Course syllabus

Faculty of Technology

Department of Building Technology

1BY019 Grunder för anläggningsteknik, 7.5 credits
Geosciences

Main field of study
Civil Engineering

Subject Group
Building Technology

Level of classification
First Level

Progression
G1F

Date of Ratification
Approved by Faculty of Technology 2022-08-30
The course syllabus is valid from spring semester 2023

Prerequisites
Building Technology 1 (1BY008) 7,5 credits, Structural Engineering and Design (1BY034) 7,5 credits, and Computational Methods for Technical Applications (1MA112) 15 credits or similar, alternative 52,5 credits within the programme Building Technology Programme with specialisation in Architectural Engineering.

Objectives
The course gives basic understanding regarding what should be considered when laying foundations for buildings and roads. It provides basic understanding regarding what to consider when constructing roads and how to handle water and wastewater.

After completing the course, the student should:

- Be able to describe the evolution of the Swedish geology and what characterise the most common soils and how they have developed
- Have knowledge regarding basic geotechnical concepts
- Know what characterise different kinds of soil and be able to make stress and subsidence calculations based on soil type
- Have basic knowledge regarding roads and how the location and traffic load influence the design of roads
- Have knowledge about the relationship between the different phases planning,

design, construction, operation and maintenance
- Know what to consider when dimensioning the layers of a road
- Be able to perform calculations for basic structural road design
- Have knowledge about the water cycle and how this connects to freshwater production and wastewater handling
- Be able to perform calculations to dimension water flows and pipes

Content

The course provides general knowledge considering soil types and how they influence the laying of foundations. It also gives knowledge regarding structural road design, and regarding the handling of freshwater and wastewater. The course includes contacts with the industry in the form of internship.

The course comprises the following elements:
Geology

- The structure of the earth: earth’s materials
- minerals and rocks

Geotechnics

- Soil properties
- Stress analysis
- Strength of soils
- Consolidation

Water and Wastewater Technology

- Terminology of water & wastewater systems
- Historical aspects and changes in priorities
- Water distribution network
- Sewer & stormwater net
- Water & wastewater treatment in central system
- Locale water supply treatment
- Wastewater treatment in local systems

Road Technology

- Road and traffic terminology
- Road structure
- Maintenance of road structure

Contact with the industry:
Study visits and contacts with the industry are carried out according to the teacher's instructions.

Type of Instruction

The teaching consists of lectures, workshops, laboratory work and exercises. The Road Technology part contains one compulsory exercise class.

Examination

The course is assessed with the grades U, 3, 4 or 5.

The course is examined through

- written exam of 4.5 credits with the grades U, 3, 4 or 5.
- The part Water and Wastewater Technology, 2.0 hp, is examined through a separate written exam in connection to the part, and assessed with the grades U, 3,4 or 5.
- Road Technology is partly examined through a written project work, 0.5 credits, assessed with the grades U / G.
- The company contacts, 1.0 credits, are examined with a grade of U / G through attendance and presentations.

All parts must be approved before the course is passed. The final grade is obtained as a weighing of the various parts of the examination where the written exam is most important.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Credit Overlap

The course cannot be included in a degree along with the following course/courses of which the content fully, or partly, corresponds to the content of this course: 1BY000, 7.5 credits, 1BY016, 2,5 credits, 1BY021, 2,5 credits

Required Reading and Additional Study Material

Required reading

Kompendium i teknisk geologi AK, 2012, Conny Svensson, Avdelningen för teknisk geologi, Lund.

Dahlblom, Ola & Tudisco, Erika (2022). Introduktion till geotekniken. Studentlitteratur AB, Lund. ISBN 9789144159980.

Lidström, Viveka (latest edition). Vårt Vatten, grundläggande lärobok i vatten- och avloppsteknik. Svenskt vatten AB. ISSN 1654-5117.

Aghard, Sven & Parhamifar, Ebrahim. Vägbyggnad, 2014. Liber, Stockholm. ISBN 978-91-47-09346-5.