Opasraportti

LuTK - Geosciences 2011-12 (2011 - 2012)

Tutkintorakenteisiin kuulumattomat opintokokonaisuudet ja -jaksot

774301A: A Basic Course in Geochemistry, 6 op
300002M: Advanced Information Skills, 1 op
773646S: Advanced field techniques, 3 op
773616S: Aerial photo interpretation in surficial geology, 5 op
774304A: Analytical methods in geochemistry, 5 op
772631S: Archean Geology, 5 op
771303A: Bachelor of Science thesis, 9 op
771102P: Basic course in mineralogy, 6 op
773303A: Basics of glacial geology, 4 op
772613S: Bedrock geology of Finland, 6 op
772334A: Bedrock mapping, 3 op
773341A: Biostratigraphy: diatom analyses, 5 op
773337A: Biostratigraphy: pollen analyses, 5 op
771302A: Digital modelling and geological information systems in geosciences, 5 op
771111P: Endogenic Processes, 6 op
Compulsory
771111P-01: Endogenic processes, Lectures, 0 op
771111P-02: Endogenic processes, Rock identification, 0 op
773314A: Environmental Geology, 3 op
773673S: Environmental geology and geophysicfield course, 3 op
772640S: Excursion, 5 op
773606S: Excursion in surficial geology, 2 - 5 op
773610S: Excursion on glacial geology of Lapland, 4 op
773612S: Excursion on regional surficial geology, 3 - 6 op
771112P: Exogenic Processes, 4 op
Compulsory
771112P-01: Exogenic Processes, lectures, 0 op
Electives
771112P-02: Exogenic Processes, practices, 0 op
772103P: Field course in bedrock geology, 3 op
772662S: Field course in bedrock geology and geophysics, 3 op
773103P: Field course in surficial geology, 3 op
773324A: Field mapping of Quaternary deposits, 5 op
772310A: General mineralogy, 5 op
774636S: Geochemistry of Mining Environment, 5 op
774315A: Geochemistry of igneous rocks, 4 op
774630S: Geochemistry of radiogenic isotopes, 6 op
772628S: Geology of basic layered intrusions, 5 op
772621S: Geology of alkaline rocks, carbonatites and kimberlites, 5 op
488115S: Geomechanics, 5 op
773601S: Glacial Geology II, 5 op
773621S: Global environmental and climate change during the Cenozoic, 4 op
488108S: Groundwater Engineering, 5 op
773331A: Hydrogeology, 5 op

488102A: Hydrological Processes, 5 op
772341A: Igneous Petrology, 7 op
030005P: Information Skills, 1 op
774329A: Introduction to Environmental Geochemistry, 5 op
771108P: Introduction to Ore Geology, 2 op
771106P: Introduction to bedrock geology of Finland, 2 op
771107P: Introduction to historical geology and surficial geology of Finland, 2 op
772335A: Introduction to ore mineralogy, 5 op
750616S: Legislation in environmental protection, 5 op
773613S: Literature essay, 5 op
773607S: Literature study, 5 op
772615S: Literature study, 5 op
772666S: Master's thesis, 30 op
772345A: Metamorphic Petrology, 6 op
Compulsory
772345A-01: Metamorphic petrology, lectures, 0 op
772345A-02: Metamorphic petrology, exercises, 0 op
772619S: Mineralogical instrumental analytics, 4 op
772601S: Mineralogy - advanced course, 5 op
772608S: Mining geology, 3 op
488111S: Modelling in Geoenvironmental Engineering, 5 op
772339A: Optical mineralogy, 6 op
772339A-01: Optical mineralogy, lectures, 0 op
772339A-02: Optical mineralogy, practices, 0 op
772385A: Ore geology, 5 op
770001Y: Orientation course for new students, 1 op
773317A: Physical Sedimentology, 5 op
772636S: Practical course in fluid inclusion, 4 op
772635S: Practical course in mineral chemistry, 4 op
771304A: Practical training, 4 - 5 op
773657S: Pro gradu thesis, 30 op
773343A: Quaternary Geology Seminar I, 5 op
773306A: Quaternary Geology of Finland, 5 op
773300A: Quaternary Stratigraphy, 5 op
773619S: Quaternary geology seminar II, 5 op
772632S: Regional ore geology, 5 op
772344A: Sedimentary Petrology, 5 op
Compulsory
772344A-01: Sedimentary Petrology, lectures, 0 op
772344A-02: Sedimentary Petrology, practices, 0 op
773648S: Sedimentary Structures, 5 op
773647S: Sedimentology, 6 op
772624S: Seminar in geology and mineralogy 2, 5 op
772337A: Seminar in geology and mineralogy I, 5 op
772667S: Seminar in ore geology, 5 op
772658S: Special issues in geology and mineralogy, 1 - 9 op
773608S: Special questions in Quaternary geology, 5 op
772316A: Structural geology, 5 op
772609S: Structural geology workshop, 6 op
773615S: Studia Generalia -lectures, 2 op
773679S: Studies in other universities, 0 op
772690S: Studies in other universities and colleges, 0 op
773322A: Surficial geology in ore exploration, 5 op
773641S: Surficial geology in ore exploration, advanced course 1, 5 op
773642S: Surficial geology in ore exploration, advanced course 2, 5 op
773316A: Technical Properties of Sediments, 8 op
772333A: Technical mineralogy, 5 op
772357A: Technical use of rocks and minerals, 4 op
772620S: Tectonics, 5 op
771100P: The Earth in Universe, 2 op
773345A: Work practice 2, 4 - 5 op
772614S: Workshop in bedrock mapping, 5 op

Opintojaksojen kuvaukset

Tutkintorakenteisiin kuulumattomien opintokokonaisuuksien ja -jaksojen kuvaukset

774301A: A Basic Course in Geochemistry, 6 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Eero Hanski
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
1st or 2nd spring
Learning outcomes:
The main objective is to provide students with the basic knowledge of various aspects of geochemistry .
Contents:
Geochemistry as a field of science; history of geochemistry; tasks and fields of geochemistry; origin of chemical elements; origins and structure of the Earth; meteorites; moon and planets; composition of earth's different spheres; geochemical differentiation; geochemical circulation; the geochemical characteristics and circulation of elements; geochemistry of disintegration and stratification; pH-Eh-diagrams; clays; carbonate sediments; geochemical processes; the main fields of geochemistry and their applications.
Learning activities and teaching methods:
32 h lectures, 12 h exercises
Recommended optional programme components:
780109P
Recommended or required reading:
Gill, Robin, Chemical Fundamentals of Geology, Chapman & Hall, London, 1996, 298 p. And Mason, B. & Moore, C.B.: Principles of Geochemistry, 4th Student Edition, J. Wiley, New York, 1982, p. 187-209.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
E. Hanski

300002M: Advanced Information Skills, 1 op

Voimassaolo: 01.08.2009 -
Opiskelumuoto: Other Studies
Laji: Course
Vastuuyksikkö: Faculty of Science
Arvostelu: 1 - 5, pass, fail
Opettajat: Sassali, Jani Henrik
Opintokohteen kielet: Finnish

ECTS Credits:
1 ECTS credit
Language of instruction:
Finnish
Timing:
Recommend to degree students who are working on their diploma/master's thesis. The course unit is held once in the autumn and once in the spring semester.
Learning outcomes:
Students know the different phases of scientific information retrieval process and basic techniques of systematic information search. They will find the most important reference databases of their discipline and know how to evaluate information sources and search results.

Contents:
Scientific information retrieval, evaluation of search results and information sources, information search on subject areas of diploma/master's thesis.

