Opasraportti

Open University - Engineering, manufacturing and construction (2019 - 2020)

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jakset

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ay466106S: Advanced topics on design of steel structures (OPEN UNI), 6 op
ay462113S: Advanced topics on mechatronics and machine diagnostics (OPEN UNI), 5 op
488204S: Air Pollution Control Engineering, 5 op
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780397A: Chemistry for Teachers, 5 op
ay780397A: Chemistry for Teachers (OPEN UNI), 5 op
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451534P: History of Architecture I, lecture course, 5 op
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ayA440190: Industrial Engineering and Management (IEM) Minor Subject Studies (OPEN UNI), 25 op

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ay555285A: Project management (OPEN UNI), 5 op
ay555286A: Process and quality management (OPEN UNI), 5 op
ay555264P: Managing well-being and quality of working life (OPEN UNI), 5 op
ay555242A: Product development (OPEN UNI), 5 op
488215S: Industry and Environment, 5 op
477129S: Inorganics Materials in Circular Economy, 5 op
ay802136P: Introduction to Cryptography, 2 op
771113P: Introduction to Geology I, 5 op
771114P: Introduction to Geology II, 5 op
780116P: Introduction to Organic Chemistry, 5 op
ay780116P: Introduction to Organic Chemistry (OPEN UNI), 5 op
771116P: Introduction to Quaternary deposits of Finland and their resources, 5 op
Opintojaksojen kuvaukset

Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

466106S: Advanced topics on design of steel structures, 6 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Kangaspuoiskari, Matti Johannes
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay466106S Advanced topics on design of steel structures (OPEN UNI) 6.0 op
460128S-01 Advanced Course in Design of Steel Structures I, examination 0.0 op
460128S-02 Advanced Course in Design of Steel Structures I, exercise work 0.0 op
460128S Advanced Topics on Design of Steel Structures I 4.0 op

ECTS Credits:
6 ECTS
Language of instruction:
Finnish
Timing:
Periods 3 and 4
Learning outcomes:
After completing the course the student is capable of explain the performance and design principles of welded steel structures exposed to fatigue loading. He is able to design the plated structural elements and cold-formed members. He is able to analyze and design a steel frame. He is able to analyze dynamically loaded structures and can explain the effect of vibration on steel structures strength and reliability.
Contents:
Mode of delivery:
Face-to-face.

**Learning activities and teaching methods:**
Lectures and exercises 52 h. Self-study 110 h. Total 162 h = 6 ECTS Credits.

**Target group:**
Major students in Structural Engineering, Machine design, and Engineering Mechanics. 466102A

**Prerequisites and co-requisites:**

**Recommended or required reading:**

**Assessment methods and criteria:**
Three midterm exams or one final exam is required. One design exercise is required.

**Grading:**
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**
Matti Kangaspuoskari

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**ay466106S: Advanced topics on design of steel structures (OPEN UNI), 6 op**

**Voimassaolo:** 01.08.2017 -
**Opiskelumuoto:** Advanced Studies
**Laji:** Course
**Vastuuysikkö:** University of Oulu, Open University
**Arvosotelu:** 1 - 5, pass, fail
**Opetus suunnattu:** University of Oulu, Open University
**Opettajat:** Kangaspuoskari, Matti Johannes
**Opintokohteen kiele:** Finnish

**Leikkaavuudet:**
466106S Advanced topics on design of steel structures 6.0 op

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**ay462113S: Advanced topics on mechatronics and machine diagnostics (OPEN UNI), 5 op**

**Voimassaolo:** 01.08.2019 -
**Opiskelumuoto:** Advanced Studies
**Laji:** Course
**Vastuuysikkö:** University of Oulu, Open University
**Arvosotelu:** 1 - 5, pass, fail
**Opetus suunnattu:** University of Oulu, Open University
**Opintokohteen kiele:** Finnish

**Leikkaavuudet:**
462115S Tolerance Design 5.0 op
462113S Advanced topics on mechatronics and machine diagnostics 5.0 op

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**488204S: Air Pollution Control Engineering, 5 op**

**Voimassaolo:** 01.08.2005 -
**Opiskelumuoto:** Advanced Studies
**Laji:** Course
**Vastuuysikkö:** Field of Process and Environmental Engineering
**Arvosotelu:** 1 - 5, pass, fail
**Opettajat:** Tiina Laitinen, Esa-Matti Turpeinen, Satu Pitkäaho
Opintokohteen kielet: English

Leikkaavuudet:

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ECTS Credits: 5 ECTS credits / 135 hours of work

Language of instruction: English

Timing:
Course 488214S Air Pollution Control Engineering - Practical Solutions, 5 cr, replaces this course in academic year 2019-2020.

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. Student is also aware of common air pollution control systems for different emissions (particulates, VOCs, SO2, NOx) and is able to design air pollution cleaning devices. In addition, the student is able to describe the main laws related to air emission control.

Contents:
Atmosphere and air pollutants. Air pollution effects and regulations. Emission measurements. General ideas in air pollution control. Emission control technologies; primary particulates, VOC emissions, SOx emissions, NOx emissions. Motor vehicle problem, CO, lead, HAP, Indoor air pollution, and radon.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
Lectures 30 h, exercises 12 h, homework 8 h, teamwork presentations 10 h, and self-study 75.

Target group:
Master's degree students of the Process and Environmental Engineering study programmes.

Prerequisites and co-requisites:
The courses 477011P Introduction to Process and Environmental Engineering I, 488011P Introduction to Process and Environmental Engineering II (or 477013P Introduction to Process and Environmental Engineering) and 780109P Basic Principles in Chemistry recommended beforehand.

Recommended optional programme components:
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Recommended or required reading:
Materials in the Optima environment. de Nevers; N.: Air Pollution Control Engineering. 2nd ed. McCraw-Hill 2000. 586 pp

Assessment methods and criteria:
Written final exam or intermediate exams.

Grading:
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
Postdoctoral researcher Satu Pitkäaho

Working life cooperation:
No

Other information:

488214S: Air Pollution Control Engineering - Practical Solutions, 5 op

Voimassaolo: 01.08.2019 -
OpiskeluMuoto: Advanced Studies
Laji: Course
VastuuYksikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Satu Pitkäaho
Opintokohteen kielet: English

ECTS Credits:
5 ECTS credits / 135 hours of work

Language of instruction:
English

Timing:
Implementation in autumn semester during 2nd period first time in Autumn term 2021.

Learning outcomes:
Student is able to explain what kind of air emissions originate from different industrial and energy production sectors. 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, choose, design and optimize emission control technologies. Student understands essential regulations and laws concerning emission control.

Contents:
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.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
Lectures 30 h, exercises 12 h, homework 8 h, teamwork presentations 10 h, and self-study 75.

Target group:
Master’s degree students of the Process and Environmental Engineering study programmes.

Prerequisites and co-requisites:
488213A Ilmansuojelutekniikan perusteet

Recommended optional programme components:
- Materials in the Optima environment. de Nevers; N.: Air Pollution Control Engineering. 2nd ed. McCraw-Hill 2000. 586 pp

Assessment methods and criteria:
Written final exam or intermediate exams.
Read more about the course assessment and grading systems of the University of Oulu at www.oulu.fi/english/studying/assessment

Grading:
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
Satu Pitkäaho ja Esa Turpeinen

Working life cooperation:
No.

