



Faculty of Health, Science and Technology  
Mechanical Engineering

# Syllabus

## Machine components

<b>Course Code:</b>	MSGB23
<b>Course Title:</b>	Machine components <i>Maskinelement</i>
<b>Credits:</b>	7.5
<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:**  
MTA (Mechanical Engineering)

### Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2022-08-30, and is valid from the Spring semester 2023 at Karlstad University.

### Prerequisites

Registered for Mathematics, 15 ECTS credits, Mechanics, 15 ECTS credits, and Solid Mechanics, 7.5 ECTS credits, or equivalent

### Learning Outcomes

The aim of the course is for students to acquire basic knowledge of various machine components and their function, as well as being trained in design methodology and selection of machine components.

Upon completion of the course, students should be able to:

- give an account of the theoretical basis of function and design
- give an account of various components in different applications and their advantages and disadvantages
- determine appropriate design parameters

- select, on the basis of a problem formulation, suitable machine components from standards and catalogs of machine components, including bolt joints, weld joints, press- and shrink joints, springs, shafts, bearings, gears, shaft couplings, and brakes
- theoretically identify and describe the common components of a drive line and a drive system, and calculate the system performance taking strength, degrees of efficiency, and gear ratios into account
- give an account of the basic theory of the critical rotation speed for shafts
- give an account of the main features of the CE marking process according to European Directives for machinery.

### **Content**

The course contains the following elements:

- lectures on common types of machine components; theoretical basis, dimensions, and selection criteria
- exercises or individual work on dimensioning, selection, and calculation of machine components
- mandatory laboratory assignment.

### **Reading List**

See separate document.

### **Examination**

Examination is in the form of a laboratory assignment and written exam.

If students have a decision from Karlstad University entitling them to Targeted Study Support due to a documented disability, the examiner has the right to give such students an adapted examination or to examine them in a different manner.

### **Grades**

One of the grades Fail (U), 3 (Pass), 4 (Some Distinction), or 5 (Distinction) 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 local regulations for studies at the Bachelor and Master levels at Karlstad University stipulate the obligations and rights of students and staff.