



Faculty of Health, Science and Technology  
Construction Engineering

## Syllabus

### Engineering Design: Timber Structures

<b>Course Code:</b>	BYGB21
<b>Course Title:</b>	Engineering Design: Timber Structures <i>Träkonstruktion</i>
<b>Credits:</b>	5
<b>Degree Level:</b>	Undergraduate level
<b>Progressive Specialisation:</b>	First cycle, has less than 60 credits in first-cycle course/s as entry requirements (G1F)

**Major Field of Study:**  
BYA (Building Technology)

#### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2015-02-05, and is valid from the Autumn semester 2015 at Karlstad University.

#### Prerequisites

Structural Mechanics 7.5 ECTS cr ( incl. calculation of cumulative loads according to the Euro codes), Strength of Materials for Building Construction 7.5 ECTS cr., or TGHBY enrollment, or equivalent

#### Learning Outcomes

The aim of the course is to introduce students to construction calculation and that students develop basic knowledge of timber construction elements and skills to design and dimension simple timber elements.

For the grade 3, students should, on completion of the course, be able to:

- give an account of the calculation principles and theoretical relationships applied in the course,
- correctly perform calculation of cumulative loads and calculate the dimensions of simple timber designs with given conditions,

For the grades 4 or 5, students should, on completion of the course, in addition be able to:

- demonstrate further knowledge and skills in calculation of cumulative loads and timber design dimensioning,
- perform more complex calculations and make reasonable assumptions and controls.

#### Content

The course deals with the preconditions for dimensioning such as partial coefficient method, calculation of cumulative loads, dimensioning and design principles, and dimensioning in accordance with current norms and standards for the material timber.

The course comprises the following components:

- design calculation norms
- load and calculation of cumulative loads
- the properties of timber
- bending moment capacity
- deformation
- transverse force capacity
- strain and stress capacity
- dimensioning for fire resistance
- nail joint
- bolted joint

Instruction is in the form of lectures, calculation workshops, and field trips.

### **Reading List**

See separate document.

### **Examination**

Assessment is continuous for the grade 3 and based on written exams. For the grades 4 or 5, assessment is based on a final written exam. A re-sit is offered for the Pass grade (3).

### **Grades**

One of the grades 5 (Distinction), 4 (Merit), 3 (Pass), or U (Fail) is awarded in the examination of the course.

### **Quality Assurance**

Follow-up relating to learning conditions and goal-fulfilment takes place both during and upon completion of the course in order to ensure continuous improvement. Course evaluation is partly based on student views and experiences obtained in accordance with current regulations and partly on other data and documentation. Students will be informed of the result of the evaluation and of any measures to be taken.

### **Course Certificate**

A course certificate will be provided upon request.

### **Additional information**

The course BYGB21 cannot be included in the same degree programme as the course BYGB17.

The local regulations for studies at the Bachelor's and Master's levels at Karlstad University stipulate the obligations and rights of students and staff.

Required course for the Building and Construction Engineering programme and the first applied course in construction calculation