Other information:
Korvaa lukuvuonna 2019-2020 kurssin 488204S Air Pollution Control Engineering.

771117P: Basic course in mineralogy, 5 op

Voimassaolo: 01.08.2017 -
OpiskeluMuoto: Basic Studies
Laji: Course
VastuuYksikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
780397A: Chemistry for Teachers, 5 op

Voimassaolo: 01.08.2017 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Field of Chemistry
Arvostelu: 1 - 5, pass, fail
Opettajat: Teija Kangas
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay780397A Chemistry for Teachers (OPEN UNI) 5 op

ECTS Credits:
5 credits / 135 hours of work
Language of instruction:
Finnish
Timing:
2nd – 5th year, spring
Learning outcomes:
After this course the student should understand the importance of the experiments in the teaching of chemistry. Student should also be able to design demonstrations and laboratory experiments suitable in different levels of learning.
Contents:
The course familiarize the students with the experimental works in the schools. Basic concepts in chemistry are revised in the same time.
Mode of delivery:
Face-to-face teaching, compulsory.
Learning activities and teaching methods:
30 hours of laboratory work (compulsory), 105 hours self-study.
Target group:
Students in the teacher specialization lines, optional
Prerequisites and co-requisites:
-
Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.
Recommended or required reading:
Material handed out by the teacher.
Assessment methods and criteria:
Practical laboratory work and home work done and reported.
Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.
Person responsible:
Teija Kangas
Working life cooperation:
No

ay780397A: Chemistry for Teachers (OPEN UNI), 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Chemistry for Teachers
5.0 op

ECTS Credits:
5 credits / 135 hours of work

Language of instruction:
Finnish

Timing:
2nd – 5th year, spring

Learning outcomes:
After this course the student should understand the importance of the experiments in the teaching of chemistry. Student should also be able to design demonstrations and laboratory experiments suitable in different levels of learning.

Contents:
The course familiarize the students with the experimental works in the schools. Basic concepts in chemistry are revised in the same time.

Mode of delivery:
Face-to-face teaching, compulsory.

Learning activities and teaching methods:
30 hours of laboratory work (compulsory), 105 hours self-study.

Target group:
Students in the teacher specialization lines, optional

Prerequisites and co-requisites:
-

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:
Material handed out by the teacher.

Assessment methods and criteria:
Practical laboratory work and home work done and reported.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
Teija Kangas

Working life cooperation:
No

782338A: Chemistry in Industrial Applications, 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Field of Chemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Leikkaavuudet:
ay782338A Chemistry in Industrial Applications (OPEN UNI) 5.0 op
782638S Chemistry in Industrial Applications 5.0 op

Ei opintojaksokuvausia.

ay782338A: Chemistry in Industrial Applications (OPEN UNI), 5 op
Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetussuunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:

782338A Chemistry in Industrial Applications 5.0 op

Ei opintojaksokuvauksia.

477128S: Circular Bioeconomy, 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Elisa Koivuranta
Opintokohteen kielet: English
Leikkaavuudet:

ay477128S Circular Bioeconomy (OPEN UNI) 5.0 op
477125S Recycling of bioproducts 5.0 op
477106S Recycled Fiber Processes 3.0 op

ECTS Credits:
5 cr

Language of instruction:
English

Timing:
Implementation in the spring period 3.

Learning outcomes:
Upon completion of the course, a student should be able to recognize the incentives for the recycling of bioproducts and residues from forest industry. Student is familiarized with circular bioeconomy at the state-of-art level. Student is able to identify the challenges (properties, transportation ect.) of raw materials and their processing, can propose solutions and has ability to review the sustainability of final products.

Contents:
Reuse, recycling and utilization of bioproducts and side streams of forest industry in accordance with principles of circular bioeconomy. The properties and processing of raw material. Novel applications in circular bioeconomy.

Mode of delivery:
Lectures, group meetings and project work.

Learning activities and teaching methods:
Work load in the course is totally 133h. The number of lectures can vary but project working is main activities in the course.

Target group:
Students interested in circular bioeconomy.

Prerequisites and co-requisites:
488052A Introduction to Bioproduct and Bioprocess Engineering is recommended.

Recommended optional programme components:
-

Recommended or required reading:
Lecture materials and other materials that will be announced at the lectures.

Assessment methods and criteria:
The assignment and seminar. More information about assessment methods is given during the course.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**
Elisa Koivuranta

**Working life cooperation:**
Visiting lecturers from the industry, when feasible.

**Other information:**
This Course replace course 477125S Recycling of bioproducts, 5 cr.

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### 466105S: Design of Steel Structures, 6 op

**Voimassaolo:** 01.08.2015 -

**Opiskelumuoto:** Advanced Studies

**Laji:** Course

**Vastuuysikkö:** Field of Mechanical Engineering

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Kangaspuoaskari, Matti Johannes

**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**

- 485118S Design of Steel Structures 5.0 op
- ay466105S Design of Steel Structures (OPEN UNI) 6.0 op
- 460127S-01 Design of Steel Structures, examination 0.0 op
- 460127S-02 Design of Steel Structures, exercise work 0.0 op
- 460125A Introduction to Design of Steel Structures 4.0 op
- 460125A-01 Introduction to Design of Steel Structures, examination 0.0 op
- 460125A-02 Introduction to Design of Steel Structures, exercise work 0.0 op
- 460127S Design of Steel Structures 4.0 op

**ECTS Credits:**
6 ECTS

**Language of instruction:**
Finnish

**Timing:**
Periods 1 and 2

Course 485108A replaces this course in academic year 2021-2022.

**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. The student is familiar with fire design of steel structures. He is able to explain common types of corrosion. The student is able to design the most typical joints in a steel frame and he can analyze simple steel structures. He is also able to analyze stability problems and explain the effects of imperfections and second order effects on frame behavior and member forces.

**Contents:**

**Mode of delivery:**
Face-to-face.

**Learning activities and teaching methods:**
Lectures and exercises 52 h. Self-study 110 h. Total 162 h = 6 ECTS Credits.

**Target group:**

**Prerequisites and co-requisites:**
Recommended or required reading:

Assessment methods and criteria:
Three midterm exams or one final exam is required. One design exercise is required.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
Matti Kangaspuuoskari

ay466105S: Design of Steel Structures (OPEN UNI), 6 op

Voimassaolo: 01.08.2017 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opettajat: Kangaspuuoskari, Matti Johannes
Opintokohteen kielet: Finnish
Leikkaavuuudet:
466105S    Design of Steel Structures    6.0 op

ECTS Credits:
5 ECTS credits / 135 hours of work

Language of instruction:
English

Timing:
A 10 week intensive course is arranged twice per year: in the autumn semester and in the spring semester. For further information concerning the schedule please contact the teachers.

Learning outcomes:
Upon completion of the course, the student has an understanding of the multidisciplinary nature and concept of the current environmental problems through the lens of (1) environmental chemistry and (2) environmental ecology. In addition, the student is able to consider how the circular economy tools can be applied to prevent and minimize environmental impacts.

Contents:
A project work focusing on four major environmental concerns is done in groups of 4-5 students. In addition to the project work, there are individual course tasks.

