Course syllabus

Teknisk geologi och markanvändning
Engineering Geology and Land Use

VTGA10, 5 credits, G1 (First Cycle)

Valid for: 2023/24
Faculty: Faculty of Engineering, LTH
Decided by: PLED V
Date of Decision: 2023-03-21

General Information

Main field: Technology.
Compulsory for: L1
Language of instruction: The course will be given in Swedish

Aim

Basic knowledge in general and applied geology as well as hydrogeology in order to provide an understanding of how the geological conditions can affect construction and civil engineering issues as well as the impact of geology on land use.

Learning outcomes

Knowledge and understanding
For a passing grade the student must

- Be able to give an account of the most common geological materials, especially Sweden's soil types and their formation, occurrence, landscape forms and terrain, internal structural structure, soil layer sequences as well as physical and technical properties such as permeability and frost hazard,
- Be able to understand and describe how geological properties can affect issues such as foundation work and land exploitation.
- Have some understanding of how geological conditions can affect other environmental issues such as exploitation and protection of natural resources and groundwater.

Competences and skills
For a passing grade the student must

- Be able to establish a geological expectation model, i.e. read a geological map, establish a geological section with layer sequences and thus be able to describe a soil/rock mass in three dimensions.
- Be able to use the geological expectation model as a basis for assessment of the land's suitability for construction and foundation work.
- Be able to present an engineering geological investigation in a written scientific report.
- Be able to independently obtain information to solve specific tasks within the subject area.

Judgement and approach
For a passing grade the student must

- Be able to reflect on the value of natural environments, its change and future possibilities and limitations.

Contents

Lectures:

The formation, behavior and properties of the soil types. Structure of the loose soil layers and an overview of the structure of the bedrock.The relationship between landscape forms, formation, material composition, grain size and soil properties. An overview of the impact of the bedrock.Groundwater formation, behavior, movement and composition as a function of the geoenvironment. Field survey methodology. The role of geomaterials in construction. Geology as a resource and in the construction process.

Exercises:

Soil type exercises that are carried out as independent exercises with some teacher access in a semi-permanent collection in the corridor of the geolaboratory throughout the study period. Geological mapping exercise with a strong focus on the concept of "geological expectation model" and how to establish one using a map and section with layer sequences. Groundwater exercises with maps and calculations.

The project work consists of an engineering geological investigation that focuses on the relationship between geology and land use. The investigation is carried out in groups of 3-4 students and presented in a concise scientific report. Special emphasis is placed on writing training with feedback, because the project work ends with an hour-long group feedback where both geological and report writing details are covered.

Excursion:

Engineering geological trip in Skåne with the aim of demonstrating the importance of the geological substratum for land use.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)
Assessment: Passed written exam. Approved project assignment. The project tasks include elements with mandatory attendance. The excursion is mandatory. The grade is determined by the exam.

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.

Admission

The number of participants is limited to: No
The course overlaps following course/s: VTVA01

Reading list

- Conny Svennson: Kompendium i Teknisk geologi. 2012.
- Ola Karlsson: Svenska skrivregler. Liber, 2017, ISBN: 978-91-47-11149-7.
- Siw Strömquist: Skrivboken, Skrivprocess, skrivråd och skrivstrategier. Gleerup Utbildning AB, 2019, ISBN: 9789151102504.

Contact and other information

Course coordinator: Joakim Robygd, joakim.robygd@tg.lth.se
Course homepage: http://www.tg.lth.se/grundutbildning/kurser
Further information: In the time plan excursion hours have been presented as laboratory hours (L). A teacher is available about 70 hours in the tutorial sample collection of the geolaboratory for learning discussions.