



# AF2202 Bridge Design, Advanced Course 6.0 credits

## Bridge Design, Advanced Course

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

### Establishment

Course syllabus for AF2202 valid from Autumn 2008

### Grading scale

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

### Education cycle

Second cycle

### Main field of study

### Specific prerequisites

AF2201 Bridge Design

### 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 of FEM and use FEM for analysis
- Understand sources of non-linearities
- Make simple analysis of a suspension bridge using Selberg's nomograms
- Consider fatigue in design according to the Eurocode (EC3)
- Describe methods for repair and strengthening of bridges
- Calculate the life-cycle-cost of a bridge
- Explain deterioration mechanisms for concrete
- Analyse and design a composite railway bridge (project task)

## Course contents

- The finite element method for bridge analysis
- Simplified analysis of suspension bridges
- Wind forces on large bridges
- Analysis of composite bridges
- Fatigue analysis
- Life-cycle-cost analysis
- Repair and strengthening of bridges
- Deterioration and durability of concrete structures

## Disposition

Including part of AF2019

## Examination

- PRO1 - Project, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Exercises, 2.0 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.

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

## **Other requirements for final grade**

Passed exercises (2 ECTS credits)

Approved project task (4 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.