Mode of delivery:
Online studies.

Learning activities and teaching methods:
Project work 100 h / Self-study 35 h

Target group:
Students in all disciplines

ay488231S: Environmental Chemistry and Ecology, 5 op

Voimassaolo: 01.08.2018 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Väisänen, Virpi Maria
Opintokohteen kielet: English
Leikkaavuuudet:
ay488231S    Environmental Chemistry and Ecology (OPEN UNI)    5.0 op
Assessment methods and criteria:
Project work and individual tasks will be assessed. Assessment criteria are based on the learning outcomes of the course. Read more about the course assessment and grading systems of the University of Oulu at www.oulu.fi/english/studying/assessment.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
University lecturer Minna Tiainen and university teacher Virpi Väisänen

ay781309A: Environmental Chemistry for Chemistry Teachers, 5 op

Voimassaolo: 01.08.2020 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:

ECTS Credits:
5 ECTS credits / 135 hours of work

Timing:
The course is held in the autumn semester

Learning outcomes:
Upon completion the student should have understanding of twelve principles of green chemistry. The student should have acquired an understanding of chemistry of atmosphere, hydrosphere and terrestrial environment. The student is acquainted with the limitations of the use of dangerous chemicals and is able to find updated information of them.

Contents:
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.

Mode of delivery:
Web-based teaching, with face-to-face meetings at the beginning and end of the course

Learning activities and teaching methods:
50 hours of the activating learning methods, portfolio work 20h, self-study 64 h. During the course, participants will design and implement a teaching session with materials distributed to all participants.

Target group:
The course is aimed at secondary school and high school natural science teachers, the course is also suitable for biology and geography teachers.

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Assessment methods and criteria:
Portfolio and project work.
50 hours of the activating learning methods, portfolio work 20h, self-study 64 h. During the course, participants will design and implement a teaching session with materials distributed to all participants.

Grading:
The course utilizes verbal grading scale “Pass/ Fail”

Working life cooperation:
Students can use their outputs in their own teaching work

ay488201A: Environmental Ecology (OPEN UNI), 5 op

Voimassaolo: 01.08.2012 -
Learning outcomes:
The student is able to define the basic concepts of environmental ecology. He/she has knowledge about the state of the environment and is able to explain the essential environmental problems and the main effects of pollution. In addition, the student knows some solutions to environmental problems and is aware of ethical thinking in environmental engineering. The student also has basic knowledge about toxicology and epidemiology.

Contents:

Mode of delivery:
distance teaching

Learning activities and teaching methods:
E-learning in the Optima learning environment.

Target group:
Master's degree students of the Department of Process and Environmental Engineering

Prerequisites and co-requisites:
The courses 477011P Introduction to Process Engineering and 488011P Introduction to Environmental Engineering recommended beforehand

Recommended or required reading:

Assessment methods and criteria:
Exercises and exam.

Grading:
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
Rauli Koskinen

Working life cooperation:
No
ECTS Credits:
5 credits / 134 hours of work

Language of instruction:
Finnish

Timing:
1st autumn

Learning outcomes:
After this course, the student:
- can explain organic and inorganic chemistry fundamentals, basic concepts and terminology.
- understand basic concepts of chemistry as described in international general chemistry curriculum.

Contents:
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.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
32 hours of lectures and applications, 20 hours of exercises and 82 hours of self-study.

Target group:
Biochemistry, Chemistry compulsory. In the entity of 25 credits (minor studies), compulsory. Physical sciences, Mathematical sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry.

Recommended optional programme components:
-

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
Johanna Havria

Working life cooperation:
No

Other information:
No

ay780117P: General and Inorganic Chemistry A (OPEN UNI), 5 op

Voimassaolo: 01.01.2016 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:
780117P General and Inorganic Chemistry A 5.0 op
780114P General and Inorganic Chemistry I 6.0 op
780115P General and Inorganic Chemistry II 6.0 op
780113P Introduction to Chemistry 12.0 op
780101P Introduction to Physical Chemistry 7.0 op
780102P Introduction to Inorganic Chemistry 5.0 op
780109P Basic Principles in Chemistry 4.0 op

ECTS Credits:
5 credits /134 hours of work

Language of instruction:
Finnish

Timing:
1st autumn

Learning outcomes:
After this course the student should understand basic concepts of chemistry as described in international general chemistry curriculum.

Contents:
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.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
32 hours of lectures and applications, 20 hours of exercises and 82 hours of self-study

Target group:
Biochemistry, Chemistry compulsory. In the entity of 25 credits (minor studies), compulsory. Physical sciences, Mathematical sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination. Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
N.N.

Working life cooperation:
No

Other information:
No

780118P: General and Inorganic Chemistry B, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Field of Chemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay780118P General and Inorganic Chemistry B (OPEN UNI) 5.0 op
General and Inorganic Chemistry I 6.0 op
General and Inorganic Chemistry II 6.0 op
Introduction to Chemistry 12.0 op
Introduction to Physical Chemistry 7.0 op
Introduction to Inorganic Chemistry 5.0 op

ECTS Credits:
5 ECTS credits / 134 hours of work

Language of instruction:
Finnish

Timing:
1st autumn

Learning outcomes:
After this course, the student:
- can explain inorganic chemistry fundamentals, basic concepts and terminology
- understand basic concepts of chemistry as described in international general chemistry curriculum.

Contents:
Thermodynamics, reaction kinetics, electrochemistry, electrons in atoms, periodic table, chemical bond, intermolecular forces.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
36 hours of lectures and applications, 22 hours of exercises, 76 hours of self-study

Target group:
Biochemistry, Chemistry, compulsory. In the entity of 25 credits (minor studies), compulsory.
Physical sciences, Mathematical sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry.

Recommended optional programme components:

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
Matti Niemelä

Working life cooperation:
No

Other information:
No

ay780118P: General and Inorganic Chemistry B (OPEN UNI), 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:
780118P General and Inorganic Chemistry B 5.0 op
780114P General and Inorganic Chemistry I 6.0 op
780115P  General and Inorganic Chemistry II  6.0 op
780113P  Introduction to Chemistry  12.0 op
780101P  Introduction to Physical Chemistry  7.0 op
780102P  Introduction to Inorganic Chemistry  5.0 op

ECTS Credits:
5 credits /134 hours of work

Language of instruction:
Finnish

Timing:
1st autumn

Learning outcomes:
After this course the student should understand basic concepts of chemistry as described in international general chemistry curriculum.

Contents:
Thermodynamics, reaction kinetics, electrochemistry, electrons in atoms, periodic table, chemical bond, intermolecular forces.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
36 hours of lectures and applications, 22 hours of exercises, 82 hours of self-study

Target group:
Biochemistry, Chemistry, compulsory. In the entity of 25 credits (minor studies), compulsory. Physical sciences, Mathematical sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry

Recommended optional programme components:

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination. Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
N.N.

Working life cooperation:
No

Other information:
No

477416S: High temperature processes, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Eetu-Pekka Heikkinen
Opintokohteen kieleet: Finnish
Leikkaavuudet:
477427A  High temperature processes  5.0 op
ay477416S  High temperature processes (OPEN UNI)  5.0 op

ECTS Credits:
5 cr / 135 hours of work.

