AF2203 Advanced Bridge Design 7.5 credits

Brokonstruktion fortsättningskurs

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

Establishment

Course syllabus for AF2203 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 Bridge Design, Finite Element Methods in Analysis and Design and Structural Dynamics for Civil Engineers, equivalent to at least 3 times 7,5 ECTS corresponding to the content in courses AF2201, AF2024 and AF2011.

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

The aim of this course is to give advanced knowledge on analysis and design of bridges. After this course, the student will be able to:

— Understand the concept and application of FEM for bridge analyses

— Use a commercial FE program to model and analyse bridges in 3D

— Consider fatigue in design according to the Eurocode (EC3)

— Use probabilistic methods in design and assessment of bridges

— Analyse box girder bridges

— Calculate life-cycle-costs of bridges

Course contents

— The finite element method for bridge analyses

— FEM modelling

— Fatigue analysis

— Box girder bridges

— Life-cycle-cost analyses

— Bridge construction methods

Design and analysis of a bridge is included in the course as a project task.

Examination

- ÖVN1 - Exercises, 1.5 credits, grading scale: P, F
- PRO1 - Project, 6.0 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.

PRO1 - Approved project task (6 ECTS credits)

ÖVN1 - Passed exercises (1,5 ECTS credits)

Grading is based on the quality and amount of work and time spent on the project task including the written report and the oral presentation. In addition, the student compliance with the deadlines and also the results from the lecture quizzes are considered.

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.