

Course syllabus

Geologi och geoteknik Engineering Geology and Soil Mechanics

VGTA05, 7,5 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

Compulsory for: IBYI2, IBYV2

Language of instruction: The course will be given in Swedish

Aim

The aim is to give basic knowledge in engineering geology and soil mechanics.

Learning outcomes

Knowledge and understanding

For a passing grade the student must

- be able to describe the most common geological materials, especially in Sweden occurring soil types, their structure and how they have been formed.
- be able to explain basic concepts and relations in the areas of soil mechanics and properties of soils.

Competences and skills

For a passing grade the student must

- be able to read a geologic map and to establish a geologic section with sequences of soil layers and have viewpoints on the use of the ground.
- be able to perform and present basic geotechnical computations
- be able to present the solution of a problem in writing (prerequisites, assumptions, calculations, results, conclusions) in a clear and correct way.

Judgement and approach

For a passing grade the student must

- be able to describe the role of geological materials and environment in different applications of building technology.
- be able to describe different geological aspects which may be hazardous in different types of ground use.
- on the basis of available experimental data and computations be able to estimate bearing capacity and settlements for simple loading situations.
- be able to assess the reasonableness of the calculation result obtained.

Contents

The course introduces engineering geology and soil mechanics. The engineering geology part gives the student knowledge about the creation and geological development of our planet, and how different rocks and soils are developed and classified. The geology part also deals with occurrence and use of groundwater.

In the soil mechanics part the student gets knowledge in microstructure and composition of soils, stresses in soils, and deformation and strength properties of soils. The soil mechanics part also treats settlements, bearing capacity, soil pressure, slope stability, and the most common test methods. The course also introduces foundation engineering.

Examination details

Grading scale: TH - (U,3,4,5) - (Fail, Three, Four, Five)

Assessment: Written examination and a mandatory hand-in assignment.

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.

Parts

Code: 0121. **Name:** Written Examination.

Credits: 6. **Grading scale:** TH. **Assessment:** Written examination **Contents:** Covers the entire course content

Code: 0221. **Name:** Hand-in Assignment.

Credits: 1,5. **Grading scale:** UG. **Assessment:** Approved hand-in assignment **Contents:** Hand-in assignment

Admission

Assumed prior knowledge: VSMA20 Structural Mechanics or VSMA10 Mechanics of Materials.

The number of participants is limited to: No

The course overlaps following course/s: VTGA01, VTGA05, VTGF05, VTVA01, VGTF05

Reading list

- Ola Dahlblom och Erika Tudisco: Introduktion till Geotekniken. Studentlitteratur AB, 2022, ISBN: 9789144159980.
- Conny Svensson: Kompendium i Teknisk Geologi. KFS.

Contact and other information

Course coordinator: Erika Tudisco, erika.tudisco@construction.lth.se

Course homepage: <http://www.geoteknik.lth.se/english>

Further information: The course may be partly taught in English.