



AE1106 Geoscience 6.0 credits

Geovetenskap

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

The official course syllabus is valid from Autumn 2024. The decision is made by Director of First and Second Cycle Education: A-2024-0696. Date: 2024-03-22

Grading scale

A, B, C, D, E, FX, F

Education cycle

First cycle

Main field of study

Technology, Architecture

Specific prerequisites

Basic knowledge of mathematics and physics, chemistry and environmental effects corresponding to the content of the courses:

AL1351 Energy, Environment and Sustainable development (4.5 credits)

MJ1508 Ecology and Environmental Effects (7.5 credits)

SF1625 Calculus in One Variable (7.5 credits)

CK1020 Fundamental chemistry (6 credits)

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After completing the course, the student should be able to:

- describe the structure and composition of the earth and describe geological conditions in Sweden
- account for the properties and use of different soil and rock materials and identify, classify and compare minerals, rocks and soils commonly found in Sweden
- interpret geological maps and account for the structure of the soil and general layer sequences as well as previous and ongoing processes that shape and affect the landscape
- account for the presence and flow of water in the soil and related concepts, analyze and interpret hydrological data and make flow calculations
- describe society's technical systems for water supply, water treatment and sewage management and compare different solutions for nutrient recovery.

Course contents

The course activities consist of lectures, exercises and field studies.

The course covers landforms and formations as functions of recent and previous geological processes, behavior and physical and chemical (mineralogical) properties of soil materials.

Particular emphasis is placed on the structural structure of bedrock and soil layers and changes in soil properties in the short and long term. Basic knowledge of geological conditions in Sweden is addressed as well as the utilization of soil material. Particular emphasis is placed on survey methodology as well as skills in the interpretation and analysis of geodata (maps and diagrams). The exercises in this part include basic mineral, soil and rock knowledge as well as interpretation of geological data.

The course further covers the hydrological cycle and its constituent parts and terms, calculation methods for flows and water balances, basic statistical analysis of hydrological data, basic knowledge of the soil's water holding properties, groundwater movement under saturated and unsaturated conditions and pore water pressure.

The course also deals with society's technical infrastructure, including water supply and sewerage and waste management.

Examination

- ÖVN1 - Exercises and Excursion, 1.5 credits, grading scale: P, F

- **TEN1** - Written Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Written examination (TEN1), 4.5 hp (A,B,C,D,E,Fx,F)

Accepted exercises and excursion (ÖVN1), 1.5 hp (P,F)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.