

**GEOB23, Geology: Sedimentology, Geomorphology and
Structural Geology, 15 credits**
Geologi: Sediment, landformer och strukturer, 15 högskolepoäng
First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2016-09-17 and was last revised on 2019-10-28. The revised syllabus applies from 2019-10-28, spring semester 2020.

General Information

The course is a compulsory course at first cycle level for a Degree of Bachelor of Science in geology.

Language of instruction: Swedish

Main field of studies

Geology

Depth of study relative to the degree requirements

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The course forms part of a series of six compulsory courses, which aims at providing basic knowledge within a broad range of geological disciplines.

Knowledge and understanding

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

- account generally for how plate tectonic processes influence the structural geological composition of Earth's crust as well as sedimentary basins and landforms
- account for the geomorphological system from a global and geological perspective
- identify and describe the large-scale and small-scale land forms of Earth's surface
- identify and describe sedimentary structures and lithofacies

- describe and explain dominating processes, lithological properties and spatial distributions of sediments in different continental and marine depositional environments, as well as account for the relationship between sediments and landforms in these environments
- explain how depositional environments and sedimentary basins are influenced at a general level by changes in global climate and sea level as well as by plate-tectonic movements
- account for fundamental concepts in structural geology
- account for fundamental properties of geological materials during deformation at brittle and ductile conditions
- identify, describe and classify deformation structures and tectonites, as well as explain their origins
- account for how deformation structures are linked in tectonic systems at different scales

Competence and skills

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

- describe sedimentary stratigraphies in an objective way, as well as compile and present the descriptions in a graphical log
- carry out facies analysis and describe landforms for interpretation and reconstruction of formation processes and environments
- apply common geological analytical methods and approaches and carry out sedimentological field studies and laboratory investigations of stratigraphies in sediments and sedimentary rocks, as well as describe and interpret the results in a written report
- use air photos, satellite images or terrain models for identification of exogenic and endogenic landforms
- perform basic documentation and interpretation of deformation structures
- make basic constructions in stereographic projection, as well as basic profile construction
- Interpret the composition of the bedrock in three dimensions based on geological maps
- construct informative and clear illustrations in the form of photos as well as hand-drawn and computer-based figures

Judgement and approach

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

- justify choices of common geological analytical methods and approaches in the field and in the laboratory for studies and descriptions of various types of sediments, landforms and structures
- at a general level, assess uncertainties in the interpretation of processes and environments based on sediments, land forms and structures

Course content

The course consists of two parts:

Module 1: Sedimentology and Geomorphology, 7.5 credits

Module 1 contains the following components in fundamental sedimentology and geomorphology:

- The geomorphological system: the rock cycle, the water cycle, denudation and sedimentation. Geomorphology in global and geological perspectives

- Karst landscapes and other landforms formed through weathering
- Sediments and landforms in alluvial, arid and periglacial environments, deltaic environments, clastic coasts and shallow coastal environments, carbonate platforms, as well as pelagic and hemi-pelagic deep-sea environments
- Landform systems and facies models for the above-mentioned continental and marine environments
- Landforms formed by igneous processes and landforms related to plate tectonics, as well as erosional landforms governed by structures in bedrock
- Fieldwork project that includes logging, photo documentation and laboratory analyses
- Geomorphological remote sensing

Module 2. Structural Geology, 7.5 credits

Module 2 contains the following components in basic structural geology:

- Fundamental concepts, such as stress and strain, and basic mechanics
- Origin and classification of different deformation structures, including folds, faults, fault and shear zones, and tectonites
- Different tectonic environments: thrust systems, normal fault systems and strike-slip systems
- Large-scale structures of sedimentary basins with a focus on basin evolution in relation to different plate-tectonic environments
- Exercises in the form of measurement of planar and linear structures, evaluation of measurement data in stereographic projection, and interpretation of geological maps
- Field studies that focus on practical training in identification, description, measurement and interpretation of deformation fabrics and deformation structures

Course design

The teaching consists of lectures, field and laboratory exercises, seminars, group work and project work. Participation in the field and laboratory exercises, seminars, group work and project work, as well as thereby integrated other teaching, is compulsory.

Assessment

Examination takes place in writing in the form of examinations and a project report during the course, through assessment of written assignments, as well as through participation in compulsory modules. Students who failed the first exam opportunity will be offered an additional exam opportunity shortly thereafter.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent 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.

To pass the entire course, passed examinations, passed reports and written assignments as well as passed compulsory components are required. The final grade is decided through a joint assessment of the results of the examinations of the included modules in proportion to their extent.

Entry requirements

For admission to the course, general entry requirements are required, as well as GEOA01 Planet Earth ? an Introduction, 15 credits, GEOA81 Geology: Earth, Water and the Environment, 15 credits, or the equivalent knowledge.

Further information

The course may not be included in a degree together with GEOB02 Climatology and Geomorphology, 15 credits, GEOB03 The Lithosphere, 15 credits or GEOB04 Sedimentology, 15 credits.

Subcourses in GEOB23, Geology: Sedimentology, Geomorphology and Structural Geology

Applies from V20

- 2001 Sedimentology and Geomorphology, written examination, 5,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 2002 Sedimentary Environments, written report, 2,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 2003 Structural Geology, written examination, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 2004 Mandatory Learning Activities, 0,0 hp
Grading scale: Fail, Pass

Applies from V17

- 1601 Sedimentology and Geomorphology, written examination, 5,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 1602 Sedimentary Environments, written examination, 2,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 1603 Structural Geology, written examination, 7,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 1604 Mandatory Learning Activities, 0,0 hp
Grading scale: Fail, Pass