine different perspectives, solutions, information sources, and the current debate on climate change critically

NP00AJ98 | Clusters and aerosols

5 ECTS | Physics | Advanced Studies | English

Person in charge: Jussi Malila

Content

Importance of aerosols and clusters in different areas of research. Properties and behavior of gases. Mechanics of clusters and particles and interaction between particles/clusters and light or electric field. Dynamics of clusters and particles. Experimental and computational approaches to cluster and particle studies.

Learning outcomes

After the course students can explain what is a (molecular) cluster and are able to describe various formation mechanisms of clusters. Students understand the properties and behaviour of aerosols, i.e solid or liquid-like particles together with the supporting gaseous medium as well as formation, transformation and motion of clusters in the gas phase and how to interpret experimental and computational results.

Official course record: [NP00AJ98](#)

766663S | Computational physics and chemistry

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Perttu Lantto

Content

The course builds a foundation for further studies of computational physics and chemistry and the use of these methods in research. Subjects: electronic structure of finite systems, solid-state electronic structure, Monte Carlo and molecular dynamics simulations, quantum simulations, machine learning interaction potentials.

Learning outcomes

After successful completion, student has a basic knowledge of computer simulation methods to study the microscopic systems (atoms, molecules and solids) in physics, chemistry, bio- and materials sciences. Student understands the application possibilities and restrictions of the methods and has versatile capabilities to use them in solving of various problems.

Official course record: [766663S](#)

763636S | Condensed matter physics

5 ECTS | Theoretical Physics | Advanced Studies | Finnish

Person in charge: Matti Alatalo

Learning outcomes

To learn to apply quantum mechanics and statistical physics to solid state, in particular to crystal structure and scattering from it, electronic structure and transport properties in noninteracting electron model, interacting electron gas and lattice vibrations.

Official course record: [763636S](#)

766653S | Cosmic rays

10 ECTS | Physics | Advanced Studies | English

Person in charge: Ilya Usoskin

Content

This is an optional physics course at an advanced level on cosmic rays. Cosmic rays are energetic particles from space that can pass through the geomagnetic field and the atmosphere and cause radiation even on the ground. Cosmic rays are energized, e.g., in supernova shocks and solar bursts. Cosmic rays can be used to study the Sun, the heliosphere and the more distant universe. Contents briefly: Components of cosmic rays, composition, energy spectrum and origin of galactic cosmic rays, acceleration of cosmic rays, solar cosmic rays and their production in flares and coronal mass ejections, modulation of cosmic rays in the heliosphere, Parker's theory, temporal variation of cosmic rays, reactions in the atmosphere and possible climatic effects, detection of cosmic rays in Oulu and elsewhere.

Learning outcomes

After passing the course the student is able to describe in physical terms the properties, origins, temporal variability, atmospheric effects and experimental methods of cosmic rays, and is able to apply physical theories describing the acceleration and modulation of cosmic rays to explain the properties of cosmic rays.

Official course record: [7666535](#)

NP00AL79 | Demonstrations in Physics

1 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Erkki Matala-aho

Content

Student work and demonstrations in mechanics, thermodynamics, wave motion theory, basic electrical theory and electromagnetism as appropriate for secondary levels.

Learning outcomes

The aim is to understand the importance of demonstrations and other student work in the teaching of physics. Orientation to occupational safety is also a part of the course.

Official course record: [NP00AL79](#)

DP00AL62 | Doctoral thesis

0 ECTS | Physics, Astronomy | Post-graduate Studies | English, Finnish

Person in charge: Matti Silveri

No description supplied in the collected record.

Official course record: [DP00AL62](#)

761687S | Electromagnetic waves

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Juha Vaara

Content

Maxwell's equations, electromagnetic waves, waveguides, generation of electromagnetic waves, electromagnetism and special relativity, scattering and absorption of electromagnetic waves.

Learning outcomes

The student can derive the basic results on electromagnetic waves starting from Maxwell's equations. He can analyse the various physical circumstances of wave propagation and is able to apply the theory to quantitative solution of problems either by hand or by means of a computer.

761119P | Electromagnetism 1

5 ECTS | Physics | Basic Studies | Finnish

Person in charge: Timo Asikainen

Content

Basic principles of electromagnetic phenomena and their physical and geometric interpretation. More detailed contents will be presented later.

Learning outcomes

The student will be able to understand the basic concepts of electromagnetism and can apply this understanding to solve problems related to electromagnetism.

Official course record: 761119P

761312A | Electromagnetism 2

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Ilkka Virtanen

Content

Electric and magnetic fields in free space and in medium, potential and potential energy, Maxwell equations, electromagnetic induction, AC circuits, propagation of electromagnetic waves in free space.

Learning outcomes

The student is familiar with the basics of electromagnetic field theory, is able to derive individual results using the theory, and is capable of applying the theory to solve problems related to electromagnetism. The student knows how to identify the theory required to solve a problem, derive a logical solution to the problem from the theory, and evaluate whether the solution could be correct. The student is able to present their solution in writing and answer questions related to it.

Official course record: 761312A

761691S | Electron and Ion Spectroscopy of Molecules

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Samuli Urpelainen

Learning outcomes

After the course the student is able to:

- 1) explain the most important working principles of ion time-of-flight spectrometers
- 2) interpret ion time-of-flight spectra
- 3) interpret ultraviolet photoelectron spectra of molecules
- 4) explain the principles of electron-ion coincidence measurements
- 5) describe the working principles of electron-ion coincidence measurement setups
- 6) understand how electron and ion spectroscopies as well as coincidence methods can be applied in physics and chemistry research

Official course record: 761691S

NP00BA97 | Exchange Studies, 0-30 ECTS

0-30 ECTS | Physics | Intermediate Studies | English

Person in charge: Maria Juntunen

Content

The content of studies varies according to the studies completed.

Learning outcomes

Studies completed in abroad complement students skill's and studies taken in Finland.

[Official course record: NP00BA97](#)

765310A | Fundamentals of astronomy 1

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Aku Venhola

Content

A more detailed basic astronomy course (part one), that contains e.g. the fundamentals of electromagnetic radiation, astronomical instruments, celestial mechanics and the physical environment of the planets.

Learning outcomes

Student can describe the basic physical processes behind astronomical phenomena and can solve mathematical problems related to the course.

[Official course record: 765310A](#)

765317A | Fundamentals of astronomy 2

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Aku Venhola

Content

A more detailed basic astronomy course (part two), that contains e.g. stellar structure and evolution, the structure of the Milky Way and principles of cosmology.

Learning outcomes

Student can describe the basic physical processes behind astronomical phenomena and can solve mathematical problems related to the course.

[Official course record: 765317A](#)

765698S | Galaxies

5 ECTS | Astronomy | Advanced Studies | English

Person in charge: Aku Venhola

Content

We begin with the observations and classification of galaxies, which introduces many of the concepts needed in the course. Most of the large galaxies are either spiral galaxies or elliptical galaxies. We study the structure and kinematics in both these galaxy types, including the theories of their formation. Especially, emphasis is placed on our own galaxy, the Milky Way. We also examine the structure in larger scale: groups and clusters of galaxies and short introduction to cosmology.

Learning outcomes

Student can describe the theories of formation of galactic structures. Student recognizes the main components of galaxies and can apply them to classify galaxies. Student can solve mathematical problems related to the course and recognizes the terminology well enough to be able to read scientific publications. Students are able to do simple data analysis related to galaxies.

