AF2602 Rock Mechanics 7.5 credits

Bergmekanik

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

Establishment

Course syllabus for AF2602 valid from Autumn 2024

Grading scale

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

Education cycle

Second cycle

Main field of study

The Built Environment

Specific prerequisites

Documented knowledge in soil mechanics or foundation engineering 7,5 ECTS. corresponding to the content in course AF1601.

Eng B/6 according to the Swedish upper secondary school system.

Language of instruction

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

Intended learning outcomes

After the course the students shall be able to:

- Account for the fundamental differences between the rock mass and other types of man-made construction materials.
- Describe ground behavior for different geological conditions and identify common geological uncertainties.
- Use different rock mass classification systems such as the Q system, the Rock Mass Rating (RMR) and the Geological Strength Index (GSI).
- Determine the mechanical properties of intact rock, joints, and rock masses to be used as input to the rock mechanical calculations.
- Calculate radial and tangential stresses and deformations around underground openings.
- Analyze the interaction between the rock mass and the installed support in tunnels with the ground reaction curve concept.
- Analyze typical stability problems in rock engineering such as block stability, arching stability and slope stability.

Course contents

- Basic terms in engineering geology and rock mechanics
- Geological uncertainties and ground behavior
- Pre-investigation methods
- Mechanical properties of the rock mass
- Rock support
- Interaction between rock mass and rock support in tunnel engineering
- Block and arching stability in tunnels
- Slope stability
- Foundations on rock

Examination

- ÖVN1 - Exercises, 3.0 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 1.5 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.

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

Other requirements for final grade

Written examination (TEN1; 3 hp),
approved exercises (ÖVN1; 3 hp) and laboratory work (LAB1; 1,5 hp)

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.