

Opasraportti

Open University - Natural sciences, mathematics and statistics (2018 - 2019)

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

- 802354A: Basics in Algebra, 5 op
 750124P: Basics of ecology, 5 op
 740151P: Biochemical methodologies I, 10 op
 750373A: Biogeography, 5 op
 740148P: Biomolecules, 5 op
 750121P: Cell biology, 5 op
 757109P: Concepts of genetics, 5 op
 ay756347A: Conservation of biodiversity (OPEN UNI), 5 op
 800317A: Continuity and derivative, 5 op
 792301A: Economic Geography and its Applications, 5 op
 800119P: Functions and limit, 5 op
 790322A: Geographical Information and Research, 5 op
 790340A: Geographies of global development, 5 op
 800318A: Integral, 5 op
 802120P: Introduction to Matrices, 5 op
 806113P: Introduction to Statistics, 5 op
 802151P: Introduction to mathematical deduction, 5 op
 761115P: Laboratory Exercises in Physics 1, 5 op
 ay752316A: Macro fungi (OPEN UNI), 3 op
 802158P: Mathematics for Economic Sciences, 7 op
 761118P: Mechanics 1, 5 op
- Compulsory*
- 761118P-01: Mechanics 1, lectures and exam, 0 op
 761118P-02: Mechanics 1, lab. exercises, 0 op
- 740149P: Metabolism I, 4 op
 791635A: Physical Geography of Fennoscandia, 5 op
 761108P: Physical world view, 5 op
 756346A: Plant biology lectures, 5 op
 790326A: Qualitative research methods, 5 op
 766116P: Radiation physics, biology and safety, 5 op
 790106A: Region, culture and society, 5 op
 792319A: Regional politics, policy and development: Northern Europe, 5 op
 790305A: Special themes in Human Geography, 5 op
 790303A: Special themes in Physical Geography, 5 op
 790350A: Special themes in Regional Development and Regional Policy, 5 op
 790320A: Tourism planning and development, 5 op
 761310A: Wave motion and optics, 5 op
- Compulsory*
- 761310A-01: Wave motion and optics, lectures and exam, 0 op
 761310A-02: Wave motion and optics, lab. exercises, 0 op
- 790349A: World regional geography, 5 op

Opintojaksojen kuvaukset

Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

802354A: Basics in Algebra, 5 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opettajat: Kari Myllylä

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay802354A Number Theory and Groups (OPEN UNI) 5.0 op

800333A Algebra I 8.0 op

ECTS Credits:

5 ECTS cr

Language of instruction:

Finnish

Timing:

1. year, 3. period

Learning outcomes:

After completing the course, student is able to

- derive and proof main results in the course
- use and apply different proof techniques
- recognize algebraic structures and the concepts
- see connections and differences between different algebraic structures

Contents:

The course includes basics in arithmetics and algebraic structures, such as, congruence, residue classes, prime numbers, Euclidean algorithm, the fundamental theorem of arithmetic, Euler-Fermat formula, groups and morphisms. The course gives an understanding of algebraic terms and concepts used in mathematics and physics.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

28 h lectures, 14 h exercises

Target group:

Major and minor students

Prerequisites and co-requisites:

802151P Introduction to mathematical deduction

Recommended optional programme components:

-

Recommended or required reading:

Lecture notes

Assessment methods and criteria:

Final exam

Grading:

1-5

Person responsible:

Kari Myllylä

Working life cooperation:

750124P: Basics of ecology, 5 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Biology

Arvostelu: 1 - 5, pass, fail

Opettajat: Jari-Heikki Oksanen

Opintokohteen oppimateriaali:

Krebs, Charles J. , , 2001

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS credits / 133 hours of work.

Language of instruction:

Finnish.

Timing:

B.Sc. 1st spring.

Learning outcomes:

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

Contents:

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

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

The course is divided into three parts which follow the course book Krebs, C. J. 2009: Ecology (6th edition). 1st part: 24 hours of lectures based mainly on parts 1-2 of the course book. 2nd part: 24 hours of lectures are based on part 3 of the course book. 3rd part: students read the part 4 from the course book. In the course exam, there will be three questions, one from each part and all the questions have to be passed.

Target group:

Compulsory biology students.

Prerequisites and co-requisites:

No.

Recommended optional programme components:

-

Recommended or required reading:

Krebs, C. J. 2009: Ecology (6th edition). Part I.

The availability of the literature can be checked from [this link](#).

Assessment methods and criteria:

Exam.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5 / Fail.

Person responsible:

Doc. Kari Koivula and Prof. Jari Oksanen.

Working life cooperation:

No.

Other information:

-

740151P: Biochemical methodologies I, 10 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Faculty of Biochemistry and Molecular Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Sakari Kellokumpu

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay740153P Basic biochemistry 2: Methods (OPEN UNI) 2.0 op

ay740144P Biochemical Methodologies I (OPEN UNI) 8.0 op

740144P Biochemical Methodologies I 8.0 op

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

10 credits

Language of instruction:

Finnish

Timing:

B.Sc. yr1 autumn (lectures), yr1 spring (laboratory practicals)

Learning outcomes:

Upon successful completion students are able to:

- use basic methods used in biochemical research laboratory
- Use laboratory equipment and work safely
- Prepare solutions used in the lab
- document and present experiments and results in the laboratory and other works

Contents:

This module covers the basic methodologies used in practical biochemistry. The following topics will be addressed: safety in the laboratory, qualitative and quantitative observations, the calculations of concentrations and dilution factors (includes a workshop), pipette cleaning and calibration, identification and quantification of biological molecules, principals and practice of the use of centrifuges, spectrophotometry, SDS-PAGE, agarose gel electrophoresis, thin-layer and paper chromatography, basics of protein purification, extraction of chromosomal DNA from bacteria, mini-prep extraction of plasmid DNA, extraction of RNA from mammalian tissue, extraction of lipids from nutmeg, sterile technique, basic microbial growth, dialysis, filtration and pH measurement. In addition transferable skills like word processing (Microsoft Word) and spreadsheet (Microsoft Excel), drawing of curve charts, the basics of oral presentation, ethics in scientific research and good scientific practice are involved.

Mode of delivery:

Face to face teaching

Learning activities and teaching methods:

34 h lectures and exercises, 120 h lab. Laboratory work is compulsory. It is possible to complete lecture part only (3.5 ECTS).

Target group:

Major students

Prerequisites and co-requisites:

Biomolecules, Biomolecules for Biochemists tai Biomolecules for Bioscientists

Recommended optional programme components:

-

Recommended or required reading:

Recommended reading: Reed, Holmes, Weyers & Jones: Practical skills in biomolecular sciences, 4th edition, Pearson, 2013.

You can check the availability of the course books via [this link](#)

Assessment methods and criteria:

Continuous assessment (home works, lab reports), final exam

Grading:

1-5/fail

Person responsible:

Sakari Kellokumpu

Working life cooperation:

No

Other information:

Location of instruction: lectures (in Finnish) at Linnanmaa campus, laboratory practicals at Kontinkangas campus

750373A: Biogeography, 5 op

Voimassaolo: 01.08.2015 - 31.07.2019

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Biology

Arvostelu: 1 - 5, pass, fail

Opettajat: Kvist, Laura Irmeli, Jari-Heikki Oksanen

Opintokohteen kielet: Finnish

Leikkaavuudet:

750173P	Biogeography	5.0 op
750363A	Biogeography	4.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work.

