AF2003 Structural Engineering, Advanced Course 7.5 credits

Bärverksanalys, avancerad kurs

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

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

Establishment

Course syllabus for AF2003 valid from Autumn 2013

Grading scale

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

Education cycle

Second cycle

Main field of study

Built Environment

Specific prerequisites

Basic knowledge in structural mechanics and structural engineering. Equivalent to at least 2·times 7,5 ECTS points.

Language of instruction

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

Intended learning outcomes

The overall aim of the course is to give knowledge and tools for analysis and design of civil structures with special reference to load bearing resistance. After having passed the course the student should be able to

- Describe the behaviour of an arbitrary structure and explain the difference between a statically determinate structure and a statically indeterminate structure.
- Analytically calculate the internal forces in statically indeterminate beams and frames, also with consideration of torsion in plane grids.
- Explain the relation between section forces, stresses and strains within the elastic range.
- Explain and analyse instability phenomena of beams, columns and column systems.
- Explain the behaviour and calculate the resistance of concrete beams in the ultimate limit state subjected to bending moment and shear force.

Course contents

- Statically indeterminate structures.
- Stress state in beams and plates due to bending and torsion in the elastic range.
- Concrete beams subjected to bending and shear force.
- Composite beams subjected to bending.
- Instability of linear elastic structures.

Disposition

- Lectures 33 hours
- Exercise classes 44 hours
- Exam 4 hours

Course literature

The necessary literature in the form of reports and handouts will be collected in a bundle available to purchase at the Students Office at Brinellvägen 23. The bundle contain

- Handouts for lectures.
- Report 120: Elastic Plate Theory for Bridge Superstructures.
- Report 121: Design of Steel Concrete Composite Bridges.

Examination

- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 3.0 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.

Other requirements for final grade

Passed written exam (4,5 ECTS credits)
Passed exercises (3 ECTS credits)

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.