[Official course record: 7656985](#)

494301A | Geophysical research methods of rock and soil

5 ECTS | Mining Engineering and Mineral Processing, Geophysics | Intermediate Studies | Finnish

Person in charge: Kari Moisio

Content

This course provides an introduction to geophysical methods used for investigating soil and bedrock. Students will learn the physical principles, measurement systems, data processing workflows, and typical applications of these methods in geological and environmental contexts. Emphasis is placed on near surface and engineering oriented geophysical surveys commonly applied in environmental studies, groundwater investigations, infrastructure planning, engineering geology, and exploration.

Learning outcomes

After the course, the student can explain the use of geophysical methods in investigating bedrock and soil structure. The student can describe theoretical basics and the measuring techniques of the different geophysical methods and has an understanding how to apply these methods in various important economical and civil targets.

Upon completion, students will be

- Able to explain the physical principles of essential geophysical methods (e.g., electrical and electromagnetic methods, ground penetrating radar, seismic methods, and gravity measurements)
- Able to critically and analytically evaluate the suitability of each geophysical method for different types of applications.
- Able to integrate geophysical information with geological knowledge.
- Understands the environmental impacts of geophysical measurements and is able to consider ethical aspects.
- Able to plan their work and manage time effectively for different tasks.
- Able to report the results of assignments in a clear and informative manner.

[Official course record: 494301A](#)

NP00AU95 | History and philosophy of physics

5 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Jussi Malila

Content

The course consists of four compulsory and one optional module. Themes for the compulsory modules are

1. Development of the natural philosophy before the 18th century: early history, antiquity, Islamic world and renaissance Europe
2. History of physical sciences during 18th and 19th centuries: development of physics' sub-disciplines (classical mechanics, electromagnetism, optics, kinetic theory of gases and thermodynamics), separation of physical sciences (physics and astronomy)
3. Development of modern physics: early quantum mechanics and theory of relativity, newer quantum mechanics and the newest physics
4. Development of the philosophy of science and the influence of physical sciences.

Themes for the optional modules:

5. The universe and the development of worldview in the light of astronomy
6. History of teaching physics in Finland and abroad
7. Physics and the ethics of science - from an atomic bomb to research misconduct.

Learning outcomes

After completing the course student

- is able to discuss on the historical development of different sub-disciplines in physical sciences and their importance for sciences and technology and also on the nature of knowledge in physics and how this knowledge develops
- knows the specifics of the philosophy of physical sciences and their importance for the general development of the philosophy of science
- is able to describe the historical roots of physics as a part of natural philosophy
- is able to describe the development of physics from antiquity to modern times
- can describe the development of physics' concepts and understanding of physical phenomenology
- can describe revolutions in physics such as scientific revolution and the rise of modern physics
- is able to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- is able to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments (optional).

Official course record: [NP00AU95](#)

763615S | Hydrodynamics

5-8 ECTS | Physics | Advanced Studies | English, Finnish

Content

The fluid state of matter is an important part of our daily life and its understanding is useful for all physicists, including bio-, geo-, space, astro- and theoretical physicists. Continuum assumption, velocity field, continuity equation, deformation tensor, stress tensor, hydrostatics, derivation of Navier-Stokes equation, solutions of Navier-Stokes equation, inviscid flow, sound waves, turbulence and surface waves on liquids.

Learning outcomes

To recognize the basics of hydrodynamic phenomena and to apply these quantitatively to simple flow problems.

Official course record: [763615S](#)

AY00AF22 | Introduction to Astronomy (OPEN UNI)

2 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Aku Venhola

Content

Basic level introduction to astronomical topics: history of astronomy, astronomical methods, the Solar System, the Sun, stars and their evolution, interstellar matter, star clusters, the Milky Way and galaxies.

Learning outcomes

Student can describe by full sentences the role of astronomy in the formation of physical world view, can name the most central astronomical research subjects and can describe the proportions of the Universe.

Official course record: [AY00AF22](#)

NP00BA96 | Introduction to chemical physics

5 ECTS | Physics | Intermediate Studies | Finnish, English

Person in charge: Akseli Mansikkamäki

No description supplied in the collected record.

Official course record: [NP00BA96](#)

766301A | Introduction to computational physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Akseli Mansikkamäki

Content

The course will provide the basic knowledge for using computational methods for bachelor and master studies, as well as build foundation for learning more advanced methods in research projects. The course topics will include data plotting and fitting using Python, numerical integration and derivation with Python, coding simple simulations in Python and the remote use of Linux servers using a command line interface.

The course includes the following generic skills: analytical, critical and creative thinking skills; well-being, and self-development skills; sustainability, responsibility and ethics skills; multidisciplinary and interdisciplinary skills; communication, interaction and digital skills.

Learning outcomes

After passing the course the student will know the general numerical tools and methods used in physics. The student will also learn to the basic methods of formulating and solving numerical problems in physics, and will learn to apply basic visualization methods.

With respect to generic skills, the student can identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities; identify and be able to describe the importance of analytical, critical. and creative thinking in scientific, professional and ethical activities; is able to critically evaluate knowledge in their own field and apply it to solve complex and unpredictable problems; is able to describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning; is able to work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields; is able to use digital and AI applications relevant to their field in their studies appropriately, safely, and responsibly.

Official course record: [766301A](#)

491102P | Introduction to solid earth geophysics

5 ECTS | Mining Engineering and Mineral Processing, Geophysics | Basic Studies | Finnish

Person in charge: Kari Moisio

Content

An overview of geophysics. Solid Earth geo-physics and Earth Sciences. Properties, structure and dynamics of the Earth. Earth as a planet: shape, size, rotation, revolution. Earth's gravitational field. Isostasy. Deformation and rheology. Seismology: seismic waves and the internal structure of the Earth. Earth's geomagnetic field. Geothermics.

Learning outcomes

Upon the completion of the course, a student can describe the position and role of geophysics in the field of the Earth system sciences, can describe the structure of the Earth and its neighbouring environment in space (spheres), their internal geophysical properties and the interactions between different spheres, can describe large scale transfer (movement) of rock material inside the Earth and on its surface (convection, plate tectonics) and can name most common geophysical research methods.

Official course record: [491102P](#)

AY00AF21 | Introduction to Space Physics (OPEN UNI)

2 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Timo Asikainen

Content

Space Physics is a science field that studies the effects of solar activity in the solar system, Earth's near-space and atmosphere.

The course explores the basic knowledge of space physics, e.g. the sun, solar wind, heliosphere, the earth's magnetosphere, ionosphere, northern lights, magnetic storms and space weather.

Official course record: [AY00AF21](#)

761633S | Ionospheric physics

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Anita Aikio

Content

The topic of this course is the ionised part of the upper atmosphere of the Earth, which is called the ionosphere. Ionosphere is created mainly by the EUV radiation from the Sun. The ionosphere at high latitudes is much more dynamic than at mid or low latitudes. This is because the high-latitude ionosphere is magnetically connected to the magnetosphere of the Earth, which in turn is connected to the solar wind in a complex way. Intense electric currents are flowing in the high-latitude ionosphere and aurora (northern lights) appear. The ionosphere was originally found because of its effect on the propagation of radio waves (radio connections around the Earth without satellites are only possible due to the ionosphere). On the other hand, the most important methods of ionospheric research are based on radio waves. Therefore, the physics of the ionosphere has also practical applications and consequences. Contents in brief: Solar radiation, the atmosphere of the Earth and its dynamics, formation of the ionosphere and ion chemistry, plasma motion and diffusion in the ionosphere, ionospheric electrical currents and electric fields, some selected phenomena of the ionosphere (e.g. electrojets in the equatorial and auroral regions, sporadic-E layers and polar wind).