Language of instruction:

Finnish.

Timing:

B.Sc. 1st autumn.

Learning outcomes:

The course introduces students to basic concepts of biogeography, patterns of distribution and historical and present factors affecting the distribution. Plant biogeography introduces students to modern and historical factors controlling the plant cover, and to the special methods of vegetation science.

Contents:

The course consists of general part and optional part on plant biogeography and vegetation science. The general part introduces basic models and theories of distribution of organisms in the environment. Historical, evolutionary, geographical, climatic and ecological explanations. Research methods used in biogeography. The part on plant biogeography and vegetation science introduces methods on factors controlling the structure and composition of vegetation, and describes major vegetation types in Finland and principal biomes in the World. Methods of vegetation science are briefly surveyed.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

General biogeography: 24 h lectures, independent work (3 cr), **Plant biogeography:** 24 h lectures (2 cr); two exams.

Target group:

Compulsory for biology students.

Prerequisites and co-requisites:

No.

Recommended optional programme components:

Other recommended courses related to the field: Basics of Ecology (750124P), Evolution and systematics of organisms (750372A), Evolution, systematics and morphology of organisms, practicals (750374A), Biodiversity in human changed environments (755631S).

Recommended or required reading:

Cox, C.B. & Moore, P.D. 2005: Biogeography. An ecological and evolutionary approach (7 ed.), Blackwell Publishing Ltd, or Cox, C.B. & Moore, P.D. 2010: Biogeography. An ecological and evolutionary approach (8 ed.), John Wiley & Sons Inc.

The availability of the literature can be checked from [this link](#).

Assessment methods and criteria:

Two exams.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5 / Fail. Final grade is average value of the two exams.

Person responsible:

Doc. Laura Kvist and Prof. Jari Oksanen.

Working life cooperation:

No.

Other information:

-

740148P: Biomolecules, 5 op**Opiskelumuoto:** Basic Studies**Laji:** Course**Vastuuyksikkö:** Faculty of Biochemistry and Molecular Medicine**Arvostelu:** 1 - 5, pass, fail**Opettajat:** Tuomo Glumoff**Opintokohteen kielet:** English**Leikkaavuudet:**

ay740157P	Basic biochemistry 1: Biomolecules (OPEN UNI)	4.0 op
ay740152P	Basic biochemistry 1: Biomolecules (OPEN UNI)	5.0 op
740143P	Biomolecules for Biochemists	8.0 op
740147P	Biomolecules for Bioscientists	8.0 op

ECTS Credits:

5 credits

Language of instruction:

English and Finnish

Timing:

autumn-(spring)

Learning outcomes:

Upon successful completion students are able to:

- tell the composition, structure and function of the major groups of biomolecules in cells; nucleic acids, proteins, carbohydrates and lipids and describe the forces that modulate their function.
- apply information in the right context and evaluate it critically

Contents:

This module provides an overview of biochemistry, outlining the forces involved in biomolecule structure and the chemical structures and properties of polynucleic acids, proteins, carbohydrates and lipids. There will also be an introduction to prebiotic evolution and a student debate on this subject. The module is arranged into lectures and workshops. All of the exercises are in English. Both a final examination and continuous assessment will count towards the final mark and attendance of some parts is compulsory.

Mode of delivery:

Face to face teaching

Learning activities and teaching methods:

30 h lectures, plus exercises

Target group:

Minor subject students, exchange students

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Mathews, van Holde & Ahern: Biochemistry, (3rd edition) , published by Addison Wesley Longman, Inc. or equivalent

Assessment methods and criteria:

Continuous assessment, final examination

Read more about [assessment criteria](#) at the University of Oulu webpage.**Grading:**

1-5/fail

Person responsible:

Tuomo Glumoff

Working life cooperation:

No

Other information:

This module is the same as Biomolecules for Biochemists except that it contains no practical component. Location of instruction: Linnanmaa campus

750121P: Cell biology, 5 op

Voimassaolo: - 31.07.2020

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Biology

Arvostelu: 1 - 5, pass, fail

Opettajat: Häggman, Hely Margaretha, Jaana Jurvansuu, Henrika Honkanen

Opintokohteen oppimateriaali:

Heino, Jyrki (2) , , 2004

Alberts, B. ym., , 2008

Lodish et al., , 2003

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS credits / 133 hours of work.

Language of instruction:

Finnish.

Timing:

B.Sc. 1st autumn.

Learning outcomes:

The student is familiar with cellular structure and functioning in plant and animal cells, understands the social structures in multicellular species and knows why and how the genetic organizations (in nucleus, chloroplast and mitochondria) are co-operating, maintaining and regulating the cellular metabolism. Student understands the common origin and evolution of life on planet Earth, and understands the material basis and mechanisms of this continuity.

Contents:

During the recent years especially the development of molecular and microscopic and imaging techniques has increased our knowledge on cells and their social interactions. The structural and functional characteristics of plant and animal cells will be covered as well as the genetic organization maintaining and regulating the system.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

48 h lectures, 87 h independent work including deepening the upper secondary school knowledge in biology and chemistry as home work and book reading. Part of the home assignments is obligatory.

Target group:

Compulsory to the biology and biochemistry students.

Prerequisites and co-requisites:

Good basics in biology and especially in chemistry from upper elementary school contributes learning.

Recommended optional programme components:

Cell biology is prerequisite for the following courses: Developmental biology-histology (755320A), Animal physiology (755323A), Plant biology lectures (756346A), Concepts of genetics (757109P). Course also gives readiness for studies in molecular biology and biochemistry.

Recommended or required reading:

Suitable parts of Reece ym. 2014: Campbell Biology: a global approach (10e), Pearson, 1350 s. 978-1-292-00865-3, Alberts, B. ym. 2015: Molecular Biology of the Cell (6e), Garland Science Publishing, London, 1464 s. ISBN: 9780815345244, Heino J. & Vuento M. 2014: Biokemian ja solubiologian perusteet (3. painos) WSOY Pro Oy, Helsinki, Jones R. ym. 2013: The molecular life of plants. Wiley-Blackwell, 742 s. ISBN : 978-0-470-87012-9. The availability of the literature can be checked from [this link](#).

[\[HK1\]](#)linkkiä en osannut uudistaa

Assessment methods and criteria:

Three subexams. After each lecture section is subexam. The only way to do the course is to pass all the three subexams (no credits to Oodi are given from subexams). No final exam. The subexams are ment to be done within one academic year.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5 / Fail. Final grade is average value of the three exams.

Person responsible:

Dr. Jaana Jurvansuu, Doc. Helmi Kuittinen and Prof. Hely Häggman.

Working life cooperation:

No.

Other information:

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757109P: Concepts of genetics, 5 op

Voimassaolo: 01.08.2015 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Biology

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

757122P Concepts of genetics for biochemists 3.0 op

753124P General genetics 4.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work.

Language of instruction:

Finnish.

Timing:

B.Sc. 1st spring.

Learning outcomes:

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

Contents:

Part 1. Mendelian genetics, including the ideas of quantitative and population genetics. Part 2. Molecular genetics: replication, transcription, translation, genetic code, mutations, repair of DNA. Part 3. Selected topics on developmental genetics, and genetics of health and diseases.