Language of instruction: Finnish

Timing:
The course is held in the autumn semester, during period I. It is recommended to complete the course at the 4th autumn semester.

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).

Contents:
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).

Mode of delivery:
Classroom education

Learning activities and teaching methods:
Lectures (approximately 45 hours) supporting the exercises that are made during the course. Only in Finnish.

Target group:
Students of process metallurgy.

Prerequisites and co-requisites:
Knowledge and skills corresponding the knowledge and skills that are obtained from the Bachelor-level-studies in the programme of process or environmental engineering are recommended as prerequisites. In order to get credits from this course, bachelor thesis must be completed.

Recommended optional programme components:
This course is one of the courses of pyrometallurgy in the module of process metallurgy.

Recommended or required reading:
Material will be distributed during lectures and exercises. It is also available via courses www-site. Each student is required to search additional material for the exercises when necessary.

Assessment methods and criteria:
Continuous assessment consisting of exercises that are made during the course. Please note that the course is organised only in Finnish.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
University lecturer Eetu-Pekka Heikkinen

Working life cooperation:
The course includes a seminar day organized together with industry.

Other information:
Although it is not required to participate on lectures, it is highly recommended that the students are active and do the required exercises from the very beginning of the course due to continuous assessment used in this course.

451535P: History of Architecture I, lecture course, 4 op

Voimassaolo: 01.08.2015 - 
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Petri Vuojala
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay451535P History of Architecture I, lecture course (OPEN UNI) 4.0 op

ECTS Credits:
4 ECTS
Language of instruction: Finnish
Timing: Autumn term I and 2
Learning outcomes: After completing the course the student can evaluate the interaction between style periods of European architectural history, technical development and social changes. The student can classify the different eras and recognize their most significant buildings and architects. After the course the student can interpret the classical language of architecture the classical grammar of architecture, as well as recognize the historical layers of built environment.

Contents: Lectures discuss the general history of architecture and discipline of styles from prehistory until the end of 18th century and introduce old building methods like brickwork bonds and traditional vault constructions.

Mode of delivery: Lectures, additionally independent studies
Learning activities and teaching methods: Lessons 56 hrs
Target group: 1st year Bachelor level students
Prerequisites and co-requisites:

Recommended optional programme components: Course is combined to exercises (451536P)

Recommended or required reading: Handouts, digital slides. A literature list will be delivered during the course.

Assessment methods and criteria: Assessment is based on attendance, learning diary or written examination.
Grading: 1-5

Person responsible: Professor Anna-Maija Ylimaula, University lecturer N.N.
Working life cooperation: -

Other information: -

451534P: History of Architecture I, lecture course, 5 op

Voimassaolo: 01.08.2019 - 31.07.2020
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Petri Vuojala
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

451537A: History of Architecture II, lecture course, 3 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Petri Vuojala
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay451537A History of Architecture II, lecture course (OPEN UNI) 3.0 op

ECTS Credits:
3

Language of instruction:
Finnish (literature partly in English)

Timing:
Spring term I and 2

Learning outcomes:
During the course the student learns to recognize the historical roots of the contemporary architecture and recount the development up to today. Having completed the course, the student recognizes the most essential phenomena and styles of 19th and 20th century architecture and can reflect own personal views on contemporary architecture.

Contents:
Course discusses the general history of architecture of 19th and 20th centuries.

Mode of delivery:
Lectures, additionally independent studies.

Learning activities and teaching methods:
Lectures 48 hrs

Target group:
1st year Bachelor’s level students

Prerequisites and co-requisites:
History of architecture I, lecture course (451535P)

Recommended optional programme components:
Course is combined to practices (451538A)

Recommended or required reading:
Handouts, digital slides. A literature list will be handed out during the course

Assessment methods and criteria:
Assessment is based on attendance, learning diary or written examination

Grading:
1-5

Person responsible:
Dos. Petri Vuojala

Working life cooperation:
-

Other information:
-

451504A: History of Architecture III, 3 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Petri Vuojala
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay451504A History of Architecture III (OPEN UNI) 3.0 op

ECTS Credits:
3

Language of instruction:
Finnish (literature in English and Swedish)

Timing:
Autumn term 2 and spring term I

Learning outcomes:
The aim is to provide basic knowledge on the history of the Scandinavian and Finnish architecture from the prehistory until the 20th century. After completing the course the student masters the historical background of the architecture of Finland and Scandinavia starting from pre-historical times. The student recognizes the temporal and stylistic layers of the history of our building tradition and is able to explicate features of Finland’s architectural evolution in a relation with the international development and especially in correlation to Sweden and the other Nordic countries.

Contents:
Lecture discusses the history of architecture in Scandinavia and especially in Finland from prehistory till 20th C.

Mode of delivery:
Lectures, additionally independent studies.

Learning activities and teaching methods:
Lectures 36 h

Target group:
3rd year Bachelor level students.

Prerequisites and co-requisites:
History of architecture I and II, lecture courses (451535P and 451537A)

Recommended optional programme components:
The course is related to the History of Architecture III, practices course (451505A). Together with the Architecture III, practices course, this course can form the Bachelor’s diploma work (8 ECTS) of the Bachelor’s degree.

Recommended or required reading:
Handouts, digital slides. A literature list will be handed out during the course.

Assessment methods and criteria:
Assessment is based learning diary or written examination.

Grading:
1-5

Person responsible:
Professor Anna-Maija Ylimaula, University lecturer N.N.

Working life cooperation:
-

Other information:
-

450547A: Indesign Basics, 1 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Asko Leinonen
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay450547A Indesign Basics (OPEN UNI) 1.0 op

ECTS Credits:
1

Language of instruction:
Finnish

Timing:
workshop-type weekend course, the course is organized at most once per academic year.

Learning outcomes:
Students master the basic page layout features and understand the possibilities of the software. Students are able to produce pages ready for release combining visual and textual material from various sources.

Contents:
Placing formatted text and pictures, page layout and PDF publishing.

Mode of delivery:
workshop

Learning activities and teaching methods:
Contact teaching 16 h, independent exercises 11 h.

Target group:
Prerequisites and co-requisites:

Recommended optional programme components:

Recommended or required reading:
Software help files

Assessment methods and criteria:
Based on a project work (the presentation material of a design course at the Oulu School of Architecture or an equivalent work).

Grading:
1-5

Person responsible:
n.n.

Working life cooperation:
Students will learn to use the basic skills of Adobe InDesign publishing software and apply those skills in hands-on work. Students can use style settings in InDesign to make well controlled text and graphic layouts.

Other information:
Basic features of page layout in InDesign.
The course is intended for registered students of the Oulu School of Architecture only.

488203S: Industrial Ecology, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Väisänen, Virpi Maria
Opintokohteen kielet: English

Leikkaavuudet:

ay488203S Industrial Ecology and Recycling 5.0 op
480370S Industrial Ecology and Recycling 5.0 op

ECTS Credits:
5 ECTS credits / 135 hours of work

Language of instruction:
English

Timing:
Implementation in autumn semester during 1st period.