Learning outcomes

After the course, the student can describe how the ionosphere is formed in the upper atmosphere and solve problems associated with the most important physical processes, e.g. the production and loss of ionization, electric currents, and ambipolar diffusion.

Official course record: [761633S](#)

NP00AF45 | Magnetism and Applications

5 ECTS | Physics | Advanced Studies | English

Person in charge: Jyrki Manninen

Content

Basics of geomagnetism

Basics of solar and solar wind magnetism

Field-work on magnetic field measurements

Basics of magnetometers on ground, on-board small and large satellites

Hands-on-data exercises on time series data analysis

Learning outcomes

The student is aware of the basics of magnetism in different parts of the heliosphere including geomagnetism, solar magnetism, interplanetary magnetic field and magnetic disturbances carried by the solar wind.

The student is able to use magnetometer for measuring the strength of the Earth's magnetic field, understand the basics of the data calibration and homogenization.

The student understands the basics of the magnetometer and how they are used for orienting CubeSats and larger satellites as well as used for navigation and scientific analysis.

The student is able to handle the time series on magnetic field for over days, months and decades by the basic programming tools, and is able to proceed basic statistical analysis.

[Official course record: NP00AF45](#)

761631S | Magnetospheric physics

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Timo Asikainen

Content

This is an optional physics course at an advanced level on magnetospheric physics. A magnetosphere is made by the interaction between a planet's internal magnetic field and the interplanetary magnetic field carried by the solar wind. This interaction forms a comet-like magnetic bubble, whose size, shape and structure vary constantly, depending on the conditions of solar wind and the interplanetary magnetic field. Contents briefly: Formation of a magnetosphere, Chapman-Ferraro model, magnetospheric boundaries, tail and cusp, magnetospheric plasmas and current systems, reconnection of magnetic fields, magnetosphere-ionosphere coupling, magnetospheric dynamics (magnetic activity, auroras, substorm process, magnetic storms), space weather and space climate.

Learning outcomes

After passing the course the student is able to describe the formation of the magnetosphere as an interaction between solar wind and planetary magnetic field, to explain in physical terms the essential factors and phenomena of magnetospheric structure and dynamics, to compare different magnetospheres, and to apply basic methods of space plasmas to describe magnetospheric phenomena.

[Official course record: 761631S](#)

NP00AK04 | Master's seminar

5 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Jussi Malila

Content

The seminar contains two seminar presentations: disposition seminar is given at the beginning of thesis work, and a master's seminar given when the thesis is completed and ready to be evaluated. Besides giving presentations, each student acts as an opponent in one master's seminar. Besides seminar presentations, writing workshops in small groups are included, which cover topics such as preparation of research plan, copyright issues, applications of generative AI, ethics of science and science communication.

Learning outcomes

During the master's seminar students

- become more competent in writing of scientific text(s) and presenting scientific ideas, as well as analysing arguments and arguing appropriately both in Finnish and English and to recognise the strengths and limitations of methods in physical sciences and related disciplines.
- learn to to promote their well-being, develop their self-management skills and build their professional identity, and maintain their own competence in a goal-oriented manner.
- learn to utilise and critically evaluate digital solutions and AI technologies in their own area of expertise appropriately, safely and responsibly, and to identify their impacts on research, working life and society.

As a part of the MSc thesis project, students also learn how to act constructively in situations of uncertainty and discomfort, develop self-compassionate ways of acting, and promote community and interaction to support well-being. Additionally, students learn to apply the UN Sustainable Development Goals in their own professional activities and identify ways to participate in social debate and decision-making, and learn to solve ethical questions in their field with sound reasoning and justify their actions ethically, taking into account different backgrounds, positions of power, values, and environments

[Official course record: NP00AK04](#)

761684S | Master's thesis

20 ECTS | Physics | Advanced Studies | Finnish

Content

Master's thesis

Learning outcomes

After writing the Master's thesis, student is able to

- independently retrieve relevant physics literature
- to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- to analyse arguments and argue appropriately.
- to compare the differences and similarities between their own field of study and related disciplines
- to write a clear and logical report.

[Official course record: 761684S](#)

NP00AK02 | Master's thesis

30 ECTS | Physics | Advanced Studies | Finnish, English

Content

Master's thesis

Learning outcomes

After writing the Master's thesis, student is able to

- independently retrieve relevant physics literature
- to apply analytical and critical thinking skills in a manner appropriate to their discipline, considering the interfaces between fields and new knowledge
- to apply creative thinking and problem solving in their work to develop new knowledge and new procedures
- to analyse arguments and argue appropriately.
- to compare the differences and similarities between their own field of study and related disciplines
- to write a clear and logical report.

Official course record: NP00AK02

766101P | Mathematics for physics

5 ECTS | Physics | Basic Studies | Finnish

Person in charge: Lauri Holappa

Content

Rehearsing and expanding high-school mathematics, including integral and differential calculus, Taylor series, complex numbers, introduction to differential equations, vectors and functions of several variables. The course also includes basics of vector analysis: line, surface and volume integrals, gradient, divergence, curl, scalar and vector fields and Gauss's and Stokes's theorems.

Learning outcomes

The course is designed to provide students with basic mathematical knowledge and skills required in physical sciences. The first objective is to learn the basics of differential and integral calculus, methods for solving the most typical first and second order differential equations and the basics of vector calculus. After the course the student understands the basic mathematical methods needed in physics and is able to apply them to problems arising in the different physics courses and in research. The second objective is to understand the geometrical meaning of different mathematical concepts and their connection to physical phenomena. The course provides the student with an ability to use mathematical methods in an analytic way for understanding physical phenomena.

Official course record: 766101P

761386A | Maturity test

0 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Jussi Malila

Content

Written test about a subject of the B.Sc. Thesis. The length of the text is recommended to be one exam paper.

Learning outcomes

The student knows the vocabulary of the research field of his/her thesis and can independently produce text related to the thesis.

Official course record: 761386A

761686S | Maturity test

0 ECTS | Physics | Advanced Studies | Finnish, English

Person in charge: Jussi Malila

Content

The student describes and analyses the material, research methods, and results of his/her M.Sc. thesis. The abstract must fit on a single page.

Learning outcomes

The student can write a lucid abstract of his/her M.Sc. thesis.

[Official course record: 761686S](#)

761118P | Mechanics 1

5 ECTS | Physics | Basic Studies | Finnish

Person in charge: Ilkka Virtanen

Content

We encounter many phenomena related to mechanics in our everyday life, and many fields of engineering sciences are based on mechanics. Mechanics forms the basis for other branches of physics, including modern physics.

Contents in brief: Short summary of vector calculus. Kinematics, projectile motion and circular motion.

Newton's laws of motion. Work and different forms of energy. Momentum, impulse and collisions. Rotational motion and moment of inertia. Torque and angular momentum. Rigid body equilibrium problems. Gravitation. Periodic motion. Fluid mechanics.