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

50 h lectures and seminars, 83 h independent studies, exam.

Target group:

Compulsory to the biology students (5 cr) Biochemistry students: parts 1 and 3 (3 cr) compulsory.

Prerequisites and co-requisites:

Cell biology (750121P) or equivalent knowledge.

Recommended optional programme components:

This course is prerequisite to all other genetics courses.

Recommended or required reading:

Materials are in Optima. Klug et al. 2012. Concepts of Genetics (11. ed). Pearson, 896 p. Alberts, B. et al. 2008: Molecular Biology of the Cell (5. ed). Garland Science Publishing, London, 1268 p.

The availability of the literature can be checked from [this link](#).**Assessment methods and criteria:**

Homeworks, home exams, lecture diary, exams.

Read more about [assessment criteria](#) at the University of Oulu webpage.**Grading:**

1-5 / Fail.

Person responsible:

Prof. Outi Savolainen.

Working life cooperation:

No.

Other information:

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ay756347A: Conservation of biodiversity (OPEN UNI), 5 op

Voimassaolo: 01.08.2015 -

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: Finnish

Leikkaavuudet:

756347A Conservation of biodiversity 5.0 op

Assessment methods and criteria:

Read more about [assessment criteria](#) at the University of Oulu webpage.

800317A: Continuity and derivative, 5 op

Voimassaolo: 01.01.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

802163P Derivative 5.0 op

802156P Derivative 4.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish

Timing:

1st year, 2nd period

Learning outcomes:

Upon completing the course the student is

- able to define the concept of continuous function and apply this definition in examples and deductions
- able to determine derivatives of functions
- able to apply derivative to study functions
- able to apply the concepts of continuity and derivative in various problems, including deductions

Contents:

The course concerns continuity and derivative of real-valued functions of one variable. The central topics are the intermediate value theorem, the chain rule, the derivative of inverse functions, the mean value theorem and its applications. Differential calculus is also applied to various problems. The aim of the course is to improve mathematical thinking as well as computational skills.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

28 h lectures, 14 h exercises, 91 h independent study

Target group:

1st year mathematics and physics students as well as students taking mathematics as a minor subject

Prerequisites and co-requisites:

Functions and limit 800119P, Introduction to mathematical deduction 802151P

Recommended optional programme components:

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Recommended or required reading:

In addition to the material hand out in the course, for example the book P. Harjulehto, R. Klén, M. Koskenoja, *Analyysiä reaalityyppillä*.

Assessment methods and criteria:

Final exam, exercises

Grading:

1-5, fail

Person responsible:

Esa Järvenpää

Working life cooperation:

no

Other information:

Replaces the course 802163P Derivative.

792301A: Economic Geography and its Applications, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

The lectures and related materials are in English. The examination can be answered either in English or in Finnish. The essay and the seminar can be carried out in either in English or in English.

Timing:

2nd year, 1st semester

Learning outcomes:

The course approaches economic geography as applied to the perspectives of regional development and policy. The aim of the course is to familiarize the student with current issues and related theoretical debates in economic geography. After the course, student is able to outline the main features of the central theories in economic geography, and to apply these theories in the context of regional development and policy.

Contents:

Lectures approach economic geography from varied angles, with emphasis on regional development and policy. The course material contains scientific papers connected to each lecture. The course also includes an essay and related seminar. In the essay and seminar, students deepen and enrich the content of the lectures by means of theoretical reflection and practical case studies.

Mode of delivery:

10 hours of lectures (in English), article package, examination and practicals (an essay and a seminar). Participation in the lectures is obligatory.

Learning activities and teaching methods:

Lectures, essay and seminar

Target group:

Obligatory for students of the regional development and regional policy, for others voluntary.

Prerequisites and co-requisites:

-

Recommended optional programme components:

The course is part of minor studies of regional development and regional policy.

Recommended or required reading:

Lectures and articles.

Assessment methods and criteria:

Examination, essay and seminar

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Toni Ahlqvist

Working life cooperation:

No.

Other information:

Exchange students are asked to contact Toni Ahlqvist before taking the course.

800119P: Functions and limit, 5 op

Voimassaolo: 01.01.2017 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Salmi

Opintokohteen kielet: Finnish

Leikkaavuudet:

802162P Continuity and Limit 5.0 op

802155P Continuity and limit 4.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish

Timing:

1st year, 1st period

Learning outcomes:

Upon completing the course the student is

- able to apply the triangle inequality and make approximations
- able to manipulate elementary functions such as polynomials and trigonometric functions
- able to define the limit of a sequence and the limit of a function as well as apply these definitions
- able to apply different techniques to determine limits.

Contents:

The course concerns real-valued functions of one variable. In particular elementary functions are defined and the monotonicity of functions is studied. The notion of absolute value is reviewed and applied to approximation. Also the triangle inequality is used in approximation. The central concept is the limit of a function, which is introduced via the limit of a sequence. The aim of the course is to improve deductive skills as well as computational skills.

Mode of delivery:

Face-to-face teaching, computer exercises

Learning activities and teaching methods:

28 h lectures, 14 h exercises, 91 h independent study

Target group:

1st year mathematics and physics students as well as students taking mathematics as a minor subject

Prerequisites and co-requisites:

Introduction to mathematical deduction 802151P is recommended to be taken simultaneously (or earlier).

Recommended optional programme components:

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Recommended or required reading:

Lecture notes, STACK exercises. Additional material: for example the book P. Harjulehto, R. Klén, M. Koskenoja, *Analyysiä reaalityyvuilla*.

Assessment methods and criteria:

Final exam, exercises

Grading:

1-5, fail

Person responsible:

Pekka Salmi

Working life cooperation:

No

Other information:

Replaces the course 802162P Continuity and Limit.

790322A: Geographical Information and Research, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Paasi Anssi, Janne Alahuhta

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish.

Timing:

1st year, 1st semester.

Learning outcomes:

The student will deepen his/her understanding about geographical information and research, and he/she will see the research as a part of society. The student will learn the correct practise in scientific research and the principles of copyrights.

Contents:

Communication in science, modes, ethics and interests of geogaphy and science in general;ethical scientific pratices; ethichs of researcher; as well as stucture of a research paper

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

12 hrs lectures, written exam.

Target group:

Common course to all 1st year students of Geography.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Course is part of minor studies of Geography.

Recommended or required reading:

To be announced later

Assessment methods and criteria:

Exam on exam day.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Janne Alahuhta, Anssi Paasi and Toni Ahlqvist

Working life cooperation:

No.

790340A: Geographies of global development, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Ridanpää

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay790340A Geographies of global development (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS

Language of instruction:

Finnish or English.

Timing:

2nd or 3rd year, 1st or 2nd semesters (autumn or spring semesters).

Learning outcomes:

This course gives knowledge of global development problems from geographical point of view. After the course the student can explain what development indicates and what kind of social and economic phenomena will explain both development and under development. He/she is also able to compare different actions that are aimed to diminish the uneven development based on different theories and strategies.

Contents:

The course familiarizes students to the theories that aim to explain differences in uneven development. Under development, and its social, cultural and economic aspects will be studied from national, regional and local level. This course also requires to political programs and strategies that are aimed to stabilize equalizes uneven development.

Mode of delivery:

Book exam.

