



# Programme syllabus

[An accessible version of the syllabus can be found in the Course and programme directory.](#)

## Degree Programme in Mechanical Engineering 180 credits

Högskoleingenjörsutbildning i maskinteknik, Södertälje

*Valid for students admitted to the education from autumn 20 (HT - Autumn term; VT - Spring term).*

This is a translation of the Swedish, legally binding, programme syllabus.

### Programme objectives

In addition to the aims that are specified in the higher education ordinance, an engineer who has been graduated from Mechanical Engineering, KTH, should:

#### Knowledge and understanding

- be able to apply basic technical knowledge within fields such as materials engineering, solid mechanics, manufacturing process, electrical and control engineering, as well as computer-based engineering tools such as CAD

- demonstrate basic knowledge in mathematics and natural science and the ability to critically and systematically use knowledge to model, simulate and evaluate processes on the basis of relevant information

## Skills and abilities

- demonstrate the knowledge and skills necessary to work independently as an engineer within the disciplinary domain
- demonstrate the ability to independently and creatively identify, formulate and solve problems within mechanical engineering areas with regard to existing possibilities and constraints
- demonstrate the ability to manipulate and shape sustainable products, processes and systems based on technical, ethical, economic and societal aspects
- demonstrate skills and understanding of the importance of teamwork and collaboration in multidisciplinary and multicultural project teams
- be able to participate in the utilisation and implementation of new technology, where it entails designing products, processes and work environment

## Ability to make judgements and adopt a standpoint

- demonstrate knowledge of how the design of products and systems can best be adapted to human wants and needs with respect to environmental aspects
- have an awareness of how technology affects society with regard to human conditions and needs
- be conscious of society's goals regarding resource management, economy and environment
- have acquired the ability to immerse themselves in new technology areas and have a good basis for continuing personal development and lifelong learning, both within their own and other new subject areas, in order to be able to follow the increasingly rapid technological developments and the changes they entails

## Extent and content of the programme

The programme comprises 180 higher education credits, which corresponds to three years of full-time studies.

The programme level is primarily first cycle.

The language of instruction is mainly Swedish. Some courses and course components may be taught in English, and certain course literature is in English.

The programme is the same for all specialisations during the first three semesters. Choice of specialisation is made pursuant to the KTH instructions.

## **Specializations:**

Industrial Engineering and Production (IEPS)  
Innovation and Design (IODS)

# Eligibility and selection

To study at the BSc programme in Mechanical Engineering, the general entry requirements for higher education apply. In addition the following specific entry requirements apply:

- Field-specific entry requirement A8( Physics 2, Chemistry 1, Mathematics 3c). Other studies or professional experience are assessed based on the prior knowledge required.

# Implementation of the education

## Structure of the education

Academic year

Every academic year consists of two semesters which are 20 weeks each. Each semester is divided into two study periods.

### **Structure of the programme**

Teaching and examination forms vary from course to course. Normally part of the course consists of lectures which introduce students to concepts and theories. Exercises and laboratory work reinforce the understanding of the theoretical relationships. Engaging in project work according to an industry model plays a vital role in the programme. This provides group training in addressing reality-based tasks in an engineering way.

The programme consists of compulsory courses for the first two years, including a specialization preparatory bundle of courses. To create a unified whole, the programme emphasises cooperation between courses, both in a specific year and between years.

The programme is concluded in the final semester with a degree project, which is often carried out with an employer outside the school.

### ***Year 1***

An introductory course provides the student with perspectives on engineering and the engineer's role as well as the basics of project methodology, group dynamics and presentation techniques. Basic courses in mathematics, engineering materials, manufacturing process, programming, mechanics, and CAD represent the core basic courses pertaining to the first year.

## *Year 2*

During the second year, both specialisations involve courses within the applied subjects relating to engineering science and technology. The different specialisations are described in more detail in appendix 2.

## *Year 3*

During the third year, specialisation-specific courses are given, including 15 credits optional courses. The programme concludes with a degree project.

# Courses

The programme is course-based. Lists of courses are included in appendix 1.

The programme consists of compulsory and optional courses. The compulsory courses are defined for each year in course lists. The goals, entrance qualifications, content and course requirements for each course can be found in the official course syllabuses.

The forms of teaching and examination vary between courses. These are indicated in each official course syllabus.

The optional courses can be chosen from KTH's range of offered courses. Credits from courses at other universities/higher education institutions can also be transferred if the qualification requirements are met.