Learning outcomes

The student is able to describe the basic concepts of mechanics and apply them to solve problems related to mechanics. The student knows how to identify the theory required to solve a problem, derive a logical solution to the problem from the theory, and evaluate whether the solution could be correct. The student is able to present their solution in writing and answer questions related to it.

[Official course record: 761118P](#)

761309A | Mechanics 2

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Heikki Vanhamäki

Content

In the first half of the course we go momentarily beyond the realm of Newtonian mechanics and study the principles of the (special) theory of relativity. We will derive the Lorentz-transformation of coordinates by starting from Einstein's basic assumptions, and study motion in flat spacetime. Among other things we will derive the equivalence of mass and energy ($E=mc^2$) and discuss various apparent paradoxes. In the latter part of the course we discuss the Lagrangian formulation of classical mechanics. It is an alternative but equivalent way to formulate the equations of motion that follow from Newton's laws. We will also encounter some new mathematical tools, such as calculus of variations, which can be used to solve various minimization problems. Possible symmetries and conservation laws are emphasized in the Lagrangian equations of motion, which often simplify the study of complex dynamical systems. Many important concepts in quantum mechanics have counterparts in the Lagrangian formulation of classical mechanics.

Learning outcomes

Students can apply the Lagrange's methods to various problems in classical mechanics, and are aware of their connection to quantum mechanics. They can explain why the theory of relativity is needed, apply the Lorentz-transformation, explain why faster-than-light signals do not exist, and understand the equivalence between mass and energy.

[Official course record: 761309A](#)

NP00AJ37 | Meteorology

5 ECTS | Physics | Advanced Studies | Finnish

Person in charge: Jussi Malila

Content

Lectures cover the structure and composition of the atmosphere, heat and mass transfer and radiative processes in the atmosphere, motion of the atmosphere in different scales, weather phenomena and clouds. In practices, quantitative theory of these is studied together with weather observations and classification of clouds and weather phenomena.

Learning outcomes

This course studies behaviour and processes in the atmosphere from a physical point of view. The main learning goals are that after the course students

- understand these processes and weather phenomena in different scales
- are able to able this creatively in problem solving in working life and/or as subject teachers.

Course is aimed for those specialising as subject teachers in natural sciences as well other students in physics and other disciplines interested in atmospheric sciences.

Official course record: [NP00AJ37](#)

76667S | Modern characterization methods

5 ECTS | Physics | Advanced Studies | English

Person in charge: Wei Cao

Content

The course will be focused on methods and special requirements on experimental researches in the field of materials science. The lessons and demonstration include principles related to conventional characterization methods, microscopic detections, and the latest synchrotron-radiation-based techniques. Students will be guided to practice laboratory works from sample preparation, to morphological, and electronic structure determinations, and analysis of the obtained results. The course will also cover introduction to inorganic material growth methods, requirements to select different techniques, and physical insights within materials functionalities.

Learning outcomes

This course is aiming to give an overview of advances in materials characterization methods. Through the course, students are expected to master basic characterization methods, and correlate observed phenomena to materials properties. Techniques are dedicated to determinations of morphologies and electronic structures of bulk materials, nano-films as well as free and deposited nanomaterials.

Official course record: [76667S](#)

761692S | Molecular Magnetism

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Akseli Mansikkamäki

Content

Molecular magnetism is a relatively new field of study at the interface of molecular physics, chemistry and materials science. This course will provide the student with sufficient knowledge to understand the theoretical and practical aspects related to the magnetic properties of molecular materials. The subject matter includes: quantum-mechanical description of the magnetic properties of atoms and molecules, chemical structure of magnetic molecules, crystal-field theory, magnetic anisotropy, effective and pseudospin Hamiltonians, method of equivalent operators and exchange interaction.

Learning outcomes

Upon completion of the course, the student will be able to:

- understand the past, present and future research in molecular magnetism
- understand how macroscopic magnetic properties arise from molecular electronic structure
- understand the relationship between chemical structure of molecules and their magnetic properties, and how the properties can be modified by tailoring the structure
- understand the principles of effective and pseudospin Hamiltonians, and the method of equivalent operators
- perform calculations on realistic systems with commonly used model Hamiltonians

Official course record: [761692S](#)

761620S | Molecular properties

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Juha Vaara

Content

Molecular rotations and vibrations, electronic transitions, electric, optical, and magnetic properties of molecules.

Learning outcomes

After passing the course, the students understand the basic quantum-mechanical principles behind both experimental spectroscopic and computational (electronic-structure) means of investigating the structure and properties of molecules in the gas phase, in solution and in the solid state.

Official course record: [761620S](#)

761618S | Molecular quantum mechanics

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Perttu Lantto

Content

The course will provide the necessary background for students interested in molecular spectroscopy and/or the electronic structure calculations of molecules, materials and nanostructures. Subject matters: rotational motion and hydrogenic atoms, angular momentum, group theory, perturbation theory, variation theory, molecular electronic structure, computation of molecular electronic structure (quantum chemistry).

Learning outcomes

After passing the course, the students can routinely apply the formalism of quantum mechanics and group theory to molecular problems, understand the basic features of the electronic structure of atoms and molecules, and know about the methods of electronic structure calculation.

Official course record: [761618S](#)

761652S | NMR Imaging

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Ville-Veikko Telkki, Vladimir Zhivonitko

Content

One-dimensional Fourier imaging, k space, spin and gradient echoes. Multidimensional Fourier imaging. Continuous and discrete Fourier transform. Sampling and folding. Filtering and resolution. Contrast. Fast imaging methods. Hardware.

Learning outcomes

Students understand the principles of imaging methods based on nuclear magnetic resonance (NMR), as well as how magnetic resonance imaging (MRI) is used in medicine and to characterize the physical properties of various materials.

[Official course record: 761652S](#)

766664S | NMR of dynamic processes

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Anu Kantola

Content

Topics include the phenomena of nuclear magnetic relaxation, diffusion and chemical exchange in the context of NMR spectroscopy.

Learning outcomes

Upon completion of the course, student has knowledge of the dynamic molecular processes (nuclear relaxation, diffusion, chemical exchange) and how they affect NMR spectra. He/she is also familiar with the methods for extracting dynamic parameters with NMR spectroscopy and the applications of these methods on materials research.

[Official course record: 766664S](#)

766666S | NMR spectroscopy

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Ville-Veikko Telkki, Anu Kantola

Content

NMR (Nuclear Magnetic Resonance) spectroscopy is a versatile tool for studying the physical properties of all states of matter. It makes possible, for example, the determination of molecular structures, even those of biological macromolecules, other molecular properties and the study of their dynamics. The most well-known application of NMR phenomenon is magnetic resonance imaging (MRI). During the course, students get familiar with the basics of NMR spectroscopy, the interactions affecting the structure of NMR spectra and the principles of a spectrometer. Modern NMR allows the manipulation of nuclear spins applying various pulse sequences, and pulse sequences related to, e.g., polarization transfer will be treated as well as the basics of multidimensional NMR.

Learning outcomes

After completion, student understands the physical basis of NMR phenomenon and realizes the potential of NMR spectroscopy in the studies of molecular and materials properties.

[Official course record: 766666S](#)

761688S | NMR spectroscopy in solids

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Anu Kantola

Content

The course deals, e.g., basic NMR concepts for solids (nuclear spin magnetization, nuclear shielding, dipolar coupling, quadrupolar coupling, magic-angle spinning, relaxation, cross-polarization), practical considerations on solid state methods of spin-1/2 nuclei and quantum mechanics of solid-state NMR.