Mode of delivery:
Blended teaching: lectures, web-based learning material and exercises in Optima environment, personal guidance
Learning activities and teaching methods:
Lectures 6h, self-study 20h, personal guidance 1h
Recommended or required reading:
Parts from the following chapters of the Toolbox of Research: https://wiki.oulu.fi/display/tor/1.1+Finding+scientific+information
https://wiki.oulu.fi/display/tor/1.3.1+Evaluation+based+on+academic+publishing

Assessment methods and criteria:
Passing the course requires participation in the lectures (6h) and personal guidance and successful completion of the course assignments.
Grading:
pass/fail
Person responsible:
Science and Technology Library Tellus, tellustieto (at) oulu.fi
Other information:
http://www.kirjasto.oulu.fi/index.php?id=1250

773646S: Advanced field techniques, 3 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
3 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
After completion students are able to use appropriate field methods and approaches to solve particular research problem in Quaternary geology.
Contents:
Planning and carrying out research in the field. An introduction to various field methods and analyzing techniques.
Grading:
pass/fail
Person responsible:
V. Peuraniemi or J. P. Lunkka

773616S: Aerial photo interpretation in surficial geology, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Upon completion of the course, student should be able to identify and interpret basic landforms from air photos.
Contents:
Basics of air photo interpretation; identifying landforms from air photos and topography maps; mapping based on air photo interpretation and the necessary field research. Students draw up a map of a small area.
Learning activities and teaching methods:
20 h lectures, 30 h practical exercises
Assessment methods and criteria:
excersices and an examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

774304A: Analytical methods in geochemistry, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
After the course students should know which kind of sample pretreatment and analysis methods are used for geological samples.
Contents:
Detection limits and errors in analysis, presentation of analytical results, sampling, sample pretreatment, sample digestion (melts, solutions), silicate analysis theories and practice of different instrumental methods (AAS, XRF, ICP-AES, ICP-MS, TIMS), a visit to a geochemical laboratory.
Learning activities and teaching methods:
24 h lectures, 6 h exercises
Recommended optional programme components:
Basic course in geochemistry (774301A)
Recommended or required reading:
Gill, Robin (ed.): Modern analytical geochemistry: an introduction to quantitative chemical analysis for earth, environmental and materials scientists, Harlow, Longman, 1997, 329 p. and Sawyer, Clair N., McCarty, Perry L., Parkin, Gene F.: Chemistry for Environmental Engineering and Science, Boston, McGraw-Hill, 2003, p. 410-451.
Assessment methods and criteria:

examination
Grading:
1-5/fail
Person responsible:
E. Hanski

772631S: Archean Geology, 5 op

Voimassaolo: 01.08.2010 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Maier, Wolfgang Derek
Opintokohteen kielet: English

Ei opintojaksokuvauksia.

771303A: Bachelor of Science thesis, 9 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

ECTS Credits:
9 credits
Language of instruction:
finnish
Timing:
3rd year
Learning outcomes:
Students show that they have basic knowledge of the essential methods of their research field and they are able to use the scientific literature.
Contents:
A thesis based on individual research of literature, field work or laboratory work. Before starting the thesis, students must agree upon the details of the thesis with their professor.
Grading:
pass / fail
Person responsible:
professors

771102P: Basic course in mineralogy, 6 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku, Hanna Junttila
Opintokohteen oppimateriaali:
Risto Piispanen ja Pekka Tuisku (http;//cc.oulu.fi/ petuisku/Mineralogia/MinPer.htm, , 2005
Opintokohteen kielet: Finnish

ECTS Credits:

5 credits
Language of instruction:
finnish
Timing:
1st autumn
Learning outcomes:
Students know a basic knowledge on mineralogy.
Contents:
Crystal, crystal systems, mineral, rocks. Formation of minerals in geological processes, chemical and physical properties of minerals, occurrence and utilization. Exercises are compulsory.
Learning activities and teaching methods:
20 h lectures, 16 h exercises
Recommended or required reading:
Risto Piispanen ja Pekka Tuisku (2005) Mineralogian perusteet. http://cc.oulu.fi/~petuisku/Mineralogia/MinPer.htm
Assessment methods and criteria:
compulsory exercises **,** examination
Grading:
1-5/fail
Person responsible:
P. Tuisku

773303A: Basics of glacial geology, 4 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should have acquired knowledge of theories of how glaciers were born, of glaciogenic sediment types and of morphological landforms.
Contents:
A review to history of glacial research and its methods; theories of how glaciers were born and factors that have affect on them; present-day glaciers and their research; how snow turns into ice; movement of ice; structures of glaciers; glacier types; facts and theories about the geological activities in glaciers and how glacial sediments, landforms and erosional features are formed; glaciofluvial, glaciolacustrine and glaciomarine sedimentation, glacial deposits in pre-pleistocene formations, causes of ice ages.
Learning activities and teaching methods:
26 h lectures
Recommended optional programme components:
Exogenic processes (771109P), Surficial geology in Finland (773306A)
Recommended or required reading:
Bennet, M. R. & Glasser, N. F. 1996. Glacial Geology, Ice sheet and Landforms. Wiley. 364 s.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

772613S: Bedrock geology of Finland, 6 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Eero Hanski
Opintokohteen kielet: Finnish

ECTS Credits:
6 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
After the course student should have a good overview of the Finnish bedrock and its evolution through time.
Contents:
The main geological units of the Finnish bedrock in the light of geological processes and as a function of geological time.
Learning activities and teaching methods:
40 h lectures
Recommended or required reading:
Lehtinen, M., Nurmi, P. and Rämö, T., 2005. Precambrian Geology of Finland. 736 p. Elsevier
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
N. N.

772334A: Bedrock mapping, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Kärki, Aulis Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
3 credits
Language of instruction:
finnish / english
Timing:
2nd or 3rd year
Contents:
The course familiarizes the students with methods of bedrock mapping, compilation of geological maps and utilization of various source materials and data in those assignments.
Learning activities and teaching methods:
8 h lectures, 32 h fieldwork and exercises.
Recommended optional programme components:
Basic Studies in Geosciences and courses 772308A Petrology and 772316A Structural geology.
Assessment methods and criteria:
Active participation, written work report.
Grading:
pass/fail
Person responsible:
A. Kärki

773341A: Biostratigraphy: diatom analyses, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Tiina Eskola

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish / english
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should be able to preparate diatom samples in the laboratory and identify some of the most general diatoms in Finland.
Contents:
The aim of this course is to use diatoms as an indicator for their sedimentary environment; the salinity, acidity and nutritive value. Exercises to identify the most general diatoms; manufacturing preparations; sediment analysis.
Learning activities and teaching methods:
12 h lectures, 50 h exercises
Recommended optional programme components:
Exogenic processes (771109P)
Recommended or required reading:
Battarbee, R.W., Jones, V.J., Flower, R.J., Cameron, N.g., Bennion, H., Varvalho, L., Juggins, S., 2001. Diatoms. In: Smol, J.P., Birks, H.J.B., Last, W.M. (eds.). Tracking Environmental Change Using Lake Sediments. Volume 3: Terrestrial, Algal, and Siliceous Indicators. Kluwer, Dordrecht, The Netherlands, pp. 155 - 202. Berglund, B. (ed.) Handbook of Holocene Palaeoecology and Palaeohydrology. Wiley & Sons., 1988, ss. 527-570. Forsström. L. Piikuoriset levät
Opintomoniste, Oulun yliopisto Geotieteiden laitos 1999, 104 p. Plus class handouts.
Assessment methods and criteria:
Written report and an Examination on identifying the species of diatoms.
Grading:
pass/fail
Person responsible:
T. Eskola

773337A: Biostratigraphy: pollen analyses, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Tiina Eskola

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish / english
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should be able to preparate pollen samples in the laboratory and identify the most general pollen types and spores in Finland.
Contents:

The aim of this course is to familiarize students with the analysis and methods in pollen analysis and to examine the composition of pollen in organic or mineral sediments. Exercises to identify the most general pollen types and spores; manufacturing preparations; sediment analysis.
Learning activities and teaching methods:
12 h lectures, 50 h exercises
Recommended optional programme components:
Exogenic processes (771109P)
Recommended or required reading:
Bennett, K.D. & Willis, K.J., 2001. Pollen. In: Smol, J.P., Birks, H.J.B., Last, W.M. (eds.). Tracking Environmental Change Using Lake Sediments. Volume 3: Terrestrial, Algal, and Siliceous Indicators. Kluwer, Dordrecht, The Netherlands, pp. 5 - 32. Berglund, B. (ed.). Handbook of Holocene Palaeoecology and Palaeohydrology. Wiley & Sons, 1988, ss. 455-484. Plus class handouts.
Assessment methods and criteria:
Written report and an Examination on identifying the species of pollen and spores.
Grading:
pass/fail
Person responsible:
T. Eskola