Learning outcomes:
Upon completion of the course, the student will be able to use the tools of industrial ecology and apply them to industrial activity. The student can also analyze the interaction of industrial, natural and socio-economic systems and able to judiciously suggest changes to industrial practice in order to prevent negative impacts. The student can also analyze the examples of industrial symbioses and eco-industrial parks and able to specify the criteria of success for building eco-industrial parks.

Contents:
Material and energy flows in economic systems and their environmental impacts. Physical, biological and societal framework of industrial ecology. Industrial metabolism, corporate industrial ecology, eco-efficiency, dematerialization. Tools of industrial ecology, such as life-cycle assessment, design for the environment, green chemistry and engineering. Systems-level industrial ecology, industrial symbioses, eco-industrial parks.

Mode of delivery:
Face-to-face teaching in English.

Learning activities and teaching methods:
Lectures 30 h / Group work 30 h / Self-study 75 h. The exercises are completed as guided group work.

Target group:
Master’s degree students of process and environmental engineering.

Prerequisites and co-requisites:

Recommended optional programme components:
Recommended or required reading:

Assessment methods and criteria:
All students complete the course in a final exam. Also the exercise will be assessed. The assessment criteria are based on the learning outcomes of the course.
Read more about the course assessment and grading systems of the University of Oulu at www.oulu.fi/english/studying/assessment.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

Person responsible:
University teacher Virpi Väisänen

Working life cooperation:
No

Other information:

ayA440190: Industrial Engineering and Management (IEM) Minor Subject Studies (OPEN UNI), 25 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Study module
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetussuunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay555225P: Basics of industrial engineering and management (OPEN UNI), 5 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetussuunnattu: University of Oulu, Open University
Opettajat: Jukka Majava
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay555285A: Project management (OPEN UNI), 5 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetussuunnattu: University of Oulu, Open University
Opettajat: Kirsi Aaltonen
Opintokohteen kielet: Finnish
Leikkaavuudet:
555288A  Project Management  5.0 op
555285A  Project management  5.0 op

ay555286A: Process and quality management (OPEN UNI), 5 op
Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opettajat: Osmo Kauppila
Opintokohteen kielet: Finnish
Leikkaavuudet:
555286A  Process and quality management  5.0 op

ay555264P: Managing well-being and quality of working life (OPEN UNI), 5 op
Voimassaolo: 01.01.2014 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:
555264P  Managing well-being and quality of working life  5.0 op

ay555242A: Product development (OPEN UNI), 5 op
Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opettajat: Kai Hänninen
Opintokohteen kielet: Finnish
Leikkaavuudet:
555242A  Product development  5.0 op

488215S: Industry and Environment, 5 op
Voimassaolo: 28.06.2019 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail  
Opintokohteen kielet: English  

Leikkaavuudet:  
- 477334S Industrial activities and environment 5.0 op  
- ay488215S Industry and Environment (OPEN UNI) 5.0 op  
- 488221S Environmental Load of Industry 5.0 op  
- 488205S Environmental Load of Process Industry 4.0 op  

ECTS Credits:  
5 cr / 135 hours of work  

Language of instruction:  
English  

Timing:  
This course will teach first time in Autumn 2020. This course replaces course 488221S Environmental Load of Industry.  

Learning outcomes:  
The student is able to identify the essential features of the environmental load in different types of (chemical, wood, metallurgical,...) industry. He/she is able to explain the type, quality, quantity and sources of the emissions.  
The student is familiarized with the main emission control systems and techniques in different industrial sectors.  
The student can explain the environmental management system of an industrial plant and is able to apply it to an industrial plant.  

Contents:  
Effluents: types, quality, quantity, sources. Unit operations in managing effluents, comprehensive effluent treatment. Environmental management systems, environmental licences, environmental reporting and BAT.  

Mode of delivery:  
Face-to-face teaching.  

Learning activities and teaching methods:  
Lectures 40 h, self-study 93h.  

Target group:  
Master’s degree students of the Process and Environmental Engineering study programmes.  

Prerequisites and co-requisites:  
The courses 477011P Introduction to Process and Environmental Engineering I, 488011P Introduction to Process and Environmental Engineering II, 488204S Air Pollution Control Engineering and 488110S Water and Wastewater Treatment recommended beforehand.  

Recommended or required reading:  
Material represented in lectures and in the Optima environment.  

Assessment methods and criteria:  
Written final exam or a learning diary.  
Read more about the course assessment and grading systems of the University of Oulu at www.oulu.fi/english /studying/assessment  

Grading:  
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail  

Person responsible:  
Doctoral student Niina Koivikko  

Working life cooperation:  
No.  

Other information:  
The course mainly consists of specific lectures presented by experts who are invited from industry.  

This course will teach as online course in Fitech in Spring Term 2020.

477129S: Inorganics Materials in Circular Economy, 5 op  

Voimassaolo: 01.08.2019 -  
Opiskelumuoto: Advanced Studies  
Laji: Course  
Vastuuysikkö: Field of Process and Environmental Engineering  
Arvostelu: 1 - 5, pass, fail  
Opettajat: Elisa Koivuranta
**Opintokohteen kielet:** English

**Leikkaavuudet:**

ay477129S  Inorganics Materials in Circular Economy (OPEN UNI)  5.0 op

**ECTS Credits:**

5 cr

**Language of instruction:**

Finnish, English

**Timing:**

Spring 2020

**Learning outcomes:**

Upon completion of the course, a student explains the main incentives, possibilities, challenges and barriers behind the utilization of high-volume industrial residues. Student is familiarized with environmental and legislative aspects related to utilization of industrial residues. The student can identify customer needs and plan new business while taking the limitations set by the environmental and legislative aspects and the industrial residue into account.

**Contents:**

Properties, processing, and utilization potential of industrial residues in various applications. Specific focus in novel large-scale applications. An overview of regulatory aspects related to waste utilization. Environmental and safety aspects of materials. Product development in the context of industrial residues.

**Prerequisites and co-requisites:**

Not limited to certain degree programs.

**Assessment methods and criteria:**

Group work and final seminar.

**Grading:**

Pass/Fail

**Person responsible:**

Elisa Koivuranta

**Working life cooperation:**

Visiting lectures from the industry.

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**ay802136P: Introduction to Cryptography, 2 op**

**Voimassaolo:** 01.01.2020 -

**Opiskelumuoto:** Basic Studies

**Laji:** Course

**Vastuuysikkö:** University of Oulu, Open University

**Arvostelu:** 1 - 5, pass, fail

**Opetus suunnattu:** University of Oulu, Open University

**Opintokohteen kielet:** Finnish

**ECTS Credits:**

2 ECTS

**Language of instruction:**

Finland

**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

**Contents:**

The course considers some traditional symmetric key methods.

**Mode of delivery:**

Independent work

**Learning activities and teaching methods:**

Net course; Lecture slides, exercises, solutions of exercises (in Moodle)

**Target group:**

Upper secondary school students

**Prerequisites and co-requisites:**

Number theory and proving (MAA11)
Recommended optional programme components:
After completing the course you can expand course to 5 ECTS credits by stack-exercise and final exam.

