Timber Structures

Programme course

4 credits

Träkonstruktion

TNBJ09

Valid from: 2021 Spring semester

Determined by
Board of Studies for Mechanical Engineering and Design

Date determined
2020-09-29

Main field of study
Civil Engineering

Course level
First cycle

Advancement level
G1X

Course offered for
- Bachelor of Science in Civil Engineering

Prerequisites
Structural Mechanics and Strength of Materials. Building Technology basic course. CAD Technology 2D.

Intended learning outcomes
The course intends to give basic knowledge of timber and steel structures.

- The student should be able to describe properties and applications for the most common building construction materials
- Design of basic structures should be performed by using tables, formulas and handbooks. The calculations should be easy to follow and understand
- Calculations should be implemented in ultimate limit state and in serviceability limit state
- Technical terms, symbols and conventions should be used adequately
- Knowledge should be used integrated in analysis and solution to basic structures. Calculations should be estimated with reasonable approximations
- The student should have an overview of function, action and validity of composed structures made up of different building units
- The student should act in order to find creative and well working solutions to project assigments
- Project assigments should be presented adequately. Drawings should be implemented in CAD

Course content

Timber design: Wood as a building construction material. Determination of capacity subject to bending moment, shear force and normal force. Joint design with nails, screws and bolts. Calculation of deflection. Design of various types of connection. Bracing of horizontal forces. Steel design: Steel as a building material. Calculations in ultimate limit state: Design subject to bending moment, shear force and normal force and joint design with bolts and welds. Calculations in serviceability limit state: Design subject to deformation. Constructional details and instructions. Rust and fire protection.

Teaching and working methods

The lectures contain theoretical parts, solutions to typical problems and preparation of project assigments. A field trip to a suitable object.
The course runs over the entire autumn semester.

Examination

UPG1	Hand-in exercises	2 credits	U, G
TEN1	Written examination	2 credits	U, 3, 4, 5

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is Swedish, the course as a whole or in large parts, is taught in Swedish. Please note that although teaching language is Swedish, parts of the course could be given in English. Examination language is Swedish.
- If teaching language is Swedish/English, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English (depending on teaching language).
- If teaching language is English, the course as a whole is taught in English. Examination language is English.

Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

Department

Institutionen för teknik och naturvetenskap

Director of Studies or equivalent

Dag Haugum

Examiner

Osama Hassan

Course website and other links

Education components

Preliminary scheduled hours: 64 h
Recommended self-study hours: 43 h

Course literature

Books

Börje och Carina Rehnström, (2019) *Träkonstruktion enligt eurokoderna*
Isaksson, T., Mårtensson, A., (2020) *Byggkonstruktion: regel- och formelsamling: baserad på Eurokod*
Johannesson-Vretblad, (2011) *Byggformler och tabeller*