



# AL1300 Earth Science and Land Use in Practice 7.5 credits

Geovetenskap och markanvändning i praktiken

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

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

## Establishment

Course syllabus for AL1300 valid from Autumn 2015

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## Specific prerequisites

## Language of instruction

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

## Intended learning outcomes

The course gives basic knowledge in general and applied geology, hydrology/hydrogeology and basic principles and applications within soil science for construction and water, sewage and energy systems. Further, examples of geotechnical applications within the built environment are included.

On completion of the course, the technology student should

- be able to describe the structure, form and composition of the earth
- be able to account for how natural preconditions such as soil, water and ecosystems are bases for planning and construction.
- be able to describe the physical and chemical properties of the soil and rock (including be familiar with the mineralogical composition and basis for classification of soil and rock)
- be able to describe the historical and recent geological and hydrogeological processes that affect the development of the landscape and the long-term persistent usage of the land.
- be able to account for the general structure of rock and soil and common stratigraphies
- have basic knowledge about different soil and rock material properties and usage
- be able to describe the occurrence of water in the landscape and processes for flow of water in the soil and rock
- be able to account for processes that govern and influence the climate
- have knowledge about and be able to interpret existing geological, geotechnical and hydrological data
- be able to carry out statistical analyses of hydrological data
- be able to analyse problems with subsidence of the ground, understand the causes to landslides and falls and be able to account for the most common soil reinforcement methods in Sweden
- be able to account for the technical systems of water supply, sewage treatment and energy supply within the society.

## Course contents

The course includes lectures, exercises, laboratory work and a field exercise.

The course includes natural preconditions for the built environment, land forms and geological formations as functions of historical and recent geological processes, formations, behaviour and physical and chemical (mineralogical) properties of earth material. Strong emphasis is placed at the formation of the bedrock and the soil layers and changes in the rock and soil properties on short and long view. The course also includes basic knowledge about climate, hydrology, the water flow through the landscape, the water retention properties of the soil and the flow under saturated and unsaturated conditions as well as the pore water pressure of the soil- and ground-water. Basic knowledge about geological conditions in Sweden is

brought up and the use of the earth material. Particularly, investigation methodology and skills in interpretation and analysis of geodata are emphasised (maps, statistical analyses and diagrams).

Further, the course treats the society technical geological/hydrological infrastructure e.g. in respect to water supply and sewage handling and natural energy solutions from a long-term sustainable perspective.

The exercises include basic knowledge of minerals, rocks and soils as well as interpretation of geological, hydrological and geotechnical data.

## Course literature

Meddelas innan kursstart.

## Examination

- TEN<sub>1</sub> - Written Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN<sub>1</sub> - Exercises and Excursion, 2.5 credits, grading scale: P, 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.

## Other requirements for final grade

A-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.