**PROGRAMME STUDY PLAN**

<table>
<thead>
<tr>
<th>Programme Code</th>
<th>TGHID</th>
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<tbody>
<tr>
<td>Programme Approval</td>
<td>The Programme Study Plan was approved by the Faculty Board of Technology and Science on 20 June 2012 and is valid from the autumn semester of 2013 at Karlstad University.</td>
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<tr>
<td>Programme Title</td>
<td>Study Programme in Innovation and Design Engineering</td>
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<tr>
<td>Credits</td>
<td>180 ECTS</td>
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<tr>
<td>Language of Instruction</td>
<td>Swedish</td>
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<tr>
<td>Degree Level</td>
<td>Bachelor</td>
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<tr>
<td>Degree Type</td>
<td>General Degree</td>
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<tr>
<td>Prerequisites</td>
<td>General admission requirements plus upper secondary school level Mathematics D, Physics B and Chemistry A. Standard eligibility E3 or General admission requirements plus upper secondary school Mathematics 3c, Physics 2, Chemistry 1. Area eligibility A8 or equivalent</td>
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**General Information**
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.

**Aims**

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

### Year 1
- Introductory course: 7.5 ECTS cr.
- Electrical Engineering: 7.5 ECTS cr.
- Computer science: 7.5 ECTS cr.
- Mechanics: 7.5 ECTS cr.
- Materials Engineering: 7.5 ECTS cr.
- Energy Engineering: 7.5 ECTS cr.
- Mathematics: 15 ECTS cr.

### Year 2
- Solid mechanics: 7.5 ECTS cr.
- Machine components: 7.5 ECTS cr.
- Manufacturing engineering: 7.5 ECTS cr.
- Machine design: 15 ECTS cr.
- Production systems: 7.5 ECTS cr.
- Design courses: 15 ECTS cr.

### Year 3
- Sustainable development: 6.5 ECTS cr.
- Materials engineering: 6.5 ECTS cr.
- Ergonomics: 7.5 ECTS cr.
- Integrated product development: 9.5 ECTS cr.
- Elective: 7.5 ECTS cr.
- Degree project: 22.5 ECTS cr.

## Grades
One of the grades Fail (U), Pass (3), Some Distinction (4), or Distinction (5) is awarded in the examination of most courses in engineering programmes.

## Credit Transfer
According to the Higher Education Ordinance (Ch. 6, § 12-14), students may transfer credits from previously completed university courses subject to approval. Transfer of credits for a course module or university studies generally, is subject to the approval of the course examiner. Transfer of credits for a full course is subject to the approval of the Student Services Office.

## Degree Title
Degree of Bachelor of Science in Engineering, Innovation and Design Engineering

## 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 undergraduate studies at Karlstad University stipulate the obligations and rights of students and staff.