



HS1014 Design of Civil Engineering Constructions 7.5 credits

Bro- och anläggningskonstruktioner

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 HS1014 valid from Autumn 2011

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Students in year 3 of the Bachelor of Science in Engineering programme Constructional Engineering and Design

HS1008 Structural Design in Civil Engineering
or equivalent course

Language of instruction

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

Intended learning outcomes

The goal of this course is to provide students with basic knowledge of bridge and civil engineering structures and advanced knowledge of design of concrete structures under Eurocodes. The course provides prior knowledge for future project courses, such as “Infra Project” and “Building Project”. The course’s focus is on design principles for different types of fractures, and calculation of reinforcement needs with respect to serviceability limit state.

Course contents

The course covers these subjects:

- Design of non-tensioned reinforced concrete slabs in the ultimate limit state according to the table method
- Design of non-tensioned reinforced concrete beams in the serviceability limit state with respect to allowable crack sizes
- Calculation of anchorage lengths, shortening, and splicing of reinforcement of non-tensioned reinforced concrete structures with regard to ultimate and serviceability limit states
- Design of non-tensioned reinforced concrete columns with respect to bending moment and normal force
- Design of non-tensioned reinforced concrete beams under torsional moment
- Design of non-tensioned reinforced concrete structures with respect to stamping and spalling
- Identification and classification of different types of bridges as regards materials, design, and static systems
- Identification of different types of permanent and variable loads, designed load cases, and load combinations for road and railway bridges
- Placement of reinforcement in the construction with suitable size, design, and splicing

Disposition

The course consists of lectures, individual and group assignments, and individual and group exercises.

Course literature

Infrastrukturkonstruktioner (Rapport 13, utgåva 6, Prof. Håkan Sundquist)
Beräkning av betongkonstruktioner (Björn Engström, Rapport 2007:13, Reviderad 2008)

Examination

- TEN1 - Examination, 5.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 2.5 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.

Other requirements for final grade

A passing grade on written examination (TEN1, 5.0 credits)

A passing grade on assignments (ÖVN1, 2.5 credits)

Overall course grade is based on grading scale A-F.

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.