The following limitations apply to optional courses:

- Optional courses may not be taken in year 1
- An optional course may not correspond to a significant extent to an existing programme course or an already credited course
- Higher education preparatory courses may not be counted as optional courses
- Optional courses may be chosen but should be relevant to the professional role of engineer

# Grading system

Courses in the first and the second cycle are graded on a scale from A to F. A-E are passing grades, A is the highest grade. The grades pass (P) and fail (F) are used for courses under certain circumstances.

# Conditions for participation in the programme

Participation requires admission to courses within the programme and course registration. For studies at a higher study year there are specific admission requirements for the courses. Admission requirements are specified in the course syllabus.

## Degree project

### *Degree Project, First Cycle*

The programme includes a degree project which is a course of 15 credits and is performed in the spring semester year 3. The degree project may begin when special admission requirements for the course are fulfilled.

## Degree

To obtain a Bachelor of Science in Engineering, Degree Programme in Mechanical Engineering, requires a passing grade in all courses included in the student's study plan. The study plan must include at least 180 credits including the degree project(15 credits).

Optional introductory courses and preparatory courses cannot be included as part of the degree.

Courses whose content is similar to one or more other courses within the programme cannot be counted as part of the 180 credits that form the basis for the degree.

Optional courses will contribute to the degree programme objectives of Mechanical Engineering and the professional role.

- *Title of professional qualifications at first cycle*  
*Högskoleingenjörsexamen*  
Bachelor of Science in Engineering

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



# Appendix 1: Course list

## Degree Programme in Mechanical Engineering (TIMAS)

### General courses

#### Year 1

#### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">ML1000</a>	Engineering Mathematics	11.0 hp	First cycle
<a href="#">ML1101</a>	Mechanics, General Course	7.5 hp	First cycle
<a href="#">ML1110</a>	Mechanical Engineering, Introduction Course	9.0 hp	First cycle
<a href="#">ML1111</a>	Business Control with Applied Statistics	9.0 hp	First cycle
<a href="#">ML1200</a>	Engineering Materials and Production, General Course	10.0 hp	First cycle
<a href="#">ML1209</a>	Computer Based Product Development Tools, Basic Course	7.5 hp	First cycle
<a href="#">ML1309</a>	Programming and Numerical Tools	6.0 hp	First cycle

## Year 2

### Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">ML1030</a>	Industrial Economics and Organisation	7.5 hp	First cycle
<a href="#">ML1201</a>	Strength of Materials, General Course	6.0 hp	First cycle
<a href="#">ML1203</a>	Energy Technology	6.0 hp	First cycle
<a href="#">ML1206</a>	Machine Components	10.5 hp	First cycle

## Industrial Engineering and Production (SIEP)

## Year 2

### Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1006</a>	Electrical and Control Engineering	7.5 hp	First cycle
<a href="#">HM1016</a>	Manufacturing Process, Intermediate Course 1	7.5 hp	First cycle
<a href="#">HU1000</a>	Industrial Marketing	7.5 hp	First cycle
<a href="#">ML1906</a>	Factory Design - Shop Layout, Production Flow and Work Environment	7.5 hp	First cycle

## Year 3

### Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HU1903</a>	Management	7.5 hp	First cycle
<a href="#">ML1108</a>	Decision Models and Impact Assessment	7.5 hp	First cycle
<a href="#">ML1330</a>	Financial Control in an Industrial Concept	7.5 hp	First cycle
<a href="#">ML2200</a>	Manufacturing Process, Intermediate Course 2	7.5 hp	Second cycle

### Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">ML100X</a>	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
<a href="#">ML101X</a>	Degree Project in Industrial Business Administration and Manufacturing, First Cycle	15.0 hp	First cycle

## Innovation and Design (SIOD)

## Year 2

### Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1006</a>	Electrical and Control Engineering	7.5 hp	First cycle
<a href="#">HU1000</a>	Industrial Marketing	7.5 hp	First cycle
<a href="#">ML1213</a>	Product Development and Design	15.0 hp	First cycle



## Year 3

### Mandatory courses (22.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">ML1205</a>	Production Driven Product Design	7.5 hp	First cycle
<a href="#">ML1214</a>	Solid Mechanics, Advanced Course	7.5 hp	First cycle
<a href="#">ML1332</a>	Computer-aided Mechanical Design, Continuation Course	7.5 hp	First cycle

### Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">ML100X</a>	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
<a href="#">ML102X</a>	Degree Project in Innovation and Design, First Cycle	15.0 hp	First cycle



# Appendix 2: Specialisations

Degree Programme in Mechanical Engineering  
(TIMAS)

Industrial Engineering and Production (SIEP)

No information entered.

Innovation and Design (SIOD)

No information entered.