Learning activities and teaching methods:

Book exam.

Target group:

Compulsory for teachers, others obligatory.

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

- Potter, R.B.T, T. Binns, J.A.Elliot & D.Smith (2004). Geographies of development.

Assessment methods and criteria:

Exam on examinarium.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Juha Ridanpää

Working life cooperation:

No.

800318A: Integral, 5 op

Voimassaolo: 01.01.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opettajat: Ville Suomala

Opintokohteen kielet: Finnish

Leikkaavuudet:

802164P Series and Integral 5.0 op

802353A Series and Integrals 6.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish

Timing:

1st year 3rd period

Learning outcomes:

After completing the course, the student

- manages the basics of integration theory
- understands the connection and differences between definite and indefinite integral
- is able to understand the connection between the integral and the derivative
- is able to use appropriate integration methods and knows where integration theory is applied

Contents:

Introduction to integration theory. Riemann-integral, The fundamental theorem of Calculus, Exponent function and logarithm, integration by parts, integration by substitution, improper integral. Applications of integration theory.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, exercises 14 h, independent work

Target group:

1st year mathematics and physics students as well as students taking mathematics as a minor subject

Prerequisites and co-requisites:

Functions and limit, Continuity and derivative

Recommended or required reading:

In addition to the material hand out in the course, for example the book P. Harjulehto, R. Klén, M. Koskenoja, *Analyysiä reaalityöillä*.

Assessment methods and criteria:

Final exam

Grading:

1-5

Person responsible:

Ville Suomala

Working life cooperation:

no

Other information:

Replaces the course 802164P Series and integral.

802120P: Introduction to Matrices, 5 op

Voimassaolo: 01.06.2015 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

802118P Linear Algebra I 4.0 op

ECTS Credits:

5 ECTS credits

Language of instruction:

Finnish

Timing:

1. year, 4. period

Learning outcomes:

After completing the course the student is able to

- apply arithmetic operations of matrices
- solve system of linear equations by matrix methods
- study linear dependence and linear independence of vectors
- recognize the subspace of \mathbb{R}^n and understands the concepts of basis and dimension of a vector space
- analyse matrices by the parameters and the vectors

Contents:

Vectors and matrices, Systems of linear equations, determinant of a matrix, subspaces of \mathbb{R}^n , linear dependence and linear independence of vectors, base, dimension, eigenvalues and eigenvectors of a matrix, diagonalization.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, Exercises 14 h

Target group:

Major and minor studies

Prerequisites and co-requisites:

802151P Introduction to Mathematical Deduction

Recommended or required reading:

Lecture notes

Grossman, S.I. : Elementary Linear Algebra, David C. Lay: Linear Algebra and Its Applications.

Assessment methods and criteria:

Final exam

Grading:

Fail, 1-5

Person responsible:

Marko Leinonen

Working life cooperation:

-

806113P: Introduction to Statistics, 5 op

Voimassaolo: 01.01.2011 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opettajat: Hanna Heikkinen

Opintokohteen oppimateriaali:

Wild, Christopher J. , , 2000

Grönroos, Matti (2) , , 2003

Opintokohteen kielet: Finnish

Leikkaavuudet:

806118P Introduction to Statistics 5.0 op

806119P A Second Course in Statistics 5.0 op

806116P Statistics for Economic Sciences 5.0 op

ECTS Credits:

5 ECTS cr

Language of instruction:

Finnish

Timing:

4th period. 1st or 2nd year of studies.

Learning outcomes:

Upon completion of the course, student will be

- able to identify and define the main principles of statistical research, collection of the data and analysis
- able to apply basic methods of descriptive statistics and statistical inference in simple quantitative research using a statistical software
- able to critically evaluate results of the statistical research presented in media
- prepared for teaching statistics in secondary school and high school
- prepared for participating in a group.

Contents:

- the nature and the meaning of statistics
- data and the acquisition of them: observations, variables, measuring and designs of a study
- the descriptive statistics of empirical distributions: tables, graphical presentations and descriptive measures of center, variation and dependence
- the most important probability distributions
- the principles and the basic methods of statistical inference: random sample, sample statistics, point estimation, confidence intervals and statistical testing of hypotheses.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 16 h (partly compulsory) / instructed group work (28 h) / independent work 80 h. Group works will be returned. Additional independently implemented learning diary tasks. Independent work contains also preparation for group work and peer assessment.

Target group:

Students of mathematical and physical sciences.

Prerequisites and co-requisites:

The recommended prerequisite prior to enrolling for the course is the completion of the courses: 802151P Introduction to mathematical deduction and 800119P Functions and limit.

Recommended optional programme components:

After the course, student is able to continue other statistics courses.

Recommended or required reading:

Lecture notes.

Assessment methods and criteria:

This course utilizes continuous assessment. Practical works and learning diaries are assessed weekly. In addition web tests and learning tasks. The assessment of the course is based on the learning outcomes of the course. The more detailed assessment criteria is available in the beginning of the course. In addition one compulsory lecture and peer assessment.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

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

Person responsible:

Hanna Heikkinen

Working life cooperation:

No

802151P: Introduction to mathematical deduction, 5 op

Voimassaolo: 01.08.2009 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Mathematics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay802151P Introduction to mathematical deduction (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS cr

Language of instruction:

Finnish

Timing:

First period at the first semester.

Learning outcomes:

After completing the course, student is:

- able to use different methods proving techniques
- able to use basic set theoretic concepts and definitions
- able to define and apply basic definitions related to functions

Contents:

The course in an introduction to mathematical deduction and introduces different types of proof techniques. The course covers the concepts familiar from upper secondary school studies more profound way. Main concepts in this course are basic set theory and functions.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, exercises 14 h

Target group:

Major and minor students

Prerequisites and co-requisites:

-

Recommended optional programme components:

-

Recommended or required reading:

Lecture notes

Assessment methods and criteria:

Final exam

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

Pass/Fail

Person responsible:

Marko Leinonen

Working life cooperation:

-

761115P: Laboratory Exercises in Physics 1, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

761121P Physical Measurements I 3.0 op
 761121P-01 Physical measurements I, exam 0.0 op
 761121P-02 Physical measurements I, lab. exercises 0.0 op
 800149P Introduction to LaTeX 2.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish

Timing:

Spring

Learning outcomes:

The student can safely make physical measurements, use different measurement tools, read different scales, handle the data, calculate the error estimations and make a sensible report of his laboratory measurements.

Contents:

The skill to make laboratory measurements is important for physicists. This is an introductory course how to make physical measurements and how to treat the measured data. Laboratory works are made in groups. The laboratory security is an essential part also in physics. Measurements are made with different instruments. As a result the most probable value is determined as well as its error. The skills obtained during this course can be applied in the other laboratory courses Laboratory exercises in physics 2 and 3.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 10 h, exercises 20 h (5 x 4 h). Five different works will be made during the course in groups. Self-study 103 h.

Target group:

For the students of the University of Oulu.

Prerequisites and co-requisites:

No specific prerequisites.

Recommended optional programme components:

800149P Introduction to LaTeX

Recommended or required reading:

Lecture material is in Finnish. Work instructions are available also in English.