771302A: Digital modelling and geological information systems in geosciences, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Kärki, Aulis Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd autumn
Learning outcomes:
After the course students will have a basic knowledge on 3D-digital modeling and GIS-softwares and the opportunities what they offer in geosciences.
Contents:
The aim of this course is to give students basic knowledge on 3D- digital modelling and geographic information systems and introduce the opportunities they offer in geosciences (e.g. geological mapping and modelling, different kind of feasibility study of raw materials).
Learning activities and teaching methods:
8 h lectures, 20 h demonstrations, 50 h exercises
Recommended or required reading:
Tokola, T., Soimasuo, J., Turkia, A., Talkkari, A., Store, R. & Kangas, A., (toim.) 1994: Paikkatieto ja paikkatietojärjestelmät. Silva Carelica 28. Joensuun Yliopisto. Blom, T., 1995: Paikkatietojärjestelmien perusteet. Helsingin yliopiston maantieteen laitoksen opetusmonisteita 37; Bonham-Carter, G. F., 1994: Geographical information systems for geoscientist. Modelling with GIS .
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
A. Kärki

771111P: Endogenic Processes, 6 op

Voimassaolo: 01.08.2011 -

Opiskelumuoto: Basic Studies

Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

Compulsory

771111P-01: Endogenic processes, Lectures, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Basic Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

771111P-02: Endogenic processes, Rock identification, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Basic Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Hanna Junttila
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

773314A: Environmental Geology, 3 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay773314A Environmental Geology (OPEN UNI) 3.0 op

ECTS Credits:
3 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:

Upon completion of the course, student should have acquired knowledge of basic concepts of environmental geology.
Contents:
Basic concepts of environmental geology, geological processes, landforms and risks related to geological processes, geological resources, and environmental geological aspects in planning the land usage, environmental geochemistry.
Learning activities and teaching methods:
24 h lectures
Recommended optional programme components:
Exogenic processes (771109P)
Recommended or required reading:
Murck, B.W., Skinner, B.J. & Porter, S.C., 1996: Environmental Geology, John Wiley & Sons, 535 p.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

773673S: Environmental geology and geophysicfield course, 3 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
3 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Contents:
Course gives basic knowledge and skills for studying the Quaternary landforms, their consistency, ground water questions and environmental issues with geological and geophysical methods.
Learning activities and teaching methods:
8 h lectures, 32 h exercises
Assessment methods and criteria:
active participation
Grading:
pass/fail
Person responsible:
V. Peuraniemi

772640S: Excursion, 5 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

773606S: Excursion in surficial geology, 2 - 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
2-5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Contents:
One to three five-day excursions in Finland or abroad during which the participants become familiar with different formations, stratigraphically good model targets, research areas and with their characteristics.
Grading:
pass/fail
Person responsible:
V. Peuraniemi

773610S: Excursion on glacial geology of Lapland, 4 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

773612S: Excursion on regional surficial geology, 3 - 6 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
3-6 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Assessment methods and criteria:
written report
Grading:
pass/fail
Person responsible:
V. Peuraniemi

771112P: Exogenic Processes, 4 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay771112P Exogenic Processes (OPEN UNI) 4.0 op

Ei opintojaksokuvauksia.

Compulsory

771112P-01: Exogenic Processes, lectures, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Basic Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

Electives

771112P-02: Exogenic Processes, practices, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Basic Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Tiina Eskola
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

772103P: Field course in bedrock geology, 3 op

Voimassaolo: 01.08.2006 -
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Kärki, Aulis Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish / english
Timing:
1st spring
Learning outcomes:
Upon completion of the course, student should be able to identify rocks and minerals in the field and know the basics of bedrock mapping.
Contents:
Introduction to bedrock mapping as part of field work. Map material (geological maps, topographic maps) and geologist's tools. Review to identification of rocks and minerals in the field.
Learning activities and teaching methods:
8 h lectures, 32 h demonstrations
Recommended optional programme components:
basic studies in geosciences
Assessment methods and criteria:
active participation, written work report
Grading:
pass/fail
Person responsible:
A. Kärki
Other information:
The course consists of two parts (772301A and 773302A), which are compulsory for all geology students.

772662S: Field course in bedrock geology and geophysics, 3 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Kärki, Aulis Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
3 credits
Language of instruction:
finnish / english
Timing:
4th or 5th year
Contents:
Application of geophysical and geological methods to bedrock mapping, ore research and structures of bedrock.
Learning activities and teaching methods:
8 h lectures, a field course with 32 h of demonstrations, 20 h independent exercises and a written report.
Assessment methods and criteria:
Active participation, a written work report.
Grading:
pass /fail
Person responsible:
A Kärki

773103P: Field course in surficial geology, 3 op

Voimassaolo: 01.01.2006 -

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
3 credits
Language of instruction:
finnish
Timing:
1st spring
Learning outcomes:
Upon completion of the course, student should be able to identify the most important sediment types and. Student should also be able to observe ice flow directions.
Contents:
During this field course students will be introduced with the most important sediment types and the methods of their study and determination and with different glacial landforms. Lectures on the different sediment types and their characteristics in Finland.
Learning activities and teaching methods:
8 h lectures, 32 h exercises
Recommended optional programme components:
basic studies in geoscience
Assessment methods and criteria:
compulsory exercises
Grading:
pass/fail
Person responsible:
V. Peuraniemi
Other information:
The course consists of two parts (772301A and 773302A), which are compulsory for all geology students.

773324A: Field mapping of Quaternary deposits, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
To learn the basic methods in mapping of Quaternary deposits.
Contents:
A field course that introduces techniques used in the mapping of Quaternary deposits. In the field students are reconstructing a 1: 20 000 scale Quaternary map from pre-selected mapping area.
Learning activities and teaching methods:
40 h lectures and exercises in the field
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J.P. Lunkka

772310A: General mineralogy, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Tuisku

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
The student will deepen their basic knowledge of mineralogy.
Contents:
Research history and research methods of mineralogy. Classification of minerals, crystal chemical structures, chemical compositions, the most important properties and occurrence of minerals in rocks.
Learning activities and teaching methods:
26 h lectures
Recommended optional programme components:
Basic Mineralogy 771102P
Recommended or required reading:
Wenk & Bulakh, Minerals: their Constitution and Origin, Cambridge University Press.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
P. Tuisku

774636S: Geochemistry of Mining Environment, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
After the course students are able to understand geochemical processes related to the mining environment.
Contents:
Oxidation of sulfide minerals, water chemistry in a mining environment, acid neutralization capacity of rocks, acid mining drainage (AMD) and its prevention.
Learning activities and teaching methods:
28 h lectures
Recommended optional programme components:
Basic course in geochemistry 774301A and Introduction to environmental geochemistry 77439A
Recommended or required reading:
Jambor, J. L., Blowes, D. W., Ritchie, A. I. M. (Eds.) Environmental Aspects of Mine Wastes, Mineralogical Association of Canada, Short Course Series, Vol. 31, 2003, 430 s., Plumlee, G.S., Longsdon, M.J. (Eds.) The Environmental Geochemistry of Mineral Deposits. Reviews in Economic Geology, 1999, Vol. 6A.
Assessment methods and criteria:

examination/essay
Grading:
1-5/fail
Person responsible:
E. Hanski

774315A: Geochemistry of igneous rocks, 4 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eero Hanski

Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course students are able to classify igneous rocks and make conclusions on their genesis on the basis of their geochemical composition.
Contents:
Manipulation and graphical presentation of geochemical data, geochemical classification of magmas, normative mineral compositions, mobility of elements, geochemistry of volcanics in different geotectonic environments, the behavior and modeling of trace elements in magmas.
Learning activities and teaching methods:
26 h lectures, 20 h computer exercises
Recommended optional programme components:
Basic course in geochemistry (774301A) and petrology (772308A)
Recommended or required reading:
Rollinson, Hugh: Using Geochemical Data: Evaluation, Presentation, Interpretation, Harlow, Pearson Education Ltd, 1993, pp. 1-214., and selected journal articles.
Assessment methods and criteria:
written work report
Grading:
1-5/fail
Person responsible:
E. Hanski

774630S: Geochemistry of radiogenic isotopes, 6 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eero Hanski

Opintokohteen kielet: Finnish

ECTS Credits:
6 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:

To be able to read geological literature containg isotope data and evaluate the possibilies of utilizing isotopes in solving geological problems.
Contents:
Mechanisms of radioactive disintegration; mass spectrometry; Rb-Sr-, Sm-Nd-, K-Ar-, Ar-Ar-, Re-Os-, Lu-Hf-, Sm-Nd- and U-Pb-methods, isotope geochemistry of lead; fission track and uranium-thorium disequilibrium method; cosmogenics and short-lived isotopes.
Learning activities and teaching methods:
32 h lectures, 20 h computer exercises
Recommended optional programme components:
Basic course in geochemistry 774301A
Recommended or required reading:
Faure, G.: Principles of Isotope Geology. 2 nd ed., J. Wiley & Sons, New York, 1986, pp. 1-423. Dickin, A.P.: Radiogenic Isotope Geology, 2 nd ed., Cambridge University Press, 2005, 492 p.
Assessment methods and criteria:
2 examinations
Grading:
1-5/fail
Person responsible:
E. Hanski

772628S: Geology of basic layered intrusions, 5 op

Voimassaolo: 01.08.2009 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Maier, Wolfgang Derek

Opintokohteen kielet: English

ECTS Credits:
5 credits
Language of instruction:
english
Timing:
4th or 5th year
Learning outcomes:
By the end of this *course*, students should be able to understand which kind of processes result in the formation of layered intrusions and their internal structures and ore deposits.
Contents:
Layered intrusions in space and time and the mineralogy, petrology, stratigraphy and ore-forming processes in layered intrusions.
Learning activities and teaching methods:
36 h lectures
Recommended or required reading:
Cawthorn, R.G.: Layered Intrusions. Elsevier, 1996, 531 p., Parsons, I. (ed.): Origins of Igneous Layering. NATO ASI series, Series C, Mathematical and physical sciences; vol. 196. D. Reitel Publishing Company, Dordrecht, Holland, 1987.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
W. Maier

772621S: Geology of alkaline rocks, carbonatites and kimberlites, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Gehör

Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Contents:
Occurrence of carbonatites, alkaline rocks and kimberlites; mineralogy, petrography, geochemistry, petrogenesis and economic geology.
Learning activities and teaching methods:
24 h lectures
Recommended or required reading:
Lehtinen, M., Nurmi, P. & T. Rämö (ed.), Precambrian Geology of Finland - Key to the evolution of the Fennoscandian Shield. Elsevier, Amsterdam. Mitchell, R.H. 1986: Kimberlites; Mineralogy, Geochemistry and Petrology, 442 s.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
S. Gehör

488115S: Geomechanics, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Process and Environmental Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Kauko Kujala

Opintokohteen kielet: Finnish

Leikkaavuudet:

480211A Advanced Course in Environmental Geotechnics 5.0 op

ECTS Credits:
5,0 cr
Language of instruction:
Finnish
Timing:
Implementation in 3rd-4th periods.
Learning outcomes:
The aim of the course is to provide the students an overview of mechanical behaviour of soil and rock materials in civil engineering applications.
Learning outcomes: Have a clear understanding of mechanical behaviour of soil structures in loading and environmental conditions. Understand design and dimensioning principles and can explain environmental aspects of soil behaviour.
Contents:
Origins and composition of soils, classification of soils, streses and strains in soils, mechanical properties of soils, stability of slopes, bearing capacity of foundation, seepage analyses, freezing and thawing of soils, site investigations and in situ testing.
Learning activities and teaching methods:
Lectures, calculation and design exercises
Recommended optional programme components:
Basics in Geoenvironmental Engineering.
Recommended or required reading:

Handout and other materials delivered in lectures.
Assessment methods and criteria:
Examination and homeworks.
Person responsible:
Chief engineer Kauko Kujala
Other information:
Lectures are given every year.

773601S: Glacial Geology II, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
After completion students will be able to understand physical properties of glaciers and the genesis of glagial sediments and glacial landforms.
Contents:
Dynamics and hydrology of glaciers; erosion and sedimentation processes in glacial environment; basics of glaciology; subglacial, englacial and supraglacial processes. Origin of different glacigenic sediments and landforms and modelling of paleoice-sheets.
Learning activities and teaching methods:
30 h lectures
Recommended or required reading:
Glaciers & Glaciation. Benn, D. I. & Evans, D. J. A. Arnold. 1998.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

773621S: Global environmental and climate change during the Cenozoic, 4 op

Voimassaolo: 01.08.2009 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:

After completion students will be able to understand the mechanisms behind the natural climate and environmental change and relate that to the ongoing changes in climate and environment.
Contents:
Mechanisms and rates of the environmental and climate change during the past 100 million. The course introduces, for example the influence of orbital cycles, tectonics, ocean currents and ice sheets on the environmental and climate change during the deep past.
Learning activities and teaching methods:
24 h lectures
Recommended or required reading:
Lunkka, J. P. 2008. Maapallon ilmastohistoria. Gaudeamus - Helsinki University Press. 286 s. and other selected readings
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

488108S: Groundwater Engineering, 5 op

Voimassaolo: - 31.07.2017

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Process and Environmental Engineering

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Rossi, Björn Klöve

Opintokohteen kielet: English

Leikkaavuudet:

480122A Groundwater Technology 5.0 op

ECTS Credits:
5,0 cr
Language of instruction:
Finnish
Timing:
Implementation in 1st-2nd periods.
Learning outcomes:
To acquire knowledge on water retention and flow in soils, hydraulics of ground water systems, ground water quality, ground water use and modelling.
Learning outcomes: Students learn to define hydraulic characteristics of soil and aquifers. Student is able to estimate key factors influencing on discharge and water quality of groundwater and to use general methods to calculate groundwater flow. The student is able to plan and manage, and protect groundwater resources in a sustainable way.
Contents:
Soil and ground water, water balance, hydraulic properties of soils, formation of ground water, flow equations and solutions, pumping tests and methods, ground water quality and modelling.
Learning activities and teaching methods:
Lectures, calculus assignments, a modelling tasks (GMS-MODFLOW).
Recommended optional programme components:
Hydrological Processes.
Recommended or required reading:
Lecture notes, Physical and Chemical Hydrogeology (Domenico PA, Schwartz FW, 2nd edition, 1998, ISBN 0-471-59762-7). Maanalaiset vedet - pohjavesigeologian perusteet (Korkka-Niemi K, Salonen V-P, 1996, ISBN 951-29-0825-5). Pohjavesi ja pohjaveden ympäristö (Mälkki E, 1999, ISBN 951-26-4515-7).
Assessment methods and criteria:
Examination and report about modelling task are graded in the scale 1-5.
Person responsible:
Professor Björn Klöve

773331A: Hydrogeology, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha Pekka Lunkka
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
To learn basic concepts in hydrogeology and to introduce hydrogeological research methods.
Contents:
Hydrological cycle, especially phases of earth water and ground water, origin of ground water and its occurrence in Finnish soil and bedrock and in other sediment, karst and volcanic formations; examples from Finland and elsewhere; ground water on climatic peripheries; flow of ground water and well hydraulics; ground water research, geological geophysical methods; stable and radioactive isotopes; principles of hydrochemistry; quality of ground water; deep ground water research; mineral waters and thermal waters; artificial ground waters; contaminating of ground water and its protection.
Learning activities and teaching methods:
30 h lectures and exercises
Recommended or required reading:
Grundvatten, Teori & Tillämpning. Knutsson, G. & Morfeldt, C-O. Svensk Byggtjänst. 1993, 304 s. Maanalaiset vedet - pohjavesigeologian perusteet. Korkka-Niemi, K. & Salonen, V-P. Täydennyskoulutuskeskus. Turun yliopisto. 1996. 181 s. Pohjavesi ja pohjaveden ympäristö. Mälkki, E. Tammi.1999 304 s.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

488102A: Hydrological Processes, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Process and Environmental Engineering
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Leikkaavuudet:

ay488102A	Hydrological Processes (OPEN UNI)	5.0 op
480207A	Hydraulics and Hydrology	5.0 op

ECTS Credits:
5,0 cr
Language of instruction:
Finnish
Timing:
Implementation in 4th-5th periods.
Learning outcomes:
The student will be able to explain the main hydrological processes quantitatively through mathematical methods.
Contents:

Hydrological cycle, physical properties of water, distribution of water resources, water balance, precipitation, evapotranspiration, soil and ground water, infiltration, runoff, snow hydrology, hydrometry, water quality, rivers and lakes.
Learning activities and teaching methods:
Lectures, calculus sessions and an assignment.
Recommended optional programme components:
Material and Energy Balances (recommended).
Recommended or required reading:
Lecture notes, solved exercises, RIL 141-1982 Yleinen vesitekniikka (Mustonen S, 1982, ISBN 951-758-024-X), RIL 124-1 Vesihuolto I (Karttunen E, 2003, ISBN 951-758-503-3), Sovellettu hydrologia (Mustonen S., 1986, ISBN 951-95555-1-X), Fluid Mechanics and Hydraulics (Giles RV, 1995, 3rd Edition, ISBN 0-07-020509-4). Physical Hydrology (Dingman SL, 2002, 2nd Edition, ISBN 978-1-57766-561-8), Maan vesi- ja ravinnetalous: Ojitus, kastelu ja ympäristö (Paasonen-Kivekäs M, Peltomaa R, Vakkilainen P, Äijö H, 2009, ISBN 978-952-5345-22-3)
Assessment methods and criteria:
Examination (1-5), the assignment (pass/fail).
Person responsible:
Professor Björn Klöve
Other information:
English version (self-study package) from the course is available.

772341A: Igneous Petrology, 7 op

Voimassaolo: 01.01.2009 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Maier, Wolfgang Derek
Opintokohteen kielet: English

Ei opintojaksokuvauksia.

030005P: Information Skills, 1 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Faculty of Technology
Arvostelu: 1 - 5, pass, fail
Opettajat: Koivuniemi, Mirja-Liisa, Sassali, Jani Henrik
Opintokohteen kielet: Finnish
Leikkaavuudet:

030004P	Introduction to Information Retrieval	0.0 op

ECTS Credits:
1 credit.
Language of instruction:
Finnish/English
Timing:
2nd or 3rd year.
Learning outcomes:
Students know the different phases of information retrieval process and basic techniques of scientific information retrieval. They will find the most important reference databases of their discipline and know how to evaluate information sources and retrieval results.
Contents:
Retrieval of scientific information, the retrieval process, key databases of the discipline, and evaluation of information retrieval and information sources.
Learning activities and teaching methods:

The course involves training sessions (8h), web-based learning materials, exercises in the Optima learning environment and a final assignment on a topic of the student's own choice.
Recommended or required reading:
Web-based learning material from Toolbox of Reseach (https://wiki.oulu.fi/display/tor/1.1+Finding+scientific+information)
Assessment methods and criteria:
Passing the course requires participation in the training sessions and successful completion of the course assignments.
Grading:
pass/fail
Person responsible:
Science and Technology Library Tellus, tellustieto (at) oulu.fi http://www.kirjasto.oulu.fi/index.php?id=738
Other information:
http://www.kirjasto.oulu.fi/index.php?id=738

774329A: Introduction to Environmental Geochemistry, 5 op

Voimassaolo: 01.01.2005 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eero Hanski

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
After the course students should have basic knowledge on the reactions that affect the behavior of harmful (mainly inorganic) substances in the environment.
Contents:
Concepts of the environment and environmental geochemistry; solution, hydrolysis and redox reactions of minerals, sorption and related geochemical processes, topical environmental problems (acid rain, decrease of ozone, greenhouse phenomenon, heavy metal fallout) from the viewpoint of geochemistry; buffer systems of nature; heavy metals in environment; acid mine drainage.
Learning activities and teaching methods:
30 h lectures, 12 h computer exercises
Recommended optional programme components:
Basic course in geochemistry (774301A)
Recommended or required reading:
Sawyer, Clair N., McCarty, Perry L., Parkin, Gene F., Chemistry for Environmental Engineering and Science, Boston, McGraw-Hill, 2003, p. 1-397 and Alloway, B. J. (ed.) Heavy Metals in Soils, London, Blackie Academic & Professional, 1995, p. 1-57.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
E. Hanski

771108P: Introduction to Ore Geology, 2 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Gehör

Opintokohteen kielet: Finnish

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
1st spring
Learning outcomes:
Students will a general view on the raw materials, their environmental impacts and exploration.
Contents:
Aspects of mineral economy, environmental impacts of raw material production and use, classification of ores and ore-forming processes, examples of ore types of abundant and scarse elements, methods of ore exploration, mining legislation.
Learning activities and teaching methods:
14 h lectures
Target group:
all geology students
Recommended or required reading:
Craig, J.R., Vaughan, D.J. & Skinner, B.J.: Resources of the Earth - Origin, Use, and Environmental Impact. Prentice Hall, 1996, 472 p.
Assessment methods and criteria:
written examination
Grading:
1-5/fail
Person responsible:
E. Hanski

771106P: Introduction to bedrock geology of Finland, 2 op

Opiskelumuoto: Basic Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Kärki, Aulis Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
1st spring
Learning outcomes:
After the course students know main geological features of bedrock of Finland.
Contents:
The main geological features of the bedrock of Finland including its structure, age and orogenic evolution.
Learning activities and teaching methods:
10 h lectures
Recommended or required reading:
Lehtinen, M., Nurmi, P. ja Rämö, T., 1998: Suomen Kallioperä, Suomen Geologinen Seura or Lehtinen et al. (ed) 2005. Precambrian Geology of Finland. Elsevier, Amsterdam, 736 s
Assessment methods and criteria:
examination
Grading:
1-5/fail

Person responsible:
A. Kärki

771107P: Introduction to historical geology and surficial geology of Finland, 2 op

Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
1st spring
Learning outcomes:
Upon completion of the course, student should have acquired knowledge of the main features of the Finnish preglacial and Quaternary deposits and the main features of the history of life and geological time table.
Contents:
Main features and origin of the Finnish preglacial and Quaternary deposits. Historical geology: Geological time table, main features of the history of life, mass extinctions.
Learning activities and teaching methods:
10 h lectures
Recommended or required reading:
Monroe, J.S. & Wicander, R.: The Changing Earth. Exploring Geology and Evolution. Brooks/Cole, 2001. Pages 514-537, 560-733.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

772335A: Introduction to ore mineralogy, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: English
Voidaan suorittaa useasti: Kyllä

ECTS Credits:
5 credits
Language of instruction:
english
Timing:
2nd or 3rd year
Learning outcomes:
Students will obtain basic knowledge on ore minerals and their mode of occurrence and learn to recognize the most common ore minerals under the ore-microscope.
Contents:

Division and structure of ore minerals, composition and texture, phase diagrams and their applications. Ore microscope and how it is used, microscopic properties of ore minerals. Ore mineral assemblages and their occurrence.
Learning activities and teaching methods:
22 h lectures, 12 h exercises
Target group:
students specializing in geology and mineralogy
Recommended optional programme components:
Introduction to ore geology (771108P), Basic mineralogy (771102P)
Recommended or required reading:
Stanton, R.L.: Ore Petrology, McGrawHill Book Company, 1972, p. 36-132.; Craig, J.P. & Vaughan, D.J.: Ore Microscopy and Ore Petrography. Wiley & Sons, 1994, 2 nd ed. 434 p. *Handbooks:* Criddle A.J. & Stanley, C.J. (Ed.): Quantitative Data for Ore Minerals. Chapman Hall, 1993, 635 p.; Ramdohr, P.: The Ore Minerals and their Intergrowths, vol. 1 and 2. Pergamon Press, 1980, 1205 p.
Assessment methods and criteria:
written examination and a practical test on ore microscopy
Grading:
1-5/fail
Person responsible:
W. Maier

750616S: Legislation in environmental protection, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Biology

Arvostelu: 1 - 5, pass, fail

Opettajat: Jari-Heikki Oksanen

Opintokohteen oppimateriaali:
Hollo, Erkki J. , , 2001
Opintokohteen kielet: Finnish

ECTS Credits:
5 cr.
Language of instruction:
Finnish.
Timing:
B.Sc. 3 rd or M.Sc. 1 st autumn - spring. Every second year.
Learning outcomes:
To familiarise students with environmental legislation in European Union with regard to environmental protection and natural resources. Student is able to apply his knowledge to different environmental questions and analyze the needed means. Student knows the environmental administration and organisations in environmental protection and natural resources.
Contents:
Environmental protection and natural resources legislation in Finland and in Europe. Environmental administration and organisations, use and protection of natural resources, prevention of environmental destruction, assessment of environmental effect as well as principles of environmental legislation and main international conventions, environmental issues in UNEP and OECD are covered.
Learning activities and teaching methods:
24 h lectures, 18 h exercises including demonstrations, literature, and final exam.
Target group:
Compulsory to students who are doing the environmental protection 25 cr study module.
Recommended or required reading:
Hollo, E. J. 2001: Ympäristönsuojeluoikeus, WSOY, 592 p.
The availability of the literature can be checked from this link.
Assessment methods and criteria:
Final exam.
Grading:
1-5 / Fail.
Person responsible:
Prof. Satu Huttunen.