Recommended or required reading:
Lecture slides, exercises, solutions of exercises

Assessment methods and criteria:
Stack-exercisis
Grading:
pass, fail
Person responsible:
Marko Leinonen
Working life cooperation:
No

771113P: Introduction to Geology I, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Kari Strand
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay771113P Introduction to Geology I (OPEN UNI) 5.0 op

ECTS Credits:
5 credits
Language of instruction:
Finnish
Timing:
1st year autumn

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 the present Earth as part of the solar system. They can tell how endogenic processes in the mantle and crust produce magmas and how magmas produce different igneous rock type 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.

Contents:
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.

Mode of delivery:
Face to face

Learning activities and teaching methods:
36 h lectures, 6 h exercises

Target group:
1st year geoscience students. The course is a good minor subject course for others.

Prerequisites and co-requisites:
Basic course in mineralogy (771102P) is parallel to this course.

Recommended optional programme components:
This course is intended as an introduction to the scope and methods of igneous and metamorphic petrology.

Recommended or required reading:

Assessment methods and criteria:
Written examination and identification test of rock types.

Grading:
5-1/fail

Person responsible:
Kari Strand

Working life cooperation:
No

771114P: Introduction to Geology II, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha Pekka Lunkka
Opintokohteen kielet: Finnish

ECTS Credits:
5 ECTS / 133 hours of work
Language of instruction:
Finnish
Timing:
1st year autumn
Learning outcomes:
Upon completion of the course, students should have acquired basic knowledge on the concepts and processes of surficial geology. Students should also be able to identify basic sediment types and soils.

Contents:
Basic concepts of surficial physical geology, weathering, erosion, sedimentation, and sediment types, soils and geological processes forming sedimentary deposits.

Mode of delivery:
Face to face teaching

Learning activities and teaching methods:
16 h lectures, 8 h exercises

Target group:
1st year Geoscience students. The course is a good minor subject course for others.

Prerequisites and co-requisites:
No

Recommended or required reading:
The availability of the literature can be checked from this link.

Assessment methods and criteria:
Obligatory exercises and written examination
Grading:
5-1/fail

Person responsible:
Juha Pekka Lunkka and Tiina Eskola

Working life cooperation:
No

780116P: Introduction to Organic Chemistry, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Field of Chemistry
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Leikkaavuudet:

ay780116P  Introduction to Organic Chemistry (OPEN UNI)  5.0 op
780103P2  Organic Chemistry I  6.0 op
780108P  Basic Course in Organic Chemistry  6.0 op
780112P  Introduction to Organic Chemistry  4.0 op
780103P  Introduction to Organic Chemistry  6.0 op

ECTS Credits:
5 credits / 134 hours of work

Language of instruction:
Finnish. Book-examination in English as well.

Timing:
1st spring

Learning outcomes:
After this course, the student:
- can recognize and name basic organic compounds and explain their properties.
- can explain organic chemistry basic concepts.
- can deduce basic reaction types and solve their mechanisms.

Contents:
Classification of organic compounds and their properties. Basic reactions of organic compounds: addition, elimination and substitution along with the reaction mechanisms. Basics of stereochemistry.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
38 hours of lectures plus 12 hours of exercises, 84 hours of independent self-study.

Target group:
Biochemistry, Chemistry, Biology, Process Engineering, Environmental Engineering and in the study entity of 25 credits, compulsory.
Physical Sciences, Geology, Geography, Mathematical Sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination.
Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
Johanna Kärkkäinen

Working life cooperation:
No

Other information:
No

ay780116P: Introduction to Organic Chemistry (OPEN UNI), 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish

Leikkaavuudet:

780116P  Introduction to Organic Chemistry  5.0 op

ECTS Credits:
5 credits / 134 hours of work

Language of instruction:
Finnish. Book-examination in English as well.

Timing:
1st autumn and 1st spring

Learning outcomes:
After this course, the student can explain organic chemistry fundamentals, basic concepts and terminology, can use them for the description of organic chemistry phenomena. He/she can name organic structures, explain their properties, deduce basic reaction types and solve their mechanisms.

Contents:
Basic reactions of organic compounds, basic principles of stereochemistry and reaction mechanisms: Addition, elimination, substitution, including electrophilic aromatic substitution, reactions of carbonyl group. Applications.

Mode of delivery:
Face-to-face teaching

Learning activities and teaching methods:
42 hours of lectures plus 12 hours of exercises, 80 hours of independent self-study

Target group:
Biochemistry, Chemistry, Biology, Process Engineering, Environmental Engineering and in the study entity of 25 credits, compulsory. Physical Sciences, Geology, Geography, Mathematical Sciences, optional.

Prerequisites and co-requisites:
Upper secondary school chemistry

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:

Assessment methods and criteria:
Two intermediate examinations or one final examination Read more about assessment criteria at the University of Oulu webpage.

Grading:
The course utilizes a numerical grading scale 0-5. In the numerical scale zero stands for a fail.

Person responsible:
Dr. Johanna Kärkkäinen

Working life cooperation:
No

Other information:
No

771116P: Introduction to Quaternary deposits of Finland and their resources, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laj: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 ECTS / 133 hours of work

Language of instruction:
Finnish

Timing:
1st year spring

Learning outcomes:
Students can describe the main features and raw material resources of the Finnish Quaternary deposits.

Contents:
Main features and raw material resources of the Finnish Quaternary deposits and their origin.

Mode of delivery:
Face to face teaching

Learning activities and teaching methods:
22 h lectures. In addition, a one-day field trip is organized in May for major subject students.

Target group:
1st year Geoscience students. The course is a good minor subject course for others.

Prerequisites and co-requisites:
Introduction to Geology II (771114P) or equivalent knowledge

Recommended or required reading:
The availability of the literature can be checked from this link.

Assessment methods and criteria:
Written examination

Grading:
5-1/fail

Person responsible:
Juha Pekka Lunkka

Working life cooperation:
No

771115P: Introduction to bedrock geology of Finland and ore geology, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Kari Strand
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits

Language of instruction:
Finnish

Timing:
1st year spring

Learning outcomes:
Students can describe and recognise the main geological units 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.

Contents:
Lithostratigraphical units, the Archaean and Palaeoproterozoic bedrock of Finland and younger rock formations. Mineral resources, their classification and origin, exploration methods.

Mode of delivery:
Face to face

Learning activities and teaching methods:
24 h lectures. In addition, a one-day field trip is organized in May for major subject students.

Target group:
Major and minor subject students starting studies in geology.

Prerequisites and co-requisites:
Basic course in mineralogy (771102P), Introduction to Geology I (771113P), Introduction to Geology II (771114P) or equivalent knowledge.

**Recommended or required reading:**

**Assessment methods and criteria:**
Written examination.

**Grading:**
5-1/fail

**Person responsible:**
Eero Hanski

**Working life cooperation:**
No

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**491101P: Introduction to mining, 5 op**

Voimassaolo: 01.08.2017 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Saija Luukkanen
Opintokohteen kielet: Finnish

**Recommended or required reading:**
lopputentti, harjoitukset, aktiivisuus

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**491102P: Introduction to solid earth geophysics, 5 op**

Voimassaolo: 01.08.2017 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuysikkö: Oulu Mining School
Arvostelu: 1 - 5, pass, fail
Opettajat: Moisio, Kari Juhani
Opintokohteen kielet: Finnish

**Timing:**
Spring semester, period 3. Recommended at 1st or 2nd year of the Bachelor studies.

**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 internalgeophysical properties and the interactions between different spheres, can describe large scale transfer (movement) of rock material inside the Earth and on its surface (convention, plate tections) and can name most common geophysical research methods.

