Faculty of Science

GEON03, Quaternary Geology: Quaternary Climate and Glaciation History, 15 credits

Kvartärgeologi: Kvartär klimat- och glaciationshistoria, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2008-03-12 to be valid from 2008-03-12, autumn semester 2008.

General Information

The course is an elective course for second-cycle studies for a Degree of Master of Science (120 credits) in geology. The course is given in English.

Language of instruction: English

Main field of studies	*Depth of study relative to the degree requirements*
Geology	A1F, Second cycle, has second-cycle course/s as entry requirements

Learning outcomes

The aims of the course are that students should have acquired the following knowledge and skills on completion of the course; they should

- be able to give an overview of the global climatic and environmental development during the Quaternary, and its major causal relations,
- have thorough knowledge of the Late Quaternary stratigraphy and the glacial, environmental, and climatic development of northern Europe, and a general insight into these topics in other parts of the world,
- independently and in a reflective way be able to analyse and interpret different types of proxy data obtained from terrestrial and marine stratigraphies and ice cores, and based on such interpretations and comparisons be able to reconstruct climatic and environmental changes during the Quaternary,

- be able to assess and evaluate ongoing global and regional climate changes as well as future climate scenarios in the perspective of Quaternary climate variations,
- be able to comprehend, critically assess and discuss scientific publications within the field, and based on this type of literature be able to summarise current research issues,
- be able to communicate in writing and speaking in English and in a balanced way be able to utilize scientific terminology associated with the topic.

Course content

The course consists of two parts:

Part 1. Literature, seminars and excursions, 10 credits

The following topics are treated based on lectures, literature studies (text book and primary scientific publications), seminars with oral presentations and excursions:
Palaeoclimatic research history and the advent of the glacial theory.
Forcings and mechanisms behind major climate changes.
Reconstruction of climate changes ? examples from terrestrial, marine, and ice-core archives.
The initiation of Quaternary glaciations and early Glacial-Interglacial periods.
Climatic and environmental changes during the last Interglacial-Glacial cycle.
Glacial dynamics of the latest Scandinavian ice sheet and stadials and interstadials during the early and middle parts of the last ice age.
The deglaciation of the latest Scandinavian ice sheet and the subsequent development of the Baltic Sea Basin.
The climatic and environmental development during the last deglaciation and the current warm period, and forcings of short-lasting climatic perturbations.
Late Quaternary glaciation history and climatic changes in the Polar regions.
The glaciation history of North America with an emphasis on the last deglaciation.
The evolution of humans and its relation to Quaternary climate and glaciation history
Recent and ongoing climate change and future climate scenarios.
Quaternary stratigraphy, climate history and glacial landscapes in the peripheral areas of the latest Scandinavian ice sheet (excursion).
Quaternary stratigraphy and glacial history of southern and central Sweden (excursion).

Part 2. Written assignment and oral presentation, 5 credits

The student chooses a topic with relevance to the course content in consultation with the teachers. The research question should be treated in writing based on critical assessment of a number of primary scientific publications. The essay is also presented in the form of an oral presentation.

Course design

The teaching consists of lectures, seminars and field teaching. All teaching except lectures is compulsory, but as lectures are integrated with other teaching and contain information that is not included directly in text books and listed primary publications it is strongly recommended that all lectures are followed.

Assessment

The examination takes place in the form of active participation in seminars and excursions together with written examination (part 1) and through submitted written assignment followed by oral presentation (part 2). For students who have not passed the regular examination, additional examination in close connection to this is offered.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.
The grades in the course are passed with distinction, passed and failed. To pass the entire course, approved examination, approved written assignment and oral presentation as well as participation in all compulsory parts are required. The final grade is determined by summarising the results of all parts that are included in the examination.

Entry requirements

For admission to the course, general entry requirements are required and 90 credits in geology including GEOB01-GEOB05 or the equivalent knowledge plus GEON01 Quaternary geology: Glacial sedimentology- processes, sediments and landform system, 15 credits, and GEON02 Quaternary geology: Palaeoecological methodology and environmental analysis, 15 credits, and English B or the equivalent knowledge.

Further information

The course may not be included in a higher education qualification together with KVG531 Quaternary geology: Quaternary climate and glaciation history, 10 credits, or KVG528 Quaternary geology: Glaciation history, vegetation development, regional stratigraphy and global climate changes, 10 credits.

Subcourses in GEON03, Quaternary Geology: Quaternary Climate and Glaciation History

Applies from V08

0801 Literature Studies, Seminars, Field Excursions, 10,0 hp
Grading scale: Fail, Pass, Pass with distinction
0802 Essay Writing and Oral Report, 5,0 hp
Grading scale: Fail, Pass, Pass with distinction