Other information:
The course will take place if sufficient resources are available. Also the environmental legislation course that Faculty of technology arranges is accepted.

773613S: Literature essay, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

773607S: Literature study, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Students acquire deep knowledge on a particular surficial geology topic.
Contents:
Independent literature search and construction of a report on a given theme.
Learning activities and teaching methods:
see above
Recommended optional programme components:
Basic course in geochemistry (774301A) and one of the other geochemistry courses
Recommended or required reading:
Will be informed separately.
Assessment methods and criteria:
a report
Grading:
pass/fail
Person responsible:
V. Peuraniemi

772615S: Literature study, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Eero Hanski
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Students acquire deep knowledge on a particular geology and mineralogy topic.
Contents:
Independent literature search and construction of a report on a given theme.
Learning activities and teaching methods:
see above
Recommended or required reading:
Will be informed separately.
Assessment methods and criteria:
a report
Grading:
pass /fail
Person responsible:
professors

772666S: Master's thesis, 30 op

Opiskelumuoto: Advanced Studies

Laji: Diploma thesis

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
35 credits
Language of instruction:
finnish / english
Timing:
5th year
Contents:
A thesis based on individual research of literature, field work or laboratory work. Before starting the thesis, students must agree upon the details of the thesis with their professor.
Person responsible:
professors

772345A: Metamorphic Petrology, 6 op

Voimassaolo: 01.08.2011 - 31.07.2015

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Tuisku

Opintokohteen kielet: Finnish

Compulsory

772345A-01: Metamorphic petrology, lectures, 0 op

Voimassaolo: 01.08.2011 - 31.07.2015

Opiskelumuoto: Intermediate Studies

Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

772345A-02: Metamorphic petrology, exercises, 0 op

Voimassaolo: 01.08.2011 - 31.07.2015
Opiskelumuoto: Intermediate Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

772619S: Mineralogical instrumental analytics, 4 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnsih
Timing:
4th or 5th year
Learning activities and teaching methods:
26 h lectures, 16 h exercises and a practice work
Recommended or required reading:
Class handouts and selected readings
Person responsible:
S. Gehör

772601S: Mineralogy - advanced course, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:

finnish
Timing:
4th or 5th year
Contents:
Profound survey to the mineralogy and mineralogical research. Mineral chemistry; crystal structures; stability of minerals.
Learning activities and teaching methods:
lectures
Recommended optional programme components:
Basic Mineralogy (771102P)
Recommended or required reading:
Putnis, A. (1992) Introduction to mineral sciences. Cambridge University Press. And Deer, W.A., Howie, R.A. & Zussman, J. (1992) An introduction to rock forming minerals. Longman.
Assessment methods and criteria:
examination
Grading:
5-1/fail
Person responsible:
P. Tuisku

772608S: Mining geology, 3 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Maier, Wolfgang Derek

Opintokohteen kielet: Finnish

Leikkaavuudet:

ay772608S Mining geology (OPEN UNI) 3.0 op

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Students learn practical aspects of the work of mining geologists.
Contents:
Lectures of rock mechanical and rock technical geology and geologic mapping inside a mine.
Learning activities and teaching methods:
8 h lectures, 32 h exercises
Recommended optional programme components:
Ore geology (772385A)
Recommended or required reading:
Will be given on site.
Grading:
pass / fail
Person responsible:
E. Hanski

488111S: Modelling in Geoenvironmental Engineering, 5 op

Voimassaolo: 01.08.2005 -

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Process and Environmental Engineering

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

Leikkaavuudet:

485305S Modelling in Geoenvironmental Engineering 5.0 op

ECTS Credits:
5,0 cr
Language of instruction:
Finnish
Timing:
Implementation in 5th-6th periods.
Learning outcomes:
To provide the student with the use of models and computational programs used in design and dimensioning of geoenvironmental materials and geostructures.
Learning outcomes: After the course the student can apply the numerical calculation methods in design and dimensioning of earth and geoenvironmetal structures. The student can evaluate the influence of boundary conditions and material parameters in calculation results.
Contents:
Contaminant transport. Design and dimensioning of waste containment systems, liner systems for landfills and surface impoundment, tailings and dams. Freezing and thawing of earth structures.
Learning activities and teaching methods:
Lectures, design and modelling assignments.
Recommended optional programme components:
Geomechanics
Recommended or required reading:
Lecture handout and other materials delivered in lectures.
Assessment methods and criteria:
To solve given assignments and to write reports about them.
Person responsible:
Chief engineer Kauko Kujala
Other information:
Lectures are given every year.

772339A: Optical mineralogy, 6 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Tuisku

Opintokohteen kielet: Finnish

772339A-01: Optical mineralogy, lectures, 0 op

Voimassaolo: 01.08.2010 -

Opiskelumuoto: Intermediate Studies

Laji: Partial credit

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Pekka Tuisku

Opintokohteen kielet: Finnish

Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

772339A-02: Optical mineralogy, practices, 0 op

Voimassaolo: 01.08.2010 -
Opiskelumuoto: Intermediate Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

772385A: Ore geology, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Maier, Wolfgang Derek
Opintokohteen kielet: English

ECTS Credits:
5 credits
Language of instruction:
english
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, students should have basic knowledge on the classification of ore deposits and have understanding of various ore-forming processes.
Contents:
The ore-forming processes of orthomagmatic, hydrothermal and sedimentary mineral deposits, and examples of different ore types.
Learning activities and teaching methods:
30 h lectures
Recommended or required reading:
Laurence Robb 2008: Introduction to Ore-Forming Processes (Blackwell) and
Ed. Chusi Li, Edward M. Ripley (Geological Publishing House, Beijing): New Developments in Magmatic Ni-Cu and PGE Deposits
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
W. Maier

770001Y: Orientation course for new students, 1 op

Opiskelumuoto: General Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
1st autumn
Learning outcomes:
After this course the student is familiar with the Department of Geosciences and the University and planning his /her studies.
Contents:
The aim of the course is to introduce a student to the University, academic studies, the department and the studies of geology.
Learning activities and teaching methods:
18 h lectures
Assessment methods and criteria:
active participation
Grading:
pass/fail
Person responsible:
amanuensis

773317A: Physical Sedimentology, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
To learn the basic concepts in sedimentology.
Contents:
The aim of the lecture course is to give geological and physical background of the exogenic processes that operate in terrestrial and marine sedimentary environments. The lecture course also introduces the basic methods and concepts used in physical sedimentology. The topics discusses are related to modern and ancient sedimentary environments and processes including themes such as weathering, soils and palaeosoils, mass movement mechanisms, water and ice flow dynamics, erosion and sedimentation processes and products.
Learning activities and teaching methods:
30 h lectures
Recommended optional programme components:
The course is a prerequisite for other courses in the field of surficial geology.
Recommended or required reading:
Press, F. & Siever, R. 1998. Understanding Earth. W. H. Freeman and Company, p. 134 - 161, p. 264 - 455 and other selected readings.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

772636S: Practical course in fluid inclusion, 4 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Contents:
Introduction to the basics of fluid inclusion research. What is a fluid inclusion, where and how are they formed and how they are studied.
Learning activities and teaching methods:
6 h lectures, 80 h exercises
Recommended or required reading:
E. Roedder, Fluid Inclusions. Reviews in Mineralogy,vol.12. Min.Soc. America. 1984. 644 p.
Assessment methods and criteria:
examination
Person responsible:
S. Gehör