Learning outcomes

The student can explain the basic principles and methods of nuclear magnetic resonance spectroscopy (NMR spectroscopy) in the solid state and can derive their consequences in the extent and level of the lectures (see Contents). In addition, he/she can solve problems which require profound understanding of the essential contents of the course.

Official course record: [7616885](#)

766344A | Nuclear and particle physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Matti Alatalo

Content

The structure and properties of nuclei, nuclear forces, nuclear models, radioactivity, nuclear reactions, properties and interactions of elementary particles.

Learning outcomes

The student knows structure models and key properties of atomic nuclei, the most important ways in which the nuclei undergo radioactive decay, and is familiar with some technological applications based on nuclear properties and radioactivity.

The student is familiar with fission and fusion reactions and how they can be exploited in energy production. The student knows the standard model classification of elementary particles, their properties and interactions. The student can explain main principles of particle accelerators and detectors and how they are used in research.

Official course record: [766344A](#)

761617S | Numerical programming

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Jussi Malila

Content

Numerical algorithms for differentiation, special functions, integration, derivation, interpolation and Fourier transform. Ordinary differential equations and differential equations with eigenvalues are solved. Algorithms for linear equations and matrix equations with eigenvalues are given. The programming language can be chosen freely.

Learning outcomes

Numerical algorithms for differentiation, special functions, integration, derivation, interpolation and Fourier transform. Ordinary differential equations and differential equations with eigenvalues are solved. Algorithms for linear equations and matrix equations with eigenvalues are given. The programming language can be chosen freely.

Official course record: [761617S](#)

765640S | Observational astronomy

5 ECTS | Astronomy | Advanced Studies | English

Person in charge: Vitaly Neustroev

Content

This course broadly covers the theory and practice of obtaining meaningful astronomical data. Topics covered include different detector/telescope configurations, the atmosphere and its effects on observations, observational experiments, calibrations and data reductions, both on a theoretical level and experimentally with the real data. There is an introduction to observational methods including direct imaging, astrometric, photometric, polarimetric, and spectroscopic measurements of astronomical sources across the electromagnetic spectrum. It also introduces selected analysis tools and statistical techniques (signal detection, signal-to-noise estimates, model fitting, goodness-of-fit estimation, etc.) that are commonly used in astronomical research.

Learning outcomes

After the finished course the student is expected to understand the role of observations in the formation of astronomical knowledge and to know the instruments and detectors used in astronomy, the observational methods with the modern space- and ground-based telescopes, as well as data reduction and selected data analysis methods.

Official course record: [7656405](#)

NP00AJ93 | Orientation course for new students

2 ECTS | Physics | General Studies | Finnish

Person in charge: Jussi Malila, Maria Juntunen

Content

The course comprises several modules: Orientation week program, orientation in small groups, introduction to methods of studying in physical sciences, tutor teaching meetings, principles of scientific information retrieval process and PSP (Personal Study Plan).

Learning outcomes

Upon completion of the course:

The student should be able to find different places in the learning environment

He/she also knows how to register for courses and examinations.

He/she can use the services offered to students by the university and the Student Union.

After making the personal study plan, the student can describe the structure of B.Sc. degree in Physics.

Understands the importance of analytical, critical and creative thinking skills in physics studies.

Is able to identify key elements related to their own well-being and self-management, identifies stressors related to expert work and utilizes self-compassion to support well-being and is able to describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning.

Official course record: [NP00AJ93](#)

491100P | Orientation to OMS studies

1 ECTS | Mining Engineering and Mineral Processing, Geophysics, Geosciences | Basic Studies | Finnish, English

Person in charge: Marita Puikkonen

Content

Issues related to the beginning of the studies. Goals, structure and contents of the studies in the Oulu Mining School. Preparing a personal study plan PSP, etc.

Learning outcomes

The aim of the course is to introduce new students to the university, to academic studies of their degree programme in the Oulu Mining School.

[Official course record: 491100P](#)

AY00BD73 | Peek into Quantum Technology (OPEN UNI)

2 ECTS | Physics | Basic Studies | Finnish

Person in charge: Matti Silveri

Content

Introduction to basics of quantum computing

Basic features of quantum devices

Functioning principles and potential of quantum computing, quantum communication and quantum sensors

Implications of quantum technology to societies and industries

Learning outcomes

Upon completion of the course, the student:

- can explain what are the different branches of quantum technologies: quantum computing, quantum computing and quantum sensors
- understands the scientific basic concepts and factors which constitute quantum technologies
- recognizes future industrial and societal implications of quantum technologies

[Official course record: AY00BD73](#)

AY00BE85 | Physics at the Heart of the Green Transition (OPEN UNI)

2 ECTS | Physics | Basic Studies | Finnish

Person in charge: Saana-Maija Aho

No description supplied in the collected record.

[Official course record: AY00BE85](#)

080923S | Physics in Radiation Therapy

5 ECTS | Medical Physics | Advanced Studies | English

Person in charge: Juha Nikkinen

Content

The course introduces students to basic physics of radiotherapy equipment for the hospital. Topics to be included: a linear accelerator dosimetry, radiation protection, dose planning, quality assurance, radiation physics and biology from the radiotherapy point of view, and internal radiation therapy methods.

Learning outcomes

Upon completion of the course, the student will be able to:

explain the common radiotherapy techniques

explain the physical and biological factors connected to the dose planning

explain the dosimetric and radiation protection factors in radiotherapy

[Official course record: 080923S](#)

761630S | Plasma physics

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Timo Asikainen

Content

Most normal matter in the universe is in plasma state, i.e., consists of charged particles interacting electromagnetically. Plasma physics studies what kind of phenomena appear in such a system. Plasma physics is the most important theory of space physics, which is applied to describe, e.g., ionospheric, magnetospheric, solar and heliospheric phenomena. This course gives a profound treatment of plasma theories and plasma phenomena, such as plasma waves.

Contents briefly: Kinetic theory of plasma, magnetohydrodynamic theory, linearization of differential equations, MHD waves, waves in cold plasma, kinetic theory of plasma waves, Landau damping, instabilities.

Learning outcomes

The course begins with the introduction of the basic plasma theories: the kinetic theory and magnetohydrodynamics. After passing the course the student is able to explain the physical content of these theories, and is able to apply the theories to basic plasma problems. The student is also able to linearize partial differential equations related to these theories, transforming complicated differential equations into a solvable form. The student is able to apply these methods to study basic plasma wave modes and the most important plasma instabilities.

[Official course record: 7616305](#)

764337A | Practical training

3-9 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Jussi Malila

Content

A job, e.g. a summer job, which supports studies in physics, and could be accepted as a practical training. One month of employment corresponds 1.5 study points.

Credits from the practical training can be included into elective studies in Bachelor of Science degree..

Learning outcomes

After practical training the student understands better the actual needs of employment. After practical training student is able to

- describe their own expertise and develop their own professional identity
- work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields
- can communicate clearly orally and in writing to both experts in their field and to other audiences.

[Official course record: 764337A](#)

766681S | Practical training

3-10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Jussi Malila, aineenopettajien harjoittelu

Content

Have you found a job, e.g. a summer job, which supports your studies in physics, and could be accepted as a practical training? One month of employment corresponds 1.5 study points. Maximum of 5 study points from practical training can be included to the major subject in the Master of Science studies in physics.