Assessment methods and criteria:

Written reports of the experiments and one written examination.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Seppo Alanko

Working life cooperation:

No work placement period

Other information:

Includes parts:

761115P-01 Laboratory Exercises in Physics 1, lecture and exam

761115P-02 Laboratory Exercises in Physics 1, laboratory exercises

ay752316A: Macro fungi (OPEN UNI), 3 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:** Finnish**Leikkaavuudet:**

752316A Macro fungi 3.0 op

ECTS Credits:

3 cr.

Language of instruction:

Finnish / English.

Timing:

B.Sc. 3 rd autumn. NNE.

Learning outcomes:

Student is able to identify most common macrofungal species as fresh specimens and knows basics of fungal ecology.

Contents:

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

Mode of delivery:

Face-to-face teaching.

Learning activities and teaching methods:

14 h lectures, 25 h exercises including excursions, identification exam.

Target group:

Optional.

Prerequisites and co-requisites:

No.

Recommended optional programme components:

-

Recommended or required reading:

Course handout, Salo, P. and Nummela-Salo, U. 2002: Sienikurssi (752316). Toinen uusittu painos. Lajiesittelyt. Biologian laitoksen monisteita 2/2002, 41 p. and mushroom guides.

The availability of the literature can be checked from [this link](#).**Assessment methods and criteria:**

Species identification exam.

Grading:

1-5 / Fail.

Person responsible:

Dr. Annamari Markkola.

Working life cooperation:

No.

Other information:

-

802158P: Mathematics for Economic Sciences, 7 op**Voimassaolo:** 01.06.2014 -**Opiskelumuoto:** Basic Studies**Laji:** Course**Vastuuyksikkö:** Field of Mathematics**Arvostelu:** 1 - 5, pass, fail

Opettajat: Kari Myllylä

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay802158P Mathematics for Economic Sciences (OPEN UNI) 7.0 op

ECTS Credits:

7 ECTS cr

Language of instruction:

Finnish

Timing:

1. period. It is recommended to complete the course at the 1st autumn semester.

Learning outcomes:

After completing the course, student is able to

- define and apply basic mathematical concept such as rationals, absolute value, power and root function
- handle different types of functions and knows their special properties
- solve different equations and inequalities
- define the concepts of limit and continuity of a function
- calculate limits in case of different functions
- calculate and apply derivative, and knows the relevance of the concept
- use all mathematical concepts covered by the course in different problems related to economics (interest, investments, optimization and indeces)

Contents:

Course aims to build a solid background to mathematics in later economics courses. Course begins with a revision of concepts familiar from high school such as sequences, rationals, absolute value and powers. After that we focus on different types of functions such as polynomials, rational functions, exponential functions and logarithm. Different types of equations and inequalities, containing the functions mentioned above, are solved. Main concepts in the course are also limit of a function, continuity and derivative and their applications. Nämä käsitteet tullaan esittelemään kaikille kurssilla käsiteltäville funktiotyypeille.

After the more mathematical part, the focus is turned on economical applications (such as interests, optimization, investments, indeces).

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 40 h, exercises 20 h.

Target group:

Students in Oulu Business School

Prerequisites and co-requisites:

None

Recommended optional programme components:

After the course, student is able to continue other mathematics courses directed to the students in Oulu Business School.

Recommended or required reading:

Lecture notes

Assessment methods and criteria:

Mid-term exams and/or final exam

Grading:

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

Person responsible:

Kari Myllylä / Erkki Laitinen

Working life cooperation:

-

761118P: Mechanics 1, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opettajat: Vaara, Juha Tapani

Opintokohteen kielet: Finnish

Leikkaavuudet:

766343A	Mechanics	7.0 op
761111P	Basic mechanics	5.0 op
761101P	Basic Mechanics	4.0 op
766323A	Mechanics	6.0 op
761323A	Mechanics	6.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

- 761118P-01, Lectures and exam (4 cr)

- 761118P-02, Lab. exercises (1 cr)

Language of instruction:

The lectures will be in Finnish. The textbook is in English and exercises are selected from the textbook. For further information, contact the responsible person of the course.

Timing:

Autumn

Learning outcomes:

The student is able to describe the basic concepts of mechanics and to apply those when solving the problems related to mechanics.

Contents:

We encounter many phenomena related to mechanics in our everyday life. Most engineering sciences are based on mechanics and mechanics forms the basis of many other fields of physics, including modern physics. Contents in brief: Short summary of vector calculus. Kinematics, projectile motion and circular motion. Newton's laws of motion. Work and different forms of energy. Momentum, impulse and collisions. Rotational motion and moment of inertia. Torque and angular momentum. Rigid body equilibrium problems. Gravitation. Periodic motion. Fluid mechanics.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 30 h, 7 exercises (14 h), 2 laboratory exercises (3 hours/exercise), self-study 83 h

Target group:

For the students of the University of Oulu.

Prerequisites and co-requisites:

Knowledge of vector calculus and basics of differential and integral calculus.

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously.

Recommended or required reading:

Text book: H.D. Young and R.A. Freedman: University physics, Addison-Wesley, 13th edition, 2012, chapters 1-14. Also older editions can be used. Lecture material: Finnish lecture material will be available on the web page of the course.

Assessment methods and criteria:

Both parts (761118P-01 and 761118P-02) will be graded separately. The final grade of the course is the weighted average of the grades of part 1 (4 cr) and part 2 (1 cr).

761118P-01: Three midterm exams or final examination

761118P-02: Two laboratory exercises

Read more about assessment criteria at the University of Oulu webpage.

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Juha Vaara

Working life cooperation:

No work placement period

Other information:

<https://wiki oulu.fi/display/761118P>

Compulsory

761118P-01: Mechanics 1, lectures and exam, 0 op

Voimassaolo: 01.01.2017 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opettajat: Vaara, Juha Tapani

Opintokohteen kielet: Finnish

Leikkaavuudet:

766343A	Mechanics	7.0 op
761111P-02	Basic mechanics, lab. exercises	0.0 op
761111P-01	Basic mechanics, lectures and exam	0.0 op
761111P	Basic mechanics	5.0 op
761121P	Physical Measurements I	3.0 op
761101P	Basic Mechanics	4.0 op
761323A	Mechanics	6.0 op
766323A	Mechanics	6.0 op

Language of instruction:

The lectures will be in Finnish. The textbook is in English and exercises are selected from the textbook. For further information, contact the responsible person of the course.

Timing:

Autumn

Learning outcomes:

The student is able to describe the basic concepts of mechanics and to apply those when solving the problems related to mechanics.

Contents:

We encounter many phenomena related to mechanics in our everyday life. Most engineering sciences are based on mechanics and mechanics forms the basis of many other fields of physics, including modern physics. Contents in brief: Short summary of vector calculus. Kinematics, projectile motion and circular motion. Newton's laws of motion. Work and different forms of energy. Momentum, impulse and collisions. Rotational motion and moment of inertia. Torque and angular momentum. Rigid body equilibrium problems. Gravitation. Periodic motion. Fluid mechanics.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

The whole course: Lectures 30 h, 7 exercises (14 h), 2 laboratory exercises (3 hours/exercise), self-study 83 h

Target group:

For the students of the University of Oulu

Prerequisites and co-requisites:

Knowledge of vector calculus and basics of differential and integral calculus.

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

Text book: H.D. Young and R.A. Freedman: University physics, Addison-Wesley, 13th edition, 2012, chapters 1-14. Also older editions can be used. Lecture material: Finnish lecture material will be available on the web page of the course.