772635S: Practical course in mineral chemistry, 4 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Kaukonen, Risto Johan
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Students will be able to utilize the electron microanalyzer in their future thesis work or research.
Contents:
Analyzing of different minerals with an electron microprobe. Processing of the analyzed results with a computer and Examination of errors.
Learning activities and teaching methods:
4 h demonstrations and 76 h independent work
Assessment methods and criteria:
written work report
Grading:
pass /fail
Person responsible:
E. Hanski and R. Kaukonen

771304A: Practical training, 4 - 5 op

Opiskelumuoto: Intermediate Studies

Laji: Practical training

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
2nd or 3rd summer
Learning outcomes:
To get familiar with geologist's work in real life.
Contents:
Practical training accomplished under the direction of a qualified geologist. Before the training, students must in advance agree upon the details of the field work with their professor such as the work place, time, instructor and the supervisor.
Target group:
all geology students
Assessment methods and criteria:
a written report on the training work
Grading:
pass/fail
Person responsible:
professors
Other information:
compulsory to the Bachelor´s degree

773657S: Pro gradu thesis, 30 op

Opiskelumuoto: Advanced Studies

Laji: Diploma thesis

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
35 credits
Language of instruction:
finnish
Timing:
5th year
Contents:
A thesis based on individual research of literature, field work or laboratory work. Before starting the thesis, students must agree upon the details of the thesis with their professor.
Person responsible:
professors

773343A: Quaternary Geology Seminar I, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3 rd year
Learning outcomes:
The objective is to enhance students' ability to construct and give a scientific presentation on a subject of their field.
Contents:
Students prepare and give an oral presentation (about 30 minutes) on a subject that has required independent work and judgement. Each participant acts once as an opponent. Active class participation required.
Assessment methods and criteria:
oral presentation and acting as an opponent
Grading:
pass/fail
Person responsible:
J. P. Lunkka

773306A: Quaternary Geology of Finland, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should have acquired knowledge of the Finnish glacial landforms and deglaciation in Finland.
Contents:
The pre-Quaternary landform of Finland; thermomers and cryomers during Pleistocene period; Finnish glacial landforms and their regional division; occurrence of landforms and their combinations as seen in aerial photos; deglaciation; the highest shoreline and its meaning; water-laid deposits; eolian deposits; land uplift; evolutionary phases of lakes; evolution of organic environment.
Learning activities and teaching methods:
30 h lectures
Recommended optional programme components:
Exogenic processes (771109P)
Recommended or required reading:
Koivisto M. 2004: Jääkaudet. WSOY, Helsinki, 233s.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

773300A: Quaternary Stratigraphy, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
To learn basic concepts of stratigraphy, and Earth's Quaternary history. Students will also be acquainted with research methods applied in Quaternary Geology.
Contents:
The last period of the history of Earth is called the Quaternary. The course focuses on Quaternary history and stratigraphy of the Earth. The course consists of the following topics: basic concepts of stratigraphy including litho-, bio-, and chronostratigraphy, geochronology and other types of stratigraphical practices; stratigraphical methods; absolute and relative dating methods; marine and terrestrial sediments as stratigraphical archives; classical and modern stratigraphical models; climate change.
Learning activities and teaching methods:
30 h lectures
Recommended or required reading:
Ehlers, J.: Quaternary and Glacial Geology. Wiley & Sons, New York. Lowe, J.J. & Walker, M.J.C.: Reconstructing Quaternary Environments, , Longman, Hong Kong, 2. ed, 1997. Donner, J.: The Quaternary History of Scandinavia. World and Regional Geology 7. Cambridge University Press, 200 pp. 1995.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

773619S: Quaternary geology seminar II, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
The objective is to enhance students' ability to construct and give a scientific presentation on a subject of their field.
Contents:
Students prepare and give an oral presentation (about 30 minutes) on a subject that has required independent work and judgement. Each participant acts once as an opponent. Active class participation required.
Assessment methods and criteria:
oral presentation and acting as an opponent
Grading:
pass/fail
Person responsible:

J. P. Lunkka or V. Peuraniemi

772632S: Regional ore geology, 5 op

Voimassaolo: 01.08.2010 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Maier, Wolfgang Derek
Opintokohteen kielet: English

Ei opintojaksokuvauksia.

772344A: Sedimentary Petrology, 5 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Compulsory

772344A-01: Sedimentary Petrology, lectures, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

772344A-02: Sedimentary Petrology, practices, 0 op

Voimassaolo: 01.08.2011 -
Opiskelumuoto: Intermediate Studies
Laji: Partial credit
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Pekka Tuisku
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

773648S: Sedimentary Structures, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: English

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
After completion students are able to identify various sedimentary structures and facies associations and use them for palaeoenvironmental reconstructions.
Contents:
The most general sedimentary structures and their occurrence; exercises to identify different structures.
Learning activities and teaching methods:
26 h lectures, 29 h exercises
Recommended or required reading:
topical publications
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

773647S: Sedimentology, 6 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Juha Pekka Lunkka

Opintokohteen kielet: Finnish

ECTS Credits:
6 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
To provide a complete picture on sedimentological processes and products.
Contents:
sedimentary environments, processes and products
Learning activities and teaching methods:
30 h lectures
Recommended or required reading:
Reading, H. G. 1996. Sedimentary Environments. Blackwell Science Ltd. 688 pp. And Coe, A. L. 2005. The Sedimentary Record of Sea-level Change. Cambridge University Press. 287 pp.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
J. P. Lunkka

772624S: Seminar in geology and mineralogy 2, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
The objective is to enhance students' ability to construct and give a scientific presentation on a subject of their field.
Contents:
Students prepare and give an oral presentation (about 30 minutes) on a subject that has required independent work and judgement. Each participant acts once as an opponent.
Learning activities and teaching methods:
see above
Recommended or required reading:
Will be informed upon starting the course.
Assessment methods and criteria:
oral presentation and acting as an opponent
Grading:
1-5/fail
Person responsible:
professors

772337A: Seminar in geology and mineralogy I, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Eero Hanski

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
The objective is to enhance students' ability to construct and give a scientific presentation on a subject of their field.
Contents:
Students prepare and give an oral presentation (about 30 minutes) on a subject that has required independent work and judgement. Each participant acts once as an opponent.
Learning activities and teaching methods:
see above
Recommended or required reading:
Will be informed upon starting the course.
Assessment methods and criteria:
oral presentation and acting as an opponent

Grading:
1-5/fail
Person responsible:
E. Hanski

772667S: Seminar in ore geology, 5 op

Voimassaolo: 01.08.2010 -
Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

772658S: Special issues in geology and mineralogy, 1 - 9 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Eero Hanski
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Ei opintojaksokuvauksia.

773608S: Special questions in Quaternary geology, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Juha Pekka Lunkka
Opintokohteen kielet: Finnish

ECTS Credits:
1-9 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
The objective of the *course* is to provide the student's with knowledge on the current developments in a special topic in geology and mineralogy.
Contents:
A course on a current topic given by a staff member or outside lecturer.
Learning activities and teaching methods:
30 h lectures
Recommended or required reading:
Will be informed separately.
Assessment methods and criteria:
examination
Grading:

1-5/fail
Person responsible:
N. N.

772316A: Structural geology, 5 op

Opiskelumuoto: Intermediate Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
This course familiarizes the students with the basic reasons for deformation: stress theory and strain theory.
Contents:
The origin and characteristic features of deformation structures like folds, faults, foliations, lineations, fractures and polyphase deformation are handled in detail.
Learning activities and teaching methods:
24 h lectures
Recommended or required reading:
Park, R.G. 1989. Foundations of Structural Geology, Blackie, Glasgow, 202 s. tai Pollard, D. D. & Fletcher, R. C. 2005, Fundamentals of Structural geology, Cambridge University Press, Cambridge. 500 s.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
A. Kärki

772609S: Structural geology workshop, 6 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Kärki, Aulis Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
6 credits
Language of instruction:
finnish / english
Timing:
4th or 5th year
Contents:
Geometric analysis and identification of different structural elements in the field. Structural synthesis and modelling the regional structure of bedrock that is based on information collected from field observations and geophysical data maps. Maps of structural geology, profiles, sector diagrams and projections. Statistical methods and GIS-applications in the data processing.
Learning activities and teaching methods:
16 h lectures, 32 h modelling demonstrations and 40 h exercises, a written report
Recommended optional programme components:

Structural geology (772316A), Digital modeling and geological information systems in geosciences (771302A)
Recommended or required reading:
McClay: The Mapping of Geological Structures. 1991. Open University Press, Milton Keynes, 168 pages. Rowland: Structural Analysis and Synthesis. 1986. Blackwell Sci. Publ. 208 pages. Lisle: Geological Strain Analysis. 1985. Pergamon Press. 99 pages.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
A. Kärki

773615S: Studia Generalia -lectures, 2 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seija Roman
Opintokohteen kielet: Finnish

Ei opintojaksokuvauksia.

