Faculty of Science

GEOM10, Bedrock Geology: Sedimentary Geology and Basin Analysis, 15 credits

Berggrundsgeologi: Sedimentär geologi och bassänganalys, 15 högskolepoäng

Second Cycle / Avancerad nivå

Details of approval

The syllabus is an old version, approved by Study programmes board, Faculty of Science on 2017-03-19 and was valid from 2017-03-19 , autumn semester 2017.

General Information

The course is an elective second cycle component of a Master of Science (120 credits) in Geology.

Main field of studies	*Depth of study relative to the degree requirements*
Geology	A1N, Second cycle, has only first-cycle course/s as entry requirements

Learning outcomes

The general aim of the course is to provide students with specialised theoretical and practical knowledge for documentation and interpretation of sedimentary sequences and to carry out basin analysis based on tectonic structures, sedimentary facies, geochemistry, sequence stratigraphy and geophysical bore-hole logging. Together with other second cycle courses in bedrock geology this knowledge will form the basis for advanced understanding of the environmental and climatic development in continental and marine environments in a time perspective of tens to hundreds of millions of years.

Knowledge and understanding

On completion of the course, the student shall be able to:

- account for the large-scale development of sedimentary basins in different plate-tectonic environments
- describe and understand the most common stratigraphic and geophysical methods for categorisation and interpretation of the structure, facies and temporal evolution of sedimentary basins
- account in detail for how relative sea-level changes and climate influence depositional systems and sedimentary environments with regard to processes and products
- account for how sediment geochemical methods can be used for interpretation of palaeoceanography and palaeoclimatology
- account at a general level for sedimentary basins in Scandinavia, specifically with regard to their formation and development
- account at a general level for formation, occurrence and extraction of petroleum

Competence and skills

On completion of the course, the students shall be able to:

- comprehend, critically assess and discuss scientific primary publications within the subject, communicate orally and in writing by means of subject-specific terminology, as well as use scientific reference techniques
- apply the most common methods for large-scale analysis of sedimentary basins; primarily sedimentary facies analysis, sequence stratigraphy and sedimentary geochemistry, secondarily be able to understand and analyse geophysical bore-hole data and seismic stratigraphy

Judgement and approach

On completion of the course, the students shall be able to:

- assess and critically discuss views and conclusions expressed in primary research publications in the field

Course content

The following topics are included in the course:

- Tectonic environments and large-scale tectonic evolution of sedimentary basins
- Sedimentary facies and facies analysis in continental and marine environments
- Sequence stratigraphy and sea-level changes
- Sedimentary geochemistry and isotope geochemistry

- Palaeoceanography and palaeoclimatology
- Logging and interpretation of drill cores
- Geophysical examination methods and their applications within basin analysis
- Field trips in Sweden or abroad
- Project Work, mainly based on scientific literature

Course design

The teaching consists of lectures, field exercises, seminars, excursions, group work and project work. Participation in field exercises, seminars, group work and project work as well as associated components is compulsory.

Assessment

The assessment is based on a written exam and project reports. Students who failed the first exam opportunity will be offered an additional exam opportunity soon thereafter.

In consultation with Disability Support Services, the exam may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equal to that of a student without a disability.

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.
For a Pass on the whole course, the student must have passed the written exam, the project report and all compulsory components. The final grade is determined by the aggregated results of the assessed components in proportion to their extent (see appendix).

Entry requirements

To be admitted to the course, students must have passed 90 credits in geology including GEOB21-GEOB25 or GEOB01-GEOB04 or the equivalent. Proficiency in English corresponding to English B/English 6 from Swedish upper secondary school.

Further information

The course may not be included in a degree together with GEOM07 Sedimentary Geology and Basin Analysis 15 credits, or GEOM02 Sedimentary Basins, Palaeoclimatology and Stratigraphy, 15 credits.

Subcourses in GEOM10, Bedrock Geology: Sedimentary Geology and Basin Analysis

Applies from H19

1901 Written examination, 10,5 hp
Grading scale: Fail, Pass, Pass with distinction
1902 Project Report, 3,0 hp
Grading scale: Fail, Pass, Pass with distinction
1903 Excursion Report, 1,5 hp
Grading scale: Fail, Pass, Pass with distinction
1904 Mandatory Learning Activities, 0,0 hp
Grading scale: Fail, Pass

Applies from H17

1701 Written Examination, 12,0 hp
Grading scale: Fail, Pass, Pass with distinction
1702 Project Report, 3,0 hp
Grading scale: Fail, Pass, Pass with distinction
1703 Mandatory Learning Activities, 0,0 hp
Grading scale: Fail, Pass