Learning outcomes

To get practical work experience. After practical training student

- is able to apply the methods of their own discipline and recognise the strengths and limitations of methods in other disciplines
- is able to communicate as an expert in a way suitable for the target audience and to build professional networks
- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures.

Official course record: 7666815

761679S | Principles of Electron Spectroscopy

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Samuli Urpelainen

Learning outcomes

After completing the course the student will be able to:

- 1) explain the most important concepts related to electron spectroscopy
- 2) recognize the special features of synchrotron radiation and their significance in electron spectroscopy
- 3) explain the principles of electron spectroscopic measurements and the underlying physical phenomena as well as the technical principles of electron spectroscopy
- 4) explain the principles of interpretation of electron spectra
- 5) analyze simple electron spectra measured for elemental analysis
- 6) recognize the most common applications of electron spectroscopy

Official course record: 761679S

NP00AF43 | Principles of Sustainable Development

3-5 ECTS | Physics | Basic Studies | Finnish, English

Person in charge: Jussi Malila

Content

Sustainable development is essential for the survival of humanity and planet Earth. At the same, it is a concept that provokes strong opinions and different interpretations. This course provides basic knowledge on sustainable development as a concept and its ecological, social, economic and cultural dimensions, their connections and trade-offs; also UN sustainable development goals are discussed. Ethical viewpoint to sustainability as normative and political concept is provided. A specific focus is given on different roles and actions of individuals and society, where students are given a possibility to study their own lifestyle both from individual perspective, but also to study climate and sustainability issues as a systemic problem. Different sustainability issues and their potential solutions are presented from the viewpoints of different disciplines.

Learning outcomes

- 1) The student understands the intersectional, partly contradictory, goals and interdimensionality of the climate challenge and the challenges of sustainable development.
- 2) After completing the course, students will be familiar with the multidisciplinary links between climate change and different goals of sustainable development, and will identify different tools for solving and communicating problems.
- 3) After completing the course, students recognize the diversity of cultures and the problematic nature of stereotypes related to different language, nationality and ethnic groups, and recognize stereotypical ways of thinking, and know how to work equally and equitably with different people in accordance with professional ethics and good scientific practice, respecting different stakeholder groups, environments and values.
- 4) The student understands the importance of positivity and solution orientation both through the global responsibility of individuals and through the transformation of existing structures.

763634S | Quantum devices

5 ECTS | Theoretical Physics | Advanced Studies | English, Finnish

Person in charge: Matti Silveri

Content

The basic concepts and methods of modern quantum devices: quantum circuit theory, damping via master equation, harmonic oscillator, and Josephson junction based quantum bits.

Learning outcomes

Upon completion of the course, the student:- knows the quantum mechanical circuit theory such that the student can construct a Hamiltonian operator for a simple electric circuit- is able to explain damping of quantum systems via master equation formalism and knows how it is derived and justified- is able to solve time-dependent quantum mechanical problems involving uncoupled or coupled harmonic oscillators and quantum bits- knows basics of modern superconducting circuit based quantum bits.

Official course record: 763634S

763635S | Quantum information

5 ECTS | Theoretical Physics | Advanced Studies | English

Person in charge: Matti Silveri

Content

Quantum Information gives an introduction to quantum communication, quantum cryptography, quantum computation, and quantum error correction through elementary algorithms and protocols. The main driving force is to understand how quantum information processing is different to the classical one. In quantum communication, we show how entanglement can be utilized for sending quantum and classical information and introduce the basic BB84 protocol for quantum key distribution. Quantum computation is introduced by elementary examples on gate-based computation, adiabatic computation, quantum simulation. The last topic is quantum error correction, which introduces ways to protect quantum information against errors by utilizing entanglement.

Learning outcomes

Course introduces the concepts of quantum communication, quantum computing and quantum error correction.

Upon completion of the course, the student will be able to

- * understand and apply the central concepts of quantum information such as entanglement, measurements, and quantum gates with qubits
- * understands the no-cloning theorem
- * knows how quantum communication and quantum cryptography works through quantum teleportation and BB84 protocols
- * knows principles of quantum computation based on quantum mechanical search and simulation algorithms
- * knows basics of quantum error correction
- * is able to explain what are the modern materials and platforms used to pursue future quantum technologies and quantum computers

Official course record: 763635S

NP00AU91 | Quantum mechanics I

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Matti Alatalo

Content

Quantum mechanics, together with the general theory of relativity, lays the foundation for the modern scientific understanding of the nature. Recent developments in nanotechnology have also brought quantum-based applications into our everyday lives. However, the greatest influence quantum mechanics brings is on how we understand and interpret the behavior of the basic building blocks of nature. One of the interesting results of quantum mechanics is the uncertainty principle which means, for example, that a particle does not possess well defined position and velocity at a given time. This has far-reaching consequences in our understanding of the structure of matter, and even of the present amount and distribution of galaxies in the known universe. The inherent indeterminacy in the classical state of the particles implies that the microscopic particles have to be described with the so-called wave function, which determines the probability density of finding the particle at an arbitrary location. The course begins with the introduction of the basic principles and postulates of quantum mechanics. As an example, several one-dimensional problems for the time-evolution of the wave function are solved. The uncertainty principle is derived in its general form, and applied to the simultaneous measurement of position and velocity. In three-dimensional problems, spherical symmetry is connected with the angular momentum. The corresponding operators and quantum numbers are derived. As an example, the quantized energy states of hydrogen atom are solved.

Learning outcomes

The most important goal of the course is the development of a quantum mechanical frame-of-mind. After the course, the student knows the postulates of quantum mechanics and can solve the Schrödinger equation in such one- and three-dimensional problems that have important applications in condensed matter physics and in atomic, nuclear and molecular physics. The student will also learn to derive the uncertainty principle and use it to interpret what happens in a quantum mechanical measurement.

[Official course record: NP00AU91](#)

NP00AU92 | Quantum mechanics II

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Matti Alatalo

Content

The general formulation of quantum mechanics in terms of abstract Hilbert space and its linear transformations is presented, and shown to be equivalent with the wave function formalism. The properties of the general theory are illustrated in terms of the two quantum paradigms: the two-level system and the harmonic oscillator. In addition, many body quantum mechanics and quantum statistics are introduced using simple examples.

Learning outcomes

The student knows the quantum mechanical Hilbert space formalism and its applications. The student knows the basics of many body quantum mechanics and quantum statistics.

[Official course record: NP00AU92](#)

NP00AV05 | Quantum mechanics III

10 ECTS | Physics | Intermediate Studies | Finnish, English

Person in charge: Matti Silveri

Content

The course is divided into two parts. In the first part, we recap the familiar basic concepts of the wave function and postulates by introducing the state vectors and operator formalism. Modern quantum mechanical topics such as entanglement and measurements are discussed as an immediate application of operator formalism. The theory of angular momentum and spin is subsequently revisited, providing a comprehensive understanding of these concepts. Furthermore, we study interactions between particles using scattering theory, introducing concepts such as cross-section, phase shift, scattering amplitude, and Green's function.

