



Faculty of Health, Science and Technology
Mechanical Engineering

Syllabus

Machine design 1, Innovation and Design

Course Code:	MSGB47
Course Title:	Machine design 1, Innovation and Design <i>Konstruktionsteknik I, I&D</i>
Credits:	7.5
Degree Level:	Undergraduate level
Progressive Specialisation:	First cycle, has at least 60 credits in first-cycle course/s as entry requirements (G2F)

Major Field of Study:
MTA (Mechanical Engineering)

Course Approval

The syllabus was approved by the Faculty of Health, Science and Technology 2022-01-26, and is valid from the Autumn semester 2022 at Karlstad University.

Prerequisites

Mechanics 7.5 ECTS credits, and registered for Solid Mechanics 7.5 ECTS credits, Materials Engineering 7.5 ECTS credits, Manufacturing Technology, 7.5 ECTS credits, and Machine Components 7.5 ECTS credits, or equivalent, or registered for the Innovation and Design Engineering programme, or equivalent

Learning Outcomes

The aim of the course is for students to acquire knowledge of machine design in the areas of construction methodology, solid modelling, and drawing production.

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

Construction

- give an account of the main steps in a product development process
- give an account of the relationships between form, material, and manufacturing process
- give an account of basic design support methods
- independently structure, plan, and carry out a design assignment on the basis of a given specification of requirements, including the selection of materials and manufacturing method
- use relevant assumptions and simplifications for calculating a mechanical construction

Solid modelling and drawing production

- model and edit parts and assemblies in a 3D CAD program,
- produce 2D drawings of details and assemblies in a 3D CAD program,
- structure variant constructions using family tables and relations in a 3D CAD program,
- structure more complex designs using top-down functions in a 3D CAD program.

Content

Instruction is in the form of lectures, literature study, and supervised exercises in solid modelling and drawing production, both manually and in a 3D CAD program. The basic knowledge acquired is then integrated in one or several group assignments focused on construction. The construction assignments are presented in seminars where the groups discuss their solutions.

Reading List

See separate document.

Examination

Assessment is based on hand-in assignments and mandatory seminars.

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 Distinction (VG), Pass (G), or Fail (U) 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.