Assessment methods and criteria:

761118P-01: Three midterm exams or final examination

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Juha Vaara

Working life cooperation:

No work placement period

Other information:[Course website](#)

Both parts (761118P-01 and 761118P-02) will be graded separately. The final grade of the course is the weighted average of the grades of part 1 (4 cr) and part 2 (1 cr).

761118P-02: Mechanics 1, lab. exercises, 0 op

Voimassaolo: 01.01.2017 -

Opiskelumuoto: Basic Studies

Laji: Partial credit

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

766343A	Mechanics	7.0 op
761111P-01	Basic mechanics, lectures and exam	0.0 op
761111P-02	Basic mechanics, lab. exercises	0.0 op
761111P	Basic mechanics	5.0 op
761101P	Basic Mechanics	4.0 op
761323A	Mechanics	6.0 op
766323A	Mechanics	6.0 op

Timing:

Autumn

Learning outcomes:

The student is able to describe the basic concepts of mechanics and to apply those when solving the problems related to mechanics.

Contents:

We encounter many phenomena related to mechanics in our everyday life. Most engineering sciences are based on mechanics and mechanics forms the basis of many other fields of physics, including modern physics. Contents in brief: Short summary of vector calculus. Kinematics, projectile motion and circular motion. Newton's laws of motion. Work and different forms of energy. Momentum, impulse and collisions. Rotational motion and moment of inertia. Torque and angular momentum. Rigid body equilibrium problems. Gravitation. Periodic motion. Fluid mechanics.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

The whole course: Lectures 30 h, 7 exercises (14 h), 2 laboratory exercises (3 hours/exercise), self-study 83 h

Target group:

For the students of the University of Oulu

Prerequisites and co-requisites:

Knowledge of vector calculus and basics of differential and integral calculus.

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously.

Other information:

[Course website](#)

740149P: Metabolism I, 4 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Faculty of Biochemistry and Molecular Medicine

Arvostelu: 1 - 5, pass, fail

Opettajat: Tuomo Glumoff

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay740158P Basic biochemistry 3: Metabolis (OPEN UNI) 4.0 op

ay740154P Basic biochemistry 3: Metabolis (OPEN UNI) 3.0 op

740146P Metabolism I 6.0 op

ECTS Credits:

4 credits

Language of instruction:

Finnish

Timing:

spring

Learning outcomes:

Students will be able to explain the main principles of how the metabolism is made up, will get a detailed picture of the energy metabolism, and will be able to organize part of the wholeness of metabolism, particularly how energy metabolism is networked to the synthesis and degradation of biomolecules.

Contents:

On this course the central concepts and mechanisms of metabolism, its regulation and the integration of metabolic pathways will be introduced, like anabolism and catabolism, linking of different pathways, and metabolic regulation. Especially the energy metabolism will be studied, concerning carbohydrates, lipids and the respiratory chain. Combined with the course Metabolism II the students will get a good overview on the principles of metabolism, metabolic integration and the methods to study metabolism.

Mode of delivery:

Face to face teaching

Learning activities and teaching methods:

Lectures (28 h), problem-based exercises (workshops) 6 h and final exam.

Target group:

Minor subject students

Prerequisites and co-requisites:

Biomolecules for Biochemists or Biomolecules for Bioscientists or Biomolecules

Recommended optional programme components:

-

Recommended or required reading:

-

Assessment methods and criteria:

Problem-based exercises and a final exam will count towards the final grade.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5/fail.

Person responsible:

Tuomo Glumoff

Working life cooperation:

-

Other information:

This module is the same as Metabolism I (740146P), except that it contains no laboratory component.

Location of instruction: Linnanmaa

791635A: Physical Geography of Fennoscandia, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Janne Alahuhta

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay791635A Physical Geography of Fennoscandia (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS

Language of instruction:

Finnish and English

Timing:

2nd or 3rd year, 1st or 2nd semester.

Learning outcomes:

Course familiarizes students to the geography of the Fennoscandia. When the student has passed the written exam, he/she can define the special characters of the physical geography of Fennoscandia

Contents:

Physical geography of the Fennoscandia.

Mode of delivery:

Book exam.

Learning activities and teaching methods:

Book exam.

Target group:

Obligatory for teachers, others voluntary.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Course is part of minor studies of Geography.

Recommended or required reading:

- Seppälä, Matti (ed.) (2005). Physical Geography of Fennoscandia, 1st ed. 432 p. Oxford University Press.

Assessment methods and criteria:

Exam on examinarium.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Janne Alahuhta

Working life cooperation:

No.

761108P: Physical world view, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

761112P Physical world view 3.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish

Timing:

Autumn

Learning outcomes:

After the course student can see the position of physics in the advancement of scientific world view and technology. The student has a comprehensive view of different learning and studying methods (s)he can use later on.

Contents:

The forming of key concepts in physics, using models and observations in advancing both classical and modern physics. The meaning of applying physics in modern society. Getting to know different areas of physics research.

Mode of delivery:

Multiform teaching

Learning activities and teaching methods:

48 h face-to-face teaching, 85 h independent work including course work and group work

Target group:

Primarily for the students of the degree programme in physics. Also for the other students of the University of Oulu.

Prerequisites and co-requisites:

No specific prerequisites

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously.

Recommended or required reading:

Feynman, R. The Character of Physical Law, Penguin Books 1992 (or equivalent, there are several prints). The original Messenger Lectures by Richard Feynman in 1965 (7x55min) can be found online with search "Richard Feynman messenger lectures".

Assessment methods and criteria:

Passed course work or final exam

Grading:

Numerical grading scale 0-5, where 0 = fail

Person responsible:

Laura Timonen

Working life cooperation:

No work placement period

Other information:

<https://wiki oulu.fi/display/761112P/>

756346A: Plant biology lectures, 5 op

Voimassaolo: 01.08.2015 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Biology

Arvostelu: 1 - 5, pass, fail

Opettajat: Anna-Maria Pirttilä, Häggman, Hely Margaretha

Opintokohteen kielet: Finnish

Leikkaavuudet:

752345A Basics of functional plant biology, lectures 4.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work.

Language of instruction:

Finnish.

Timing:

B.Sc. 2nd spring.

Learning outcomes:

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

Contents:

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

Mode of delivery:

Face-to-face teaching, book exam.

Learning activities and teaching methods:

Lectures (20 h) and exams.

Target group:

Compulsory to the biology students.

Prerequisites and co-requisites:

Cell biology (750121P) or equivalent knowledge helps in following this course. This course is a prerequisite for course Plant biology practicals (756341A) and Advanced course in plant biology (752682S).

Recommended optional programme components:

-

Recommended or required reading:

Taiz, L. et al. 2015. Plant Physiology and Development. Sixth Edition. 761 p. Sinauer Associates, Inc. ISBN-9781605352558.

Terävä, E. & Kanervo, E. 2008: Kasvianatomia or equivalent.

The availability of the literature can be checked from [this link](#).

Assessment methods and criteria:

Lectures, book, exams.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5 / Fail.

Person responsible:

Prof. Hely Häggman and Doc. Anna Maria Pirttilä.

Working life cooperation:

No.

Other information:

-

790326A: Qualitative research methods, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Ridanpää

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish.

