



Course syllabus

Faculty of Technology

Department of Building Technology

1BY072 Stål- och träkonstruktioner, 7,5 högskolepoäng

Steel and Timber Structural Engineering, 7.5 credits

Main field of study

Civil Engineering

Subject Group

Building Technology

Level of classification

First Level

Progression

G1F

Date of Ratification

Approved 2009-12-15

Revised 2021-06-10 by Faculty of Technology. Literature list is revised.

The course syllabus is valid from autumn semester 2021

Prerequisites

15.0 credits in Mathematics from within the programme (equivalent to Basic Mathematics for engineers, 1MA131, 7,5 credits, or Linear algebra for engineers, 1MA133, 7,5 credits, or Calculus for engineers, 1MA132, 7,5 credits) as well as Building Technology 1 (1BY008, 7,5 credits), Structural Mechanics (1BY012, 7.5 credits) and Concrete Structural Engineering (1BY052, 7.5 credits).

Objectives

After completing the course the student is expected to;

- be able to dimension steel and wood structures loaded by moment, shear and/or normal forces
- be able to check the function in the serviceability limit state
- be able to make drawings for steel and wood structures
- be able to apply acquired knowledge within projects with given conditions

Content

The course comprises the following elements:

Steel structures:

- Current regulations
- Steel properties
- Cross section classes
- Bending and shearing
- Axially loaded bar
- Compression and simultaneous bending
- Checking steel structures in the ultimate limit state
- Bolted and welded joints
- Orientation on dimensioning against fire and fatigue
- Engineering design

Wood constructions:

- Current regulations
- Wood materials
- Bending and shearing in simple construction elements
- Axially loaded bar
- Compression and simultaneous bending
- Checking wood structures in the ultimate limit state
- Joints in timber structures
- Orientation on composite construction elements
- Timber construction systems

Type of Instruction

The teaching consists of lectures, exercises and project work.

Examination

The course is assessed with the grades U, 3, 4 or 5.

The project is giving 2,5 credits and is graded with U/G. The written exam is given 5 credits and graded with grades U, 3, 4 or 5 which is also the final grade for the course.

Course Evaluation

During the course or in close connection to the course, a course evaluation is to be carried out. The result and analysis of the course evaluation are to be communicated to the students who have taken the course and to the students who are to participate in the course the next time it is offered. The course evaluation is carried out anonymously. The compiled report will be filed at the Faculty.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: BYA917

Required Reading and Additional Study Material

Required reading

Oscarsson, J. & Dorn, M. (2018). Stålbyggnad. Utdrag ur Al-Emrani M., Engström B., Johansson M. & Johansson P.: Bärande konstruktioner Del 1 och Bärande konstruktioner Del 2, Institutionen för bygg- och miljöteknik, Avdelningen för konstruktionsteknik, Chalmers Tekniska Högskola. Växjö: Linnéuniversitetet.

Fröbel, E. (red.) (2019). Dimensionering av träkonstruktioner, Del 1-3. 3. uppl., Stockholm: Svenskt Trä.

Johansson, M. (2019) Utdrag ur Eurokod 0 och 1. Oktober 2019, Växjö: Linnéuniversitetet.

Johansson, M. (2017). Studiematerial - Lastfall, Limträdimensioner, Tibnors katalog (IPE, HEA, HEB, VKR), Håldäcksbjälklag, Överslag massivträbjälklag. Augusti 2017, Växjö: Linnéuniversitetet.

Swedish Standards Institute (SIS) (2002). SS-EN 1990 Eurokod - Grundläggande dimensioneringsregler för bärverk. Stockholm: SIS.

Swedish Standards Institute (SIS) (2). SS-EN 1991-#-# Eurokod 1: Laster på bärverk (Olika delar). Stockholm: SIS.

Swedish Standards Institute (SIS) (2). SS-EN 1993-#-# Eurokod 3: Dimensionering av stålkonstruktioner (Olika delar). Stockholm: SIS.

Swedish Standards Institute (SIS) (2). SS-EN 1995-#-# Eurokod 5: Dimensionering av träkonstruktioner (Olika delar). Stockholm: SIS.

BFS 2019:1. Boverkets föreskrifter om ändring i Boverkets föreskrifter och allmänna råd (2011:10) om tillämpning av europeiska konstruktionsstandarder (eurokoder). Karlskrona: Boverket.

Språkrådet (senaste upplaga). Myndigheternas skrivregler. Stockholm: Språkrådet och Norstedts Juridik AB.

Högskolan i Borås (senaste upplaga). Guide till Harvardsystemet. Borås: Högskolan i Borås.