The second part of the course is dedicated to an in-depth discussion of various approximative methods and their practical applications. Effects of weak perturbations are studied in terms of time-independent and time-dependent perturbation theory. As an example, we calculate fine-structure corrections to the hydrogen atom, the Zeeman effect, and the bound states of the ionic Hydrogen molecule and He-atom. The Fermi Golden Rule is derived and applied to compute radiation-induced transition rates between eigenstates. Other approximative methods, such as variational and adiabatic approximation, are also discussed.

Learning outcomes

The course continues the development of the quantum mechanical frame-of-mind. By the end of the course, students will be able to proficiently apply the operator formalism to analyze quantum phenomena, including entanglement, measurements, and angular momentum. The course will also equip students with the skills to explore particle interactions using scattering theory. Additionally, students will master advanced approximation techniques, such as perturbation theory, to study weak perturbations and practical scenarios like fine-structure corrections and the Zeeman effect.

Official course record: [NP00AV05](#)

766327A | Radiation physics, biology and safety

5 ECTS | Physics | Intermediate Studies | Finnish, English

Person in charge: Juho Keskinen

Content

Generation of ionizing radiation, interactions of radiation with matter, radiation detection and measurement as well as radiations units and quantities, radiation in the environment and its biological effects, laws and regulations about radiation safety, usage of radiation in industry and research.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the generation mechanisms of different types of radiation and their interactions with matter
- describe the essential effects of radiation on health
- describe the basics of measuring and using radiation
- describe the essential laws and regulations regarding the usage of radiation

Official course record: [766327A](#)

AY761123P | Radiation physics, biology and safety (OPEN UNI)

2 ECTS | Physics | Basic Studies | Finnish

Person in charge: Juho Keskinen

Content

Generation of ionizing radiation, interactions of radiation with matter, radiation in the environment and its biological effects.

Learning outcomes

Upon completion of the course, the student will be able to:

- describe the principal generation mechanisms of different types of radiation and their interactions with matter
- describe the essential effects of radiation on health

Official course record: [AY761123P](#)

76662S | Radio waves in the ionosphere

10 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Anita Aikio, Ilkka Virtanen

Content

The first part of the course contains a short description of the Earth's ionosphere and its variability, basic theory of radio waves, radio wave propagation in the ionosphere, Appleton-Hartree equation, ionospheric sounding and ionosonde, and principle of a riometer. The second part of the course discusses first radars including basics of signal theory, radar antennas, and principle of a radar. The focus is then shifted to incoherent scatter radars, including theory of radiowave scattering in an ionized medium, ion acoustic and Langmuir waves, incoherent scatter spectrum shape, and plasma parameter estimation from spectra.

Learning outcomes

After passing the course, the student knows the ionospheric regions and can study theoretically how radio waves propagate in the ionosphere. The student can also describe how the scientific radiowave-based instruments, like the ionosonde, riometer and incoherent scatter radar, work and utilize the knowledge in space physics research.

Official course record: [76662S](#)

766692J | Research plan seminar

1 ECTS | Physics | Post-graduate Studies | English

Person in charge: Matti Silveri

Content

During the studies, the doctoral researcher participates actively in research plan seminars. At the seminar, each doctoral researcher presents their own research topic.

Learning outcomes

Doctoral researcher

- * is able present his/her research plan to a wider audience
- * is able to answer questions and critical comments concerning the research plan
- * is able to prepare a scientific presentation

Official course record: [766692J](#)

766676S | Research project in physics

5 ECTS | Physics | Advanced Studies | English, Finnish

Content

A research project on a topic of one advanced course.

Learning outcomes

The student has increased experience after participating in a science project and has thereby a better understanding of scientific work in that selected area of physics. After completing the research project and writing a report, student

- is able to apply creative thinking and problem solving in their work to develop new knowledge and new procedures,
- is able to analyse arguments and argue appropriately and
- is able to apply the methods of physical sciences and recognise the strengths and limitations of methods in other disciplines.

[Official course record: 7666765](#)

765307A | Research Project of Astronomy I

5 ECTS | Astronomy | Intermediate Studies | Finnish

Person in charge: Aku Venhola

Content

We learn to use Unix- and Python-environments for astronomical data processing and visualization.

Learning outcomes

Student is able to use Python and Unix-environments in processing and visualizing astronomical data. The course prepares students for producing research projects and reports in astronomy.

[Official course record: 765307A](#)

765641S | Research Project of Astronomy II

5 ECTS | Astronomy | Advanced Studies | English, Finnish

Person in charge: Aku Venhola

Content

Student investigates a subject of their choice and writes a research report.

Learning outcomes

Students deepen their knowledge of some sub-field or problem in astronomy and learn how to do research.

[Official course record: 765641S](#)

494304A | Seismology

5 ECTS | Mining Engineering and Mineral Processing, Geophysics | Intermediate Studies | English

Person in charge: Elena Kozlovskaya, Kari Moisio

Content

The course consists of two parts. In the first part the background of seismology are considered: seismic waves, seismic sources and their mechanisms, application of different types of seismic waves for studying the Earth interior, inner structure of the Earth based on seismological data. In the second part the students get familiar with engineering seismology, including site investigation and characterisation, seismic zonation and seismic hazard assessment.

Learning outcomes

The students understand the basics of seismology, its application for investigating the Earth interior and for solution of problems in engineering seismology.

The course contributes into development of the following generic skills: digitalization, ethics, internationality, sustainability and responsibility, critical thinking, identification and development of one's own expertise, and interaction and communication.

Official course record: [494304A](#)

766639S | Solar Effects on Climate

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Timo Asikainen

Content

This is an optional physics course at an advanced level on the solar effects on the Earth's atmosphere and climate. Climate change is well known to everyone and its importance to mankind overall can hardly be overestimated. On the other hand, while the Sun is the ultimate source of climate, scientists have only rather recently begun to understand the solar effects on climate variability. However, many of the mechanisms are still poorly understood. It has become evident that climate is influenced not only by solar radiation, but also by the variable precipitation of charged particles from space into the atmosphere, which is driven by the solar solar wind.

Specific course topics include: Long-term variations of solar radiation, solar wind and particle precipitation, basic structure and dynamics of atmosphere and climate, major modes of climate variability (ENSO, NAM, NAO, QBO, etc.), stratosphere-troposphere coupling, telecommunication between various climate modes, volcanic influences, greenhouse effect, ozone depletion and solar effects on ozone, top-down and bottom-up mechanisms of solar influence.

Learning outcomes

After passing the course the student is able to describe the basic patterns and modes of climate and climate variability, general circulation, ocean-atmosphere coupling, and telecommunication, as well as the major influences of the Sun by the different mechanisms to the climate modes and patterns.

Official course record: [766639S](#)

766652S | Solar physics

10 ECTS | Physics | Advanced Studies | English

Person in charge: Ilya Usoskin

Content

This is an optional physics course at an advanced level on the structure and dynamics of the Sun. The Sun is the most important source of energy for the Earth. The Sun also makes the most dominant contribution to global climate and the conditions of life on Earth. Therefore solar research is very important. Understanding of the basic features of the Sun already belongs to general education. Contents briefly: Solar structure and history, solar models, energy production in the Sun, solar neutrinos, solar oscillations and helioseismology, convection layer and differential rotation, solar magnetism and dynamo mechanism, solar atmosphere, solar activity.

Learning outcomes

After passing the course the student is able to describe in physical terms the structure, history and energy production of the Sun, the solar oscillations and the generation and activity of solar magnetic fields, and is able to apply physical theories and mathematical methods describing the Sun to explain the basic phenomena in the Sun.