Timing:

2nd year, 2nd semester.

Learning outcomes:

The course offers proficiency in conducting qualitative research. After the course student is acquainted with how qualitative methods are used in geography. Student is also able to compare various stages

Contents:

The course focuses on the basic concepts of qualitative research with introducing the various manners for approaching geographical phenomena qualitatively. The lectures focus on qualitative research methods and research process in general. Students also read the topical articles in human geography and ponder various factors concerning the philosophical viewpoints, research material collection and qualitative analysis.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

8 hrs lectures, 20 hrs practicals, seminar report.

Target group:

The course is aimed at all students in geography, excluding students in physical geography.

Prerequisites and co-requisites:

790104P Introduction to systematic Human Geography

Recommended optional programme components:

The course can be studied as a subsidiary subject. The course is linked with Field course in human geography.

Recommended or required reading:

Will be announced later.

Assessment methods and criteria:

A practical work.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Juha Ridanpää

Working life cooperation:

No.

766116P: Radiation physics, biology and safety, 5 op

Voimassaolo: 01.01.2015 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Alanko

Opintokohteen kielet: Finnish

Leikkaavuudet:

761116P Radiation physics, biology and safety 3.0 op

ECTS Credits:

5 ECTS credits

Language of instruction:

Finnish

Timing:

Spring

Learning outcomes:

The student knows the origin of ionising radiation and the principles of its interaction with matter. He/she can explain the essential effects of ionising radiation on human tissue and remembers the principles of radiation safety and laws and regulations (in Finland) concerning this.

Contents:

The topics of the course include the origin of ionizing radiation e.g. as a result of radioactive decay and in nuclear reactions, the interaction between radiation and matter, the detection and measurements of radiation, physical quantities and measuring units related to radiation, radiation in the environment, and examples of utilizing radiation. The biologic effects of radiation and the legislation on radiation safety are also discussed.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, 7 problem solving exercises (14 h) and 2 laboratory exercises (8 h). Self-study 90 h.

Target group:

For the students of the University of Oulu.

Prerequisites and co-requisites:

No specific prerequisites

Recommended optional programme components:

740368A Radiation and safety

Recommended or required reading:

Lecture material (in Finnish), Laws and regulations concerning radiation safety

Assessment methods and criteria:

Final examination

Grading:

Numerical grading scale 0 – 5, where 0 = fail

Person responsible:

Seppo Alanko

Working life cooperation:

No work placement period

790106A: Region, culture and society, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Paasi Anssi

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

English and Finnish

Timing:

2nd year, 1st semester.

Learning outcomes:

A student can explain and represent the main ideas of regional geography, theoretical and practical meanings of concept 'region' and the role of region in order to manage society and culture.

Contents:

Development of (contemporary) regional geography, theoretical meanings of concept 'region', region and power. Lecture serves different fields of specialization.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

16 h lectures and an exam (lectures and literature)

Target group:

Common course to all students of Geography.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Course is part of minor studies of Geography.

Recommended or required reading:

Material will be delivered during the course.

Assessment methods and criteria:

Exam on exam day.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Anssi Paasi.

Working life cooperation:

No.

792319A: Regional politics, policy and development: Northern Europe, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Heikki Sirviö

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish and English. English speaking students should contact the teacher before the course.

Timing:

2nd year, 1st semester

Learning outcomes:

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

- analyse and classify basic theories, concepts and models of regional development and policy,

- apply theories, concepts and models in interpretation, recognize their use in scientific papers and discuss them,
- perceive the characteristics and challenges in the regional development and policy in Northern Europe.

Contents:

Students familiarize themselves with the basic theories, concepts, and models of regional development and policy, and their application in practical challenges and decision-making by reading and analysing scientific articles.

Mode of delivery:

Face-to-face teaching, independent work.

Learning activities and teaching methods:

The course involves 14 h of reading group sessions and 118 h of self-learning by reading the assigned articles, writing memos and preparing an essay.

Target group:

Students who take the Regional development and policy module.

Prerequisites and co-requisites:

-

Recommended optional programme components:

The course does not require additional studies carried out at the same time.

Course is part of minor studies of regional development and regional policy.

Recommended or required reading:

Reading list will be available by the beginning of the course.

Assessment methods and criteria:

The assessment criteria are based on the learning outcomes of the course.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Heikki Sirviö

Working life cooperation:

No.

790305A: Special themes in Human Geography, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Paasi Anssi

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

ECTS Credits:

5 ECTS

Language of instruction:

Finnish.

Timing:

1st year, 2nd semester.

Learning outcomes:

After lectures the student is familiar with the research fields of cultural geography of the department and their research practices.

Contents:

The aim is to make student to interpret and understand cultural reality in geographical way. Lectures will lead to the selected themes of the cultural geography.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

20 hrs lectures and a study circle

Target group:

Obligatory for students of Human Geography and HG-orientated teachers.

Prerequisites and co-requisites:

-

Recommended optional programme components:
 Course is part of the minor studies of Geography for students of Biology (teachers). This course is possible to perform by substituting book exam (790348A).

Recommended or required reading:
 Reading circle:
 • Häkli, J. (1999). Meta hodos: johdatus ihmismaantieteeseen. 231 s.

Exam
 • Other readings, to be announced later.

Assessment methods and criteria:
 Exam on exam day and participation in reading circle
 Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:
 1-5.

Person responsible:
 Anssi Paasi and Tuomo Alhojärvi

Working life cooperation:
 No.

790303A: Special themes in Physical Geography, 5 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Janne Alahuhta

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish.

Timing:

1st year, 2nd semester.

Learning outcomes:

After this course, the student is able to define and interpret the phenomena of physical nature.

Contents:

Special characteristics of northern nature. GIS in environmental research.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

8 hrs lectures, 20 hrs practicals and report.

Target group:

Obligatory for students of Physical Geography and teachers.

Prerequisites and co-requisites:

GIS Basics and Cartography (790101P)

Recommended optional programme components:

Course is part of the minor studies of Geography. Course is also possible to perform by substituting book exam (790346A)

Recommended or required reading:

-

Assessment methods and criteria:

Learning diary and report.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1-5.

Person responsible:

Janne Alahuhta

Working life cooperation:

No.

790350A: Special themes in Regional Development and Regional Policy, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Jonne Hytönen

Opintokohteen kielet: Finnish

ECTS Credits:

5 ECTS

Language of instruction:

Finnish and English

Timing:

2nd or 3rd year, 1st or 2nd semesters (autumn or spring semesters)

Learning outcomes:

- 1) Student understands the idea of Communicative Planning Theory. Student acquaint her/himself with critical theoretical debates regarding the communicative approach.
- 2) Student understands the theoretical debates about strategic planning and city-regionalism. Student learns to interpret novel and forthcoming reforms in the planning system from a critical point of view.

Contents:

communicative planning theory, market-driven processes and planning, strategic planning and city-regionalism, reforms of planning system

Mode of delivery:

Compilation of essays. Exchange students are asked to contact the teacher in advance, if planning to pass the course during her/his exchange.

Learning activities and teaching methods:

Student studies the given literature with care and writes the compilation of essays independently. Detailed instructions from the teacher.

Target group:

Students specializing in Regional Development and Policy, voluntary for others.

