HS1008 Structural Design in Civil Engineering 7.5 credits

Konstruktionsteknik

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

Establishment

Course syllabus for HS1008 valid from Spring 2012

Grading scale

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

Education cycle

First cycle

Main field of study

The Built Environment, Technology

Specific prerequisites

Minimum 20,0 credits in mathematics 1 (HF1902), mathematics 2 (HF1004), structural mechanics 1 (HS1003) och structural mechanics 2 (HS1004).

Language of instruction

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

Intended learning outcomes

Outcomes to receive an E grade:

Upon completion of this course, students will be able to:

- Calculate snow loads and pent roofs
- Calculate self weight
- Calculate the imposed loads of fittings, fixtures and people
- Calculate critical load position
- Calculate design load in ultimate limit and serviceability limit states
- Calculate long-term design load
- Calculate plastic modulus for symmetrical and assymmetrical beam sections
- Calculate the cross-section class for bending moments and centric compressive force for bisymmetric steel i-sections and square hollow sections
- Analyze and design bisymmetric steel i-sections and square hollow sections in ultimate limit states taking consideration to bending, buckling, cross-section checks, and flexural buckling
- Analyze and design bisymmetric steel i-sections in ultimate limit states taking consideration to shear force
- Analyze and design single and double-reinforced rectangular concrete beams in the ultimate limit state taking consideration to bending moments
- Analyze rectangular reinforced concrete columns in an ultimate limit state
- Analyze and design reinforced concrete beams in ultimate limit state taking consideration to shear force
- for ridged and pent roofs Calculate wind loads for walls, ridged roofs and pent roofs
- Calculate self weight
- Calculate the imposed loads of fittings, fixtures and people
- Calculate critical load position
- Calculate design load in ultimate limit and serviceability limit states
- Calculate long-term design load
- Calculate plastic modulus for symmetrical and assymmetrical beam sections
- Calculate the cross-section class for bending moments and centric compressive force for bisymmetric steel i-sections and square hollow sections
- Analyze and design bisymmetric steel i-sections and square hollow sections in ultimate limit states taking consideration to bending, buckling, cross-section checks, and flexural buckling
- Analyze and design bisymmetric steel i-sections in ultimate limit states taking consideration to shear force
- Analyze and design single and double-reinforced rectangular concrete beams in the ultimate limit state taking consideration to bending moments

- Analyze rectangular reinforced concrete columns in an ultimate limit state
- Analyze and design reinforced concrete beams in ultimate limit state taking consideration to shear force

Course contents

- 30% Load analysis
- 30% Steel structures
- 40% Concrete structures

Course literature

Al-Emrani m fl (2008), Bärande konstruktioner,del 1,
Avd för konstruktionsteknik, Chalmers tekniska högskola, Rapport 2010:9

HS1008 Konstruktionsteknik - Formler och tabeller

Examination

- ÖVN1 - Exercises, 2.5 credits, grading scale: P, F
- TEN1 - Examination, 5.0 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.

Other requirements for final grade

Written examination (TEN1, 5 credits), grading scale A-F
Submitted assignments (ÖVN1, 2.5 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.