**Contents:**

**Learning activities and teaching methods:**
A specific target group is written in this field.

**Prerequisites and co-requisites:**
No specific prerequisites.

**Recommended or required reading:**

Assessment methods and criteria:
Variable grading and evaluation methods

Grading:
1-5/fall

Person responsible:
Kari Moisio

Working life cooperation:
No working life cooperation

477221A: Material and Energy Balances, 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Field of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Ahola, Juha Lennart
Opintokohde kiellet: Finnish
Leikkaavuudet:
ay477231A Material and Energy Balances I (OPEN UNI) 2.0 op
ay477232A Material and Energy Balances II (OPEN UNI) 3.0 op
ay477221A Material and Energy Balances (OPEN UNI) 5.0 op
477201A Material and Energy Balances 5.0 op
470220A Fundamentals of Chemical Process Engineering 5.0 op

ECTS Credits:
5 ECTS /133 hours of work
Language of instruction:
Finnish. The course can be completed in English as a book examination.

Timing:
Spring periods 3 and 4.

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.

Contents:
Formulation of material and energy balances by taking into account the effects of chemical reactions.

Mode of delivery:
Lectures and group exercise

Learning activities and teaching methods:
Lectures 40h, group work 10h and self-study 80h

Target group:
Bachelor students in of Process or Environmental Engineering

Prerequisites and co-requisites:
High school level chemistry, mathematics and physics.

Recommended optional programme components:
The course is part of a stream that aims at skills needed in the phenomenon-based modelling and planning of industrial processes.

Recommended or required reading:

Assessment methods and criteria:
During the course, there are two intermediate exams and both of them must be passed. Alternatively student can participate in final exam after the course. In addition to this, the students will be making a group exercise, which will be evaluated.
Person responsible:
Juha Ahola

Other information:
This course replaces the course 477201A Material and Energy Balances, 5 ects.

ay477221A: Material and Energy Balances (OPEN UNI), 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay477231A Material and Energy Balances I (OPEN UNI) 2.0 op
ay477232A Material and Energy Balances II (OPEN UNI) 3.0 op
477221A Material and Energy Balances 5.0 op

ECTS Credits:
5 credits

Language of instruction:
Finnish

Timing:
2.9.2019-28.5.2020

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.

Contents:
Formulation of material and energy balances by taking into account the effects of chemical reactions.

Mode of delivery:
web-based course

Learning activities and teaching methods:
web-based course

Prerequisites and co-requisites:
High school level chemistry, mathematics and physics.

Recommended or required reading:

Assessment methods and criteria:
During the course, there are scheduled exercise packages that must be passed.

Grading:
1 - 5, pass, fail

ay477231A: Material and Energy Balances I (OPEN UNI), 2 op

Voimassaolo: 01.01.2020 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opettajat: Ahola, Juha Lennart
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay477232A: Material and Energy Balances II (OPEN UNI), 3 op

Voimaajo: 01.01.2020 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish
Leikkaavuudet:

- 477232A Material and Energy Balances II 3.0 op
- 477221A Material and Energy Balances 5.0 op
- ay477221A Material and Energy Balances (OPEN UNI) 5.0 op

Ei opintojaksokuvauksia.

450541A: Photoshop, Advanced Photomanipulation, 2 op

Voimaajo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: Oulu School of Architecture
Arvostelu: 1 - 5, pass, fail
Opettajat: Asko Leinonen
Opintokohteen kielet: Finnish
Leikkaavuudet:

- ay450541A Photoshop, Advanced Photomanipulation (OPEN UNI) 2.0 op

ECTS Credits: 2

Language of instruction: Finnish

Timing: workshop-type weekend courses, the course is organized once per academic year.

Learning outcomes: Students are able to complete image renderings from 3d modelling software and to supplement them by combining elements from photos for a photorealistic and expressive end-result.

Contents: Color correction, perspective correction.

Mode of delivery: 2 weekend workshop including lectures and exercises.

Learning activities and teaching methods: Contact teaching 32 h, independent exercises 22 h.

Target group: -

Prerequisites and co-requisites: -

Recommended optional programme components: -

Recommended or required reading: -
Software help files and handouts.

Assessment methods and criteria:
Based on a project work (the presentation material of a design course at the Oulu School of Architecture or an equivalent work).

Grading:
1-5

Person responsible:
N.N.

Working life cooperation:
Students will learn to use the advanced skills of Adobe Photoshop software and apply those skills in hands-on work such as finishing conceptual drawing renderings.

Other information:
Adding a finishing touch in Photoshop to images produced with other rendering software. The course is intended for the students of the Oulu School of Architecture only

ay493300A: Principles of mineral processing (OPEN UNI), 5 op

Voimassaolo: 01.08.2019 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish, English
Leikkaavuudet:

493300A Principles of mineral processing 5.0 op

ECTS Credits:
5 ECTS / 133 hours of work

Language of instruction:
Finnish; material mainly in English

Timing:
2nd period in the autumn. Recommended for the 3rd year students.

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 palying the key role in process development. The student is able to calculate the most relevant process related calculations, such as mass balances, concentrate recoveris and grindability. The student is aware of the environmental as well as H&S aspects of mineral processing.

Contents:
The main unit processes used in mineral processing. Understanding how the mineralogy and chemistry of the ore influences in the process development.

Mode of delivery:
Mainly face-to-face teaching

Learning activities and teaching methods:
Lectures, demonstrations, assignments

Target group:
Student with mineral processing as major; students of mining engineering, geosciences and process engineering

Prerequisites and co-requisites:
-

Recommended optional programme components:
-

Recommended or required reading:
The material provided during the course. B.A. Wills: Mineral processing technology

Assessment methods and criteria:
Final exam, home works and practicals, energy

Grading:
1-5/fail

Person responsible:
Saija Luukkanen
**Working life cooperation:**
No

**Other information:**
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**492300A: Rock mechanics, 5 op**

**Voimassaolo:** 01.08.2016 -

**Opiskelumuoto:** Intermediate Studies

**Laji:** Course

**Vastuuysikkö:** Oulu Mining School

**Arvostelu:** 1 - 5, pass, fail

**Opettajat:** Zongxian Zhang

**Opintokohteen kielet:** Finnish

**ECTS Credits:**
5 ECTS /133 hours of work

**Language of instruction:**
English

**Timing:**
3rd year 3rd period

**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.

**Contents:**
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.

**Mode of delivery:**
Face to face teaching

**Learning activities and teaching methods:**
Lectures, seminars, written reports, and assignments (mine visit if available).

**Target group:**
Students from mining and mineral processing, geophysics and geology

**Recommended or required reading:**

**Assessment methods and criteria:**
Assessment methods include oral presentations, written reports, seminars, assignments and written examination. The total points gained from the above determine the final grade of the course, and it is given on the scale Fail-1-5.