Prerequisites and co-requisites:

The course is planned for those students who already have some basic knowledge of regional development or regional policy. The student should have passed some general level introductory studies to the field of regional development/policy in her/his home institution (equivalent to the course 'Introduction to Regional Development and Regional Policy' in Oulu) before attending this course. Please contact teacher in advance and clarify your starting level to her/him.

Recommended optional programme components:

-

Recommended or required reading:

Ask instructions and the list of literature from the teacher.

Assessment methods and criteria:

Compilation of essays as independent work.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Jonne Hytönen

Working life cooperation:

No.

Other information:

Exchange students are asked to contact the teacher before registration.

790320A: Tourism planning and development, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Kaarina Tervo-Kankare

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay790320A Tourism planning and development (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS

Language of instruction:

Finnish and English.

Timing:

3 year, 2nd semester.

Learning outcomes:

After this course, student understands the relationship between tourism planning and regional development and he/she knows the most central models of planning and development in local, regional and national level. He/she knows the starting points of the tourism policy in local and European level, the background aspects of the tourism policy.

Contents:

Concepts and theories of the tourism development and tourism planning, economic impacts in regional level and basic aspects of the tourism policy and regional tourism strategies.

Mode of delivery:

Face-to-face learning.

Learning activities and teaching methods:

16 hrs lectures, written seminar work and presentation, exam.

Target group:

Students who're specialising to Tourism Geography. Course is part of minor studies tourism geography.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Course is part of minor studies tourism geography.

Recommended or required reading:

- Hall, C.M. (2000). Tourism Planning: Policies, Processes and Relationships. 236 s. Prentice Hall, Harlow.
- Fennel, David A. (1999 or later version). Ecotourism – an introduction (partly).

Assessment methods and criteria:

Exam on exam day.

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Kaarina Tervo-Kankare

Working life cooperation:

No.

Other information:

Written exam can be written also in Finnish. Written seminar work and presentation is in English. If needed, this course can be organised as written exam and practical's.

761310A: Wave motion and optics, 5 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Alanko

Opintokohteen kielet: Finnish

Leikkaavuudet:

766349A Wave motion and optics 7.0 op

761114P Wave motion and optics 5.0 op

761114P-02	Wave motion and optics, lab. exercises	0.0 op
761114P-01	Wave motion and optics, lectures and exam	0.0 op
766329A	Wave motion and optics	6.0 op
761104P	Wave Motion	3.0 op

ECTS Credits:

5 ECTS credits / 133 hours of work

Language of instruction:

Finnish. The course material and exercises are available in English.

Timing:

First spring

Learning outcomes:

The student is able to treat different types of waves by methods of general theory of wave motion. The student is also able to solve problems related to basic optics and apply her/his knowledge to teaching and research in physics.

Contents:

General principles of wave motion, sound, electromagnetic waves, propagation of light, image formation in mirrors and lenses, optical instruments, interference, Fraunhofer diffraction, diffraction grating.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, exercises 14 h, 2 laboratory exercises (3 hours/exercise), self-study 90 h

Target group:

No specific target group

Prerequisites and co-requisites:

Basic skills in mathematics.

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously

Recommended or required reading:

H. D. Young and R. A. Freedman, University Physics, Addison-Wesley, 2000 ja 2004, F. L. Pedrotti ja L. S. Pedrotti, Introduction to optics, Prentice-Hall, 2. ed., 1993 ja E. Hecht, Optics, (3rd ed.), Addison Wesley Longman, 1998.

Assessment methods and criteria:

Two written intermediate examinations or one final examination

Grading:

Numerical grading scale 0 – 5, where 0 is fail

Person responsible:

Seppo Alanko

Working life cooperation:

No work placement period

Other information:

Includes parts:

761310A-01 Wave motion and optics, lectures and exam

761310A-02 Wave motion and optics, lab. exercises

*Compulsory***761310A-01: Wave motion and optics, lectures and exam, 0 op**

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Partial credit

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Alanko

Opintokohteen kielet: Finnish

Leikkaavuudet:

766349A Wave motion and optics 7.0 op

761114P Wave motion and optics 5.0 op

761114P-01 Wave motion and optics, lectures and exam 0.0 op

761114P-02	Wave motion and optics, lab. exercises	0.0 op
766329A	Wave motion and optics	6.0 op
761104P	Wave Motion	3.0 op

Language of instruction:

Finnish. The course material and exercises are available in English.

Timing:

Firts spring

Learning outcomes:

The student is able to treat different types of waves by methods of general theory of wave motion. The student is also able to solve problems related to basic optics and apply her/his knowledge to teaching and research in physics.

Contents:

General principles of wave motion, sound, electromagnetic waves, propagation of light, image formation in mirrors and lenses, optical instruments, interference, Fraunhofer diffraction, diffraction grating.

Mode of delivery:

Face-to-face teaching

Learning activities and teaching methods:

Lectures 28 h, exercises 14 h, 2 laboratory exercises (3 hours/exercise), self-study 90 h

Target group:

No specific target group

Prerequisites and co-requisites:

Basic skills in mathematics

Recommended optional programme components:

No alternative course units or course units that should be completed simultaneously.

Recommended or required reading:

H. D. Young and R. A. Freedman, University Physics, Addison-Wesley, 2000 ja 2004, F. L. Pedrotti ja L. S. Pedrotti, Introduction to optics, Prentice-Hall, 2. ed., 1993 ja E. Hecht, Optics, (3rd ed.), Addison Wesley Longman, 1998.

Assessment methods and criteria:

Two written intermediate examinations or one final examination

Grading:

Numerical grading scale 0 – 5, where 0 is fail

Person responsible:

Seppo Alanko

Working life cooperation:

No work placement period

761310A-02: Wave motion and optics, lab. exercises, 0 op

Voimassaolo: 01.08.2017 -

Opiskelumuoto: Intermediate Studies

Laji: Partial credit

Vastuuyksikkö: Field of Physics

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

766349A	Wave motion and optics	7.0 op
761114P	Wave motion and optics	5.0 op
761114P-01	Wave motion and optics, lectures and exam	0.0 op

761114P-02 Wave motion and optics, lab. exercises 0.0 op

766329A Wave motion and optics 6.0 op

761104P Wave Motion 3.0 op

Ei opintojaksokuvauksia.

790349A: World regional geography, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Field of Geography

Arvostelu: 1 - 5, pass, fail

Opettajat: Janne Alahuhta

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay790349A World regional geography (OPEN UNI) 5.0 op

ECTS Credits:

5 ECTS

Language of instruction:

Finnish and English.

Timing:

2nd or 3rd year, 1st or 2nd semester.

Learning outcomes:

After the course, the student can define and interpret different regional phenomena and processes in the global level.

Contents:

Regional phenomena of the world and their role in Physical Geography.

Mode of delivery:

Online course in Moodle: <https://moodle oulu.fi/course/view.php?id=584>

Target group:

Recommended for teachers, others voluntary.

Prerequisites and co-requisites:

-

Recommended optional programme components:

Course is part of the minor studies of geography.

Assessment methods and criteria:

Read more about [assessment criteria](#) at the University of Oulu webpage.

Grading:

1–5.

Person responsible:

Janne Alahuhta

Working life cooperation:

No.

Other information:

The course will be arranged twice during an academic year. The course consist of five periods. Each of these periods last for two weeks.