773679S: Studies in other universities, 0 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Peuraniemi, Vesa Juhani
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Contents:
Courses taken in international exchange programs (Erasmus, Nordplus) or courses taken in other Finnish universities.
Person responsible:
V. Peuraniemi

772690S: Studies in other universities and colleges, 0 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish
Voidaan suorittaa useasti: Kyllä

Contents:
Courses taken in international exchange programs (Erasmus, Nordplus) or courses taken in other Finnish universities.
Person responsible:
teachers

773322A: Surficial geology in ore exploration, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should have a basic knowledge of the dispersal of ore boulders, tracing them and of the use of till geochemistry in ore exploration.
Contents:
This course provides practical skills for performing surficial geological ore prospecting in glaciated areas. Boulder prospecting; glacigenic and geochemical dispersion in different landforms; different modes of occurrence of element. Methods: digging, boring, grain analyses, separations and applications.
Learning activities and teaching methods:
30 h lectures
Recommended optional programme components:
Exogenic processes (771109P), Surficial geology in Finland (773306A), Basics of glacial geology (773303A)
Recommended or required reading:
Kujansuu, R. ja Saarnisto, M. (eds.): Glacial Indicator Tracing, A.A. Balkema, 1990, 252 p
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

773641S: Surficial geology in ore exploration, advanced course 1, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Upon completion of the course, student has the knowledge of the mode of occurrence of elements in surficial deposits and of their research methods and of the use heavy minerals in ore exploration.
Contents:
Mode of occurrence of elements in surficial deposits; research methods of occurrence of elements; using partial extraction methods; separating different fractions from a sample; heavy mineral prospecting; mineral determinations and analysis; defining mechanisms of dispersion.
Learning activities and teaching methods:
30 h lectures

Recommended optional programme components:
Surficial geology in ore exploration (773322A)
Recommended or required reading:
McClenaghan, M., Bobrowsky, P.T., Hall, G.E.M. & Cook, S.J., Drift Exploration in Glaciated Terrain, Geological Society Special Publication n:o 185, 2001, 350 p.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

773642S: Surficial geology in ore exploration, advanced course 2, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Peuraniemi, Vesa Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning outcomes:
Upon completion of the course student has a knowledge on the use of organic sediments, waters, snow and air in ore exploration.
Contents:
Dispersion in organic material, waters, snow and in air and there use in ore exploration.
Learning activities and teaching methods:
30 h lectures
Recommended optional programme components:
Advanced course of surficial geology in ore exploration I (773641S)
Recommended or required reading:
Selected articles
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
V. Peuraniemi

773316A: Technical Properties of Sediments, 8 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Tiina Eskola

Opintokohteen kielet: Finnish

ECTS Credits:
8 credits
Language of instruction:
finnish

Timing:
2nd or 3rd year
Learning outcomes:
Upon completion of the course, student should have acquired knowledge of specify the physical and geotechnical qualities of sediments.
Contents:
Introduction to different boring methods; taking samples of fine-grained sediments. Laboratory work: defining consistency and structure of different sediments; defining different mechanical and thermal properties of sediments.
Learning activities and teaching methods:
45 h demonstrations, 135 h practical exercises, written report
Recommended optional programme components:
Exogenic processes (771109P), Field course in surficial geology (773302A), Surficial geology of Finland (773306A)
Recommended or required reading:
A handout. Velde, B: Introduction to Clay Minerals, Chemistry, Origins, Uses and Environmental Significance. Chapman & Hall, London, 198 pages. Rantamäki, Jääskeläinen & Tammirinne: Geotekniikka. pp. 31-161, 249-274, Otakustantamo, 1984.
Assessment methods and criteria:
written reports and an examination
Grading:
1-5/fail
Person responsible:
T. Eskola and K. Holappa

772333A: Technical mineralogy, 5 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Seppo Gehör

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Contents:
Occurrence and properties of non-metallic recourses; mineralogy of technical mass-productions (ceramics, glass, cement, calc, zeolite, bentonite), mineralogy of progressive ceramic products; Properties and technical use of clayminerals and their sorption, modification and use in environmental technical applications. Reactive materials and their use in environmental technical applications.
Learning activities and teaching methods:
26 h lectures and 10 h exercises lectures
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
S. Gehör and K. Kujala

772357A: Technical use of rocks and minerals, 4 op

Opiskelumuoto: Intermediate Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail
Opettajat: Kärki, Aulis Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Contents:
Usage of rock varieties and minerals in industry and in construction. Required qualifications for using rock varieties and minerals. Occurrences of Finnish building rocks, industrial rocks and industrial minerals; exploration of these occurrences and research methods; required qualifications of road surface materials.
Learning activities and teaching methods:
20 h lectures and a literature work
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
A. Kärki

772620S: Tectonics, 5 op

Opiskelumuoto: Advanced Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Kärki, Aulis Juhani
Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Contents:
The structure of Earth's crust. The tectonic features of Archaean, Proterozoic and Phanerozoic periods. Detailed presentation of the tectonic-magmatic activation and development of shield areas and plate tectonics in different geotectonic environments.
Learning activities and teaching methods:
24 h lectures
Recommended optional programme components:
basics studies of geosciences
Recommended or required reading:
Condie K. C. 1997, Plate tectonics and Crustal Evolution. Butterworth - Heineman, Oxford, 282 p. tai Moores, M. E. & Twiss, R. J., 1995, Tectonics, W.H. Freeman and Company, 415 p. tai R.G. Park, Geological Structures and Moving Plates, 1988, Blackie, Glasgow, 337 p.
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
A. Kärki

771100P: The Earth in Universe, 2 op

Voimassaolo: - 31.07.2012
Opiskelumuoto: Basic Studies
Laji: Course
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opettajat: Seppo Gehör
Opintokohteen kielet: Finnish

ECTS Credits:
2 credits
Language of instruction:
finnish
Timing:
1st autumn
Contents:
origin of elements, solar system, history of evolution, structure and composition of the Earth
Learning activities and teaching methods:
12 h lectures
Assessment methods and criteria:
examination
Grading:
1-5/fail
Person responsible:
S. Gehör

773345A: Work practice 2, 4 - 5 op

Opiskelumuoto: Intermediate Studies
Laji: Practical training
Vastuuyksikkö: Department of Geosciences
Arvostelu: 1 - 5, pass, fail
Opintokohteen kielet: Finnish

ECTS Credits:
4 credits
Language of instruction:
finnish
Timing:
2nd or 3rd year
Learning outcomes:
To get familiar with geologists's field work in practice.
Contents:
Practical training accomplished under the direction of a qualified geologist. Before the training, students must in advance agree upon the details of the field work with their professor such as the work place, time, instructor and the supervisor.
Learning activities and teaching methods:
practical work over a period of three months
Assessment methods and criteria:
a written report on the work
Grading:
pass/fail
Person responsible:
professor

772614S: Workshop in bedrock mapping, 5 op

Opiskelumuoto: Advanced Studies

Laji: Course

Vastuuyksikkö: Department of Geosciences

Arvostelu: 1 - 5, pass, fail

Opettajat: Kärki, Aulis Juhani

Opintokohteen kielet: Finnish

ECTS Credits:
5 credits
Language of instruction:
finnish
Timing:
4th or 5th year
Learning activities and teaching methods:
12 h lectures, a field course with 48 h of demonstrations, 20 h independent exercises and a written
Assessment methods and criteria:
Active participation, a written work report.
Grading:
pass /fail
Person responsible:
professors