



AE1104 Geoscience Engineering

7.5 credits

Teknisk markvetenskap

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

Establishment

Course syllabus for AE1104 valid from Autumn 2011

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Basic university entrance incl. Swedish B and AI1137 Introduction to the Planning and Building Process, SH1010 Physics for the Built Environment, AE1102 Geology and Geotechnical Engineering, AE1101 Natural Resources Theory, AE1105 Environmental Soil Chemistry, or equivalent courses.

Language of instruction

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

Intended learning outcomes

After the course, students should be able to:

- Plan and perform geological investigation needed for infrastructure projects and other land use projects.
- Assess the physical, mechanical, structural, and hydraulic properties of soil and rock material, as well as the suitability as ballast (with focus on Swedish conditions)
- Describe and discuss the principles of theoretical and experimental methods for determining physical, mechanical, structural, and hydraulic properties of soil and rock material
- Apply and describe the principles for methods to account for spatial variation in physical, mechanical, structural, and hydraulic properties of soil and rock material
- Quantitatively estimate water flows and water balance of unsaturated soil
- Quantitatively estimate heat content and heat flows in soil and rock material.

Course contents

Geological mapping, directivity estimation of structural and textural properties, classification of soil and rock material, methods for analysis of geological material (for instance, grain size analysis, LA-test, pF-analysis), equations for infiltration and water retention in unsaturated porous media, energy storage in the ground, heat flow calculations, soil sampling strategy and spatial statistics.

Course literature

Literature compendium provided by the department at the start of the course.

Examination

- ÖVN1 - Exercises, 3.5 credits, grading scale: P, F
- TEN1 - Examination, 4.0 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.

TEN1 - Examination, 4.0 credits, grade scale: A, B, C, D, E, FX, F

ÖVN1 - Exercises, 3.5 credits, grade scale: P, F

Other requirements for final grade

For the final grade it is required to have passed the examination (TEN1) and passed the mandatory assignments and excursions (ÖVN1; 3.5hp).

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.