



Faculty of Health, Science and Technology

Study Plan

Study Programme in Innovation and Design Engineering

Programme Code	TGHID
Programme Title	Study Programme in Innovation and Design Engineering Högskoleingenjörsprogrammet i innovationsteknik och design
Credits:	180
Approval	The programme Study Plan was approved by the Faculty board of Science and Technology 21 September 2017 and is valid from the fall semester 2018, Rev. 1 Dec 2022.
Language of Instruction	Swedish and English
Degree Level	Bachelor
Degree Type	General Degree
Prerequisites	General admission requirements and Physics 2, Chemistry 1, Mathematics 3c /Mathematics D

Introduction

The innovation and design programme aims at preparing students for engineering tasks in product development. The training is a combination of the fields of mechanical engineering and industrial design. Students are especially expected to acquire the knowledge and skills necessary to contribute to developing products and services. The generic subjects included in mechanical engineering are mechanics, materials engineering, and solid mechanics. The methods of industrial design and the tools of product visualization and implementation are studied along with design process as an innovation tool. These subjects are studied separately to start with but are also essential parts of the applied studies such as design techniques,

manufacturing engineering, production engineering, production system, and integrated product development.

The engineering programme in innovation and design qualifies for a professional degree and is based on science and proven experience. The programme courses have many elements of application, laboratory experiment and projects, often in conjunction with industry.

Work opportunities for innovation and design engineers are primarily to be found in the early stages of the product development process.

Objectives

Upon completion of the programme, innovation and design engineering students should, beyond the general requirements for a Bachelor's degree specified in the Higher Education Ordinance, SFS 2006:1053, be able to demonstrate the following competences in developing products and services:

- Identify needs, formulate problems, generate, evaluate and present solutions,
- Integrate all essential aspects of the product development process from product definition to product recycling,
- Design components and products, motivating the choice of solution with regard to design materials, manufacturing, form, economy, and the environment,
- Apply a customer or user perspective,
- Plan, organize, and methodically carry on projects,
- Apply creative and innovative methods,
- Use methods and tools for product configuration, product development and design,
- Present ideas in speech and writing,
- Retrieve information and view facts critically.

Programme Structure

In the first year students study basic courses in mathematics, electrical engineering, energy engineering, computer science, and in mechanical engineering the generic subjects mechanics, solid mechanics and materials engineering.

In the second year students study specialized design classes with focus on industrial design process, form, colour, design, analogue and digital visualization, and mechanical engineering courses.

The third year offers advanced and applied courses in design and ergonomics, sustainable development and mechanical engineering. An elective course is included in the concluding semester. The course integrated product development includes a major project and a degree project in conjunction with industry.

Programme Curriculum

Courses within mechanical engineering as mechanics, solid mechanics, machine design, manufacturing, production and courses within science: 112,5 ECTS credits

Courses within design including product development 45 ECTS credits.

Mathematics 22,5 ECTS credits

Thesis work 22,5 ECTS credits

Degree Title

Degree of Bachelor of Science in Engineering, Innovation and Design Engineering
Högskoleingenjörsexamen i innovationsteknik och design

Credit Transfer

According to the *Higher Education Ordinance (Ch. 6 ½ 12-14)*, students may transfer credits from previously completed university courses subject to approval.

Additional information

Moving Up Students are not allowed to start working on their Degree projects until they have completed 75% of the previous programme credits.

The local regulations for first and second cycle education at Karlstad University stipulate the obligations and rights of students and staff.