Opasraportti

Open University - Engineering, manufacturing and construction (2018 - 2019)

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

466106S: Advanced topics on design of steel structures, 6 op
ay555225P: Basics of industrial engineering and management (OPEN UNI), 5 op
466105S: Design of Steel Structures, 6 op
488231S: Environmental Chemistry and Ecology, 5 op
488201A: Environmental Ecology, 5 op
ay488201A: Environmental Ecology (OPEN UNI), 5 op
ayA440190: Industrial Engineering and Management (IEM) Minor Subject Studies (OPEN UNI), 25 op
780116P: Introduction to Organic Chemistry, 5 op
ay555264P: Managing well-being and quality of working life (OPEN UNI), 5 op
ay555286A: Process and quality management (OPEN UNI), 5 op
ay555242A: Product development (OPEN UNI), 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: Kangaspuoskari, 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:
The following topics are covered during the course: Steel structure under fatigue load. Fracture toughness. Stability and bracing of a steel frame building. Fire design. Plated structural elements with stiffeners. Elements resistance to transverse forces. Cold-formed members. Mechanical vibrations. Seismic design. Chimneys. Crane supporting structures. Accidental design situations and progressive collapse.
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, Mashine design, and Engineering Mechancs. 466102A
Prerequisites and co-requisites:
460117A Introduction to Structural Design and 466105S Design of Steel Structures. Key notes in courses Statics, Strength of Materials I, Strength of Materials II, Mechanics of materials and Mechanical Vibrations.
Recommended or required reading:
Lecture notes (in Finnish). Eurocodes 1990-1999.
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

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

Voimassaolo: 01.01.2014 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: University of Oulu, Open University

Arvostelu: 1 - 5, pass, fail

Opetus suunnattu: University of Oulu, Open University

Opettajat: Jukka Majava

Opintokohteen kielet: Finnish

Leikkaavuudet:

555225P Basics of industrial engineering and management 5.0 op

466105S: 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: Kangaspuoskari, 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
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:
The following topics are covered during the course: Ferrous metals and their properties. Principles of Eurocodes. Design of simple steel structure under base loading cases and loading combinations. Corrosion. Design of joints in steel structures. Composite structures with steel member. Section classification. Effective cross-section. Cross-sections with stiffeners. Steel members in bending and axial compression. Buckling, lateral torsional buckling, and torsion.
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 and Construction Technology, Mashine design, and Engineering Mechancs.
Prerequisites and co-requisites:
466102A Introduction to Structural Design. Key notes in courses Statics, Strength of Materials I, Strength of Materials II, Energy principles and Their Use in Beam Structures, and Plates and Shells and Mechanics of materials
Recommended or required reading:
Lecture notes (in Finnish). Eurocodes 1990-1999.
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

488231S: Environmental Chemistry and Ecology, 5 op

Voimassaolo: 01.08.2018 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Field of Process and Environmental Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Väisänen, Virpi Maria

Opintokohteen kielet: English

Leikkaavuudet:

ay488231S Environmental Chemistry and Ecology (OPEN UNI) 5.0 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
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

488201A: Environmental Ecology, 5 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Process and Environmental Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Väisänen, Virpi Maria

Opintokohteen kielet: English

Leikkaavuudet:

488210A Environmental science and technology 5.0 op
ay488201A Environmental Ecology (OPEN UNI) 5.0 op
488406A Introduction to Environmental Science 5.0 op
480001A Environmental Ecology 5.0 op

ECTS Credits:
5 ECTS credits / 133 hours of work
Language of instruction:
English
Timing:
Implementation in spring semester during 4 th period. It is recommended to complete the course at the first (Bachelor's) spring semester.
Learning outcomes:

Upon completion of the course, the student is able to define the basic concepts of environmental ecology and environmental conservation. 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 environmental toxicology.

Contents:
Principles of environmental ecology. Global and regional environmental problems and their effects. Principles of environmental toxicology. Engineering and environmental ethics.

Mode of delivery:
e-learning

Learning activities and teaching methods:
Individual e-learning 133 h following the schedule of the course.

Target group:
Bachelor's degree students of environmental engineering. International exchange students.

Recommended optional programme components:
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Recommended or required reading:
Chiras D.: Environmental Science. New York, Jones and Bartlett Publishers, 9 th edition, 2013.

Assessment methods and criteria:
Continuous assessment is implemented in the course and all learning tasks are evaluated. All students complete the course in a final examination. The assessment of the course is 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:
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ay488201A: Environmental Ecology (OPEN UNI), 5 op

Voimassaolo: 01.08.2012 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: University of Oulu, Open University

Arvostelu: 1 - 5, pass, fail

Opetus suunnattu: University of Oulu, Open University

Opintokohteen kielet: English

Leikkaavuudet:

488201A	Environmental Ecology	5.0 op

ECTS Credits:
5 cr

Language of instruction:
English

Timing:
4th and 5th period

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:
Principles of environmental ecology. Roots of environmental problems. Global air pollution: ozone depletion, acid deposition, global warming and climate change. Water pollution, eutrophication, overexploitation of ground and surface water. Main effects of pollution and other stresses. Non-

renewable and renewable energy. Energy conservation and efficiency. Hazardous and solid waste problem. Principles of toxicology, epidemiology, and risk assessment. Environmental ethics.
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:
Chiras D.: Environmental Science: Creating a Sustainable Future. New York, Jones and Bartlett Publishers, 2001, Materials in the Optima environment
Assessment methods and criteria:
Exercises and exam.
Read more about assessment criteria at the University of Oulu webpage.
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

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

Voimassaolo: 01.01.2014 -

Opiskelumuoto: Intermediate Studies

Laji: Study module

Vastuuyksikkö: University of Oulu, Open University

Arvostelu: 1 - 5, pass, fail

Opetus suunnattu: University of Oulu, Open University

Opintokohteen kielet: Finnish

Leikkaavuudet:

A440190	Industrial Engineering and Management (IEM) Minor Subject Studies	25.0 op

780116P: Introduction to Organic Chemistry, 5 op

Voimassaolo: 01.08.2015 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: 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 compunds and explain their properties.
- can explain organic chemistry basic consepts.
- can deduce basic recation 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, Geograhpy, 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:
Hart, H., Hart, D.J. and Craine, L.E.: Organic Chemistry: A Short Course, 10 th ed. or the newer edition, Houghton Mifflin Boston, 1999; Hart, H., Hart, D.J. and Craine, L.E.: Study Guide & Solutions Book, Organic Chemistry: A Short Course, 10th ed. or the newer edition, Houghton Mifflin Boston, 1999.
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

ay555264P: Managing well-being and quality of working life (OPEN UNI), 5 op

Voimassaolo: 01.01.2014 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: 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

ay555286A: Process and quality management (OPEN UNI), 5 op

Voimassaolo: 01.01.2014 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: 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

ay555242A: Product development (OPEN UNI), 5 op

Voimassaolo: 01.01.2014 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: 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