AF2610 Tunnel Engineering 7.5 credits

Bergteknik och tunnlar

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

Establishment

Course syllabus for AF2610 valid from Autumn 2021

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 foundation engineering in total 15 ECTS points corresponding to the content in courses AF1601 and AF2609.

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 students will be able to:

- Identify main characteristics of different ground behaviour,
- Identify and plan tunnel excavation method from technical, production, and sustainability point of view,
- Design tunnel reinforcement based on empirical, analytical and numerical assessment depending on complexity and acquire a holistic perspective on the design process,
- Analyse water ingress to tunnels and identify possible water related problems for excavation, as well as plan and implement suitable tunnel draining and/or grouting methods,
- Analyse cost and time for ordinary tunnels based on risks and construction management principles.

Course contents

- Problems in tunneling and ground behaviour
- Tunnel blasting and tunnel production with drill and blast
- Tunnel support: empirical, GRC, FEM analysis
- Excavation in sequences, principles and production aspects
- Ground water problem in tunnelling, Water ingress and Grouting
- Tunnel cost and time planning,
- Risk aspects in tunnelling,
- Sustainability in tunnelling

Examination

- TEN1 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVNA - Exercises, 3.0 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, 4.5 hp. Grade scale: A-F

Övn1-exercises, 3.0 hp. Grade scale: P,F

Other requirements for final grade

Approved written exam

Approved exercises

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.