Official course record: [766652S](#)

763343A | Solid state physics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Matti Alatalo

Content

The rapid development of technology is largely based on understanding the properties of the solid state. There are many interesting phenomena in solid state physics, which are consequences of very large number of particles and their interactions. The course starts with symmetry of crystal lattices and their experimental determination. Different binding forces of solids are discussed. Lattice vibrations and their contribution to specific heat are studied. Especial emphasis is put on electronic structure, and it is used to explain the electric conduction in metals, insulators and semiconductors. Also experimental methods, magnetism and superconductivity are discussed.

Learning outcomes

To learn to explain the basics of solid state physics such as lattice structure, binding interactions, lattice vibrations, band structure and its effect on conductivity, conductivity of semiconductors, the interaction between light and matter, magnetism and superconductivity, and to apply these to different materials.

[Official course record: 763343A](#)

NP00AF44 | Space Climate

5 ECTS | Physics | Advanced Studies | English

Person in charge: Jyrki Manninen

Content

Long-term evolution of the Sun
Basics of the solar activity and solar dynamo modelling
Sunspots and solar magnetic field
Grand solar maxima and minima
Basics of the Sun – Earth coupling
Seasonal and decadal changes of geomagnetic activity
Geomagnetic observations and field work
Real-time space weather analysis
Hands-on-data exercises with browser-based tools

Learning outcomes

The student is aware of the basics of space climate.
The student understands how the solar activity changes over the decades and centuries.
The student understand how the Sun affects to the near-Earth space and infrastructure.
The student is able to handle time series data with basic analysis tools.
The student is able to do the basic space weather measurements.

[Official course record: NP00AF44](#)

765692S | Special Course of Astrophysics

4-6 ECTS | Astronomy | Advanced Studies | English, Finnish

No description supplied in the collected record.

[Official course record: 765692S](#)

761359A | Spectroscopic methods

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Ville-Veikko Telkki, Vladimir Zhivonitko, Milla Leppänen

Content

Basic principles of infrared, mass and NMR spectroscopy and X-ray analytics are introduced.

Learning outcomes

After completion, student knows the principles of various spectroscopic methods and what kind of physical/biophysical phenomena can be studied and what kind of information can be obtained with these methods.

[Official course record: 761359A](#)

763620S | Statistical physics

10 ECTS | Theoretical Physics | Advanced Studies | Finnish, English

Person in charge: Matti Alatalo

Content

Statistical physics studies how the microscopic properties of particles are connected to the macroscopic properties of matter. The course begins with an overview of the classical thermodynamics, and continues with quantum mechanical concepts of statistical physics: the density operator, partition function etc. The statistical properties of non-interacting fermions and bosons form a central part of the course, after which some methods for studying interacting systems are introduced. The course finishes with a description of the phase transitions and critical phenomena.

Learning outcomes

To recognize the basics of statistical physics and to apply them to thermodynamics, noninteracting classical-, Bose- and Fermi gases, to perturbation theory of interacting systems and to phase transitions.

[Official course record: 763620S](#)

761013Y | Student tutoring

2 ECTS | Physics | General Studies | Finnish

Person in charge: Maria Juntunen

Content

Student tutor training; planning, implementation and evaluation of small group tutoring.

Learning outcomes

Student tutors represent the University of Oulu and their own degree programmes. They are giving a welcome to new students, working in collaboration with the tutor teachers and educational designers of their degree programmes. The small group tutors guide new students into the university community by familiarizing them with university practices, study support services, possibilities for students to exert influence, student instructions, and student life. The small group tutors help the students to group and to get to know each other.

[Official course record: 761013Y](#)

766673S | Synchrotron radiation

5 ECTS | Physics | Advanced Studies | English, Finnish

Person in charge: Samuli Urpelainen

Content

Synchrotron radiation is electromagnetic radiation produced by accelerated charged particles moving close to the speed of light. Synchrotron light sources and free-electron lasers are purpose-built facilities designed for production of synchrotron radiation which is especially applied to various material characterization needs. The course encompasses e.g. how synchrotron radiation is born, what properties it has, how x-rays interact with matter and what is the structure of a modern synchrotron light source. In addition, the course gives useful background information for the course 766674S Applications of synchrotron radiation, which focuses on synchrotron radiation-based material characterization techniques and their applications.

Learning outcomes

After completing the course, the student:

- can explain how x-rays interact with matter.
- knows the structure and function of modern synchrotron light source.
- knows how synchrotron radiation is produced and what properties it has.

Official course record: 766673S

761314A | Thermophysics

5 ECTS | Physics | Intermediate Studies | Finnish

Person in charge: Akseli Mansikkamäki

Content

The course introduces thermodynamics and statistical mechanics. Thermodynamics studies the relationships between energy, heat and work at a macroscopic level. On the other hand, statistical mechanics studies how the macroscopic thermodynamic properties can be derived from the microscopic atomic and molecular structure of matter. These properties will be studied both in the context of realistic examples as well as simple model systems.

The course includes the following topics: energy, heat and work; ideal gas, paramagnet and Einstein solids; microstates, macrostates, multiplicity and entropy; heat engines; free energy; phase transitions; and Boltzmann statistics.

The course includes the following generic skills: analytical, critical and creative thinking skills; well-being, and self-development skills; sustainability, responsibility and ethics skills; multidisciplinary and interdisciplinary skills.

Learning outcomes

The student can explain the basic principles of thermophysics, and can derive important results from them at the level of the course material. In addition he/she/they can solve physics problems that require deep understanding of the contents.

With respect to generic skills, the student can identify the key skills of analytical, critical and creative thinking and be able to observe them in their own activities; identify and be able to describe the importance of analytical, critical and creative thinking in scientific, professional and ethical activities; is able to describe their own expertise, develop their own professional identity, promote group learning and development, and recognize the need for lifelong learning; identifies the dimensions of sustainability (social, ecological, economic, cultural) and evaluate their own actions in relation to them; is able to compare the differences and similarities between their own field of study and related disciplines; is able to work in multidisciplinary and multiprofessional teams and appreciate expertise across different fields.

Official course record: 761314A

767601S | Time Series Analysis in Astronomy

5 ECTS | Astronomy | Advanced Studies | English

Person in charge: Vitaly Neustroev

Content

This is an introductory course, with particular emphasis on practical aspects of the typical time series encountered in astronomy and in related fields of sciences: search for periodicities hidden in noise. Topics include detrending, filtering, autoregressive modeling, spectral analysis, regression, and wavelet analysis. Methods that can be applied to evenly and unevenly spaced time series are considered.

Learning outcomes

After taking the course, the student is expected to understand basic time series concepts and terminology and to be able to select time series methods appropriate to goals and summarize results of time series analysis in writing. The main objective of this course is to develop the skills needed to do empirical research in fields operating with time series data sets.

[Official course record: 767601S](#)

761124P | Wave motion and optics

5 ECTS | Physics | Basic Studies | Finnish

Person in charge: Anu Kantola

Content

General principles of wave motion, sound, electromagnetic waves, propagation of light, image formation in mirrors and lenses, optical instruments, interference, Fraunhofer diffraction, diffraction grating.

Learning outcomes

The student is able to treat different types of waves by methods of general theory of wave motion. The student is also able to solve problems related to basic optics and apply her/his knowledge to teaching and research in physics.

[Official course record: 761124P](#)