- For grade 1, the student must be able to know and understand the basic knowledge in this course.
- For grade 2, the student must know how to make stress analysis and rock failure analysis.
- For grade 3 the student must be able to make a plan for rock support.
- For grade 4, the student must be able to make a plan for rock support and evaluate such a plan.
- For grade 5, the student must be able to apply the acquired knowledge to make a very good plan for mining and rock engineering operation by using rock mechanics. He or she must do an outstanding design in at least one aspect, e.g. he/she can find a problem related rock mechanics or rock fracture and know how to solve the problem or how to make improvement.

**Grading:**
The course unit utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.

**Person responsible:**
461102A: Statics, 5 op

Voimassaolo: 01.08.2015 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Field of Mechanical Engineering
Arvostelu: 1 - 5, pass, fail
Opettajat: Lahtinen, Hannu Tapio
Opintokohteen kielet: Finnish
Leikkaavuudet:
ay461102A Statics (OPEN UNI) 5.0 op
461016A-01 Statics, examination 0.0 op
461016A-02 Statics, exercises 0.0 op
461016A Statics 5.0 op

ECTS Credits:
5 ECTS / 149 hours of work

Language of instruction:
Lectures in finnish, foreign students follow the course by reading independently the books in english and taking part to the exercises and exams where all material is given in english.

Timing:
The course is held in the autumn semester, during periods 1 and 2. It is recommended to complete the course at the 1st autumn semester.

Learning outcomes:
After the course, the student can calculate forces and moments of loaded structures using equations of vector algebra and trigonometry. He/she can draw a free body diagram of the force system and then solve the unknown forces by using equations of equilibrium. He/she 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, he/she can draw shear force and bending moment diagrams for beam structures.

Contents:
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.

Mode of delivery:
Implemented as Face-to-face -teaching.

Learning activities and teaching methods:
Lectures 55 h / exercises 42 h / independent work of solving homework problems 52 h.

Target group:
Compulsory for candidate degree students of mechanical engineering programme.

Prerequisites and co-requisites:
Now prerequisites required.

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:

Assessment methods and criteria:
In the course acceptable homework and midterm exams / final exam are required. This course utilizes continuous assessment. There are four midterm exams, of which the last one is at the same time a final exam. Homework contain every week three problems that are marked. The student is allowed to participate to a final exam, when the homework is accepted.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.
Person responsible:
University teacher Hannu Lahtinen

Other information:
The course gives ability for understanding static equilibrium, ability for determining force balance in structures and readiness for later studies.

ay461102A: Statics (OPEN UNI), 5 op

Voimassaolo: 01.08.2019 -
Opiskelumooto: Intermediate Studies
Laji: Course
Vastuuysikkö: University of Oulu, Open University
Arvostelu: 1 - 5, pass, fail
Opetus suunnattu: University of Oulu, Open University
Opintokohteen kielet: Finnish

Leikkaavuudet:
461102A Statics 5.0 op
461016A-02 Statics, exercises 0.0 op
461016A-01 Statics, examination 0.0 op
461016A Statics 5.0 op

ECTS Credits:
5 ECTCS / 149 hours of work

Language of instruction:
Lectures in finnish, foreign students follow the course by reading independently the books in english and taking part to the exercises and exams where all material is given in english.

Timing:
The course is held in the autumn semester, during periods 1 and 2. It is recommended to complete the course at the 1st autumn semester.

Learning outcomes:
After the course, the student can calculate forces and moments of loaded structures using equations of vector algebra and trigonometry. He/she can draw a free body diagram of the force system and then solve the unknown forces by using equations of equilibrium. He/she 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, he/she can draw shear force and bending moment diagrams for beam structures.

Contents:
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.

Mode of delivery:
Implemented as Face-to-face -teaching.

Learning activities and teaching methods:
Lectures 55 h / exercises 42 h / independent work of solving homework problems 52 h.

Target group:
Compulsory for candidate degree students of mechanical engineering programme.

Prerequisites and co-requisites:
Now prerequisites required.

Recommended optional programme components:
The course is an independent entity and does not require additional studies carried out at the same time.

Recommended or required reading:

Assessment methods and criteria:
In the course acceptable homework and midterm exams / final exam are required. This course utilizes continuous assessment. There are four midterm exams, of which the last one is at the same time a final exam. Homework contain every week three problems that are marked. The student is allowed to participate to a final exam, when the homework is accepted.

Grading:
The course utilizes a numerical grading scale 1-5. In the numerical scale zero stands for a fail.
**Person responsible:**
University teacher Hannu Lahtinen

**Other information:**
The course gives ability for understanding static equilibrium, ability for determining force balance in structures and readiness for later studies.

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**455511P: Visual Arts I, 5 op**

**Voimassaolo:** 01.08.2005 -
**Opiskelumuoto:** Basic Studies
**Laji:** Course
**Vastuuysikkö:** Oulu School of Architecture
**Arvostelu:** 1 - 5, pass, fail
**Opintokohteen kielet:** Finnish

**Leikkaavuudet:**
ay455511P Visual Arts I (OPEN UNI) 5.0 op

**ECTS Credits:**
5

**Language of instruction:**
Finnish

**Timing:**
Autumn term 1-2

**Learning outcomes:**
To deal with different aspects of visual expression, to expand general knowledge relative to the various fields of art and to develop independent creative expression.
After completing the course the student is able to comprehend various sides of visual expression and can implement these skills in exercise work.

**Contents:**
Object and spatial drawing, classical model drawing, designing and modelling.

**Mode of delivery:**
Contact teaching and independent studying.

**Learning activities and teaching methods:**
lectures and/ or contact teaching 6 hours and contact teaching and/ or group guidance 92 hours.

**Target group:**
1.nd year students.

**Prerequisite(s) and co-requisite(s):**
-

**Recommended or required reading:**
Supplemental reading list will be supplied during the course.

**Assessment methods and criteria:**
Based on exercises.

**Grading:**
1-5

**Person responsible:**
Prof. Matti Sanaksenaho.

**Working life cooperation:**
Students are initiated in the artist's work through guidance of a professional artist.

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**455512P: Visual Arts II, 3 op**

**Voimassaolo:** 01.08.2005 -
**Opiskelumuoto:** Basic Studies
**Laji:** Course
**Vastuuysikkö:** Oulu School of Architecture
**Arvostelu:** 1 - 5, pass, fail
**Opintokohteen kielet:** Finnish

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Leikkaavuudet:
ay45512P  Visual Arts II (OPEN UNI)  3.0 op

ECTS Credits:
3

Language of instruction:
Finnish

Timing:
Spring term 1-2

Learning outcomes:
To deal with different aspects of visual expression, to expand general knowledge relative to the various fields of art and to develop independent creative expression.
After completing the course the student is able to comprehend various sides of visual expression and can implement these skills in exercise work.

Contents:
Classical model drawing and various applications of composition and colour theory. The relationship between architecture and colour as well as art and space is studied during the course.

Mode of delivery:
Contact teaching and independent studying.

Learning activities and teaching methods:
Lectures and/or contact teaching 92 hours and contact teaching and/or group guidance 92 hours

Target group:
2nd year students

Prerequisites and co-requisites:
-

Recommended or required reading:
Supplemental reading list will be supplied during the course.

Assessment methods and criteria:
Based on exercises.

Grading:
1-5

Person responsible:
Prof. Matti Sanaksenaho.

Working life cooperation:
Students are initiated in the artist's work through guidance of a professional artist.