



# 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 10 (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 in, for example, material technology, solid mechanics, production method and computer-based engineering tools, such as CAD

- show basic knowledge in mathematics and natural sciences, and ability to critically and systematically use knowledge to model, simulate and evaluate developments based on relevant information

## Skills and abilities

- show the knowledge and ability required to work independently as an engineer in mechanical engineering
- show ability to independently and creatively identify, formulate and solve problems in mechanical engineering fields, considering prevailing possibilities and limitations
- show ability to handle and shape products, processes and systems from technical, ethical and economic aspects
- show ability for, and understanding of, the importance of teamwork and cooperation in multicultural and multi-disciplinary project groups
- be able to participate in the use and introduction of new technology, related to designing of products, processes and working environment

## Ability to make judgements and adopt a standpoint

- show knowledge about how the design of products and systems is best adapted to human wishes and needs and with regard to environmental aspects
- have awareness of how technology influences society, regarding the conditions and needs of people and of the aims of society regarding resource management, economics and environment
- to be able to follow the accelerating technical development and the changes that follow, the technology student should have acquired the ability to get into new fields of technology and have a good basis for continued personal development and "lifelong learning", both within the own and new subject areas

KTH's local degree ordinance can be found in KTH's regulatory framework, [www.kth.se](http://www.kth.se)

## Extent and content of the programme

The education comprises 180 HE credits, which corresponds to 3 years of full-time studies.

The level of the education is mainly for first-cycle studies.

The teaching is mainly in Swedish. Certain courses and parts of courses are taught in English.

# Eligibility and selection

To study at KTH, general entry requirements for higher education apply. Furthermore, the following specific entry requirements must be fulfilled for admission to KTH's engineering programmes: Mathematics D, Physics B and Chemistry A, or equivalent. For each of the subjects, a grade of at least Pass or 3 is required. Other studies or professional experience is assessed based on the prior knowledge required.

For more information, refer to KTH's admission regulations found in KTH's regulatory framework, [www.kth.se](http://www.kth.se)

# Implementation of the education

## Structure of the education

Academic year, semesters and study periods are described in KTH's regulatory framework, [www.kth.se](http://www.kth.se)

### **Structure of the education**

The academic year is normally divided into 4 study periods, and normally two courses are read in parallel during each study period. Teaching and examination forms vary from course to course. Normally, a part of the course consists of lectures that provide an introduction to concepts and theories. Practical assignments and laboratory sessions reinforce the understanding of the theoretical relationships. Project work according to models from the industry has an essential role in the education. Here, training is given to work in groups with reality-based assignments with an engineering approach.

The education consists of compulsory courses during the first two years. In order to create wholeness in the education, cooperation between the courses is emphasised, both within each year and between the years. Two specialisations are offered in the programme, Industrial Economics and Production and Innovation and Design.

The education is completed during the final semester with a degree project that is usually carried out with employers outside of school.

### ***Year 1***

The first year is common to the specialisations of the programme, apart from one course.

An introductory course in project methodology provides the basis for project work, which is an essential part of all education. Mathematics, Programming, Computer-based Design Tools, Materials and Production, and

Solid Mechanics with Statics constitute the core of basic courses belonging to the first year. Two of the first year courses are mainly carried out as project courses. The courses that separate the specialisations in year 1 are Industrial Design with Colour and Craft I, which is given for Innovation and Design, and Economics and Management, which is given for Industrial Economics and Production. The economics course is given in year 2 for Innovation and Design.

### ***Year 2***

In the second year, the specialisations in the study fields begin. These are described more comprehensively in appendix 2. Four courses are common to both specialisations. They are Applied Mathematics, Environmental Science and Work Science, Electrical and Control Engineering and Competence and Development.

### ***Year 3***

During the third year, alternative courses are given (elective within the specialisation) and opportunity exists to freely choose other courses comprising 15 HE credits, provided that these have relevance for the educational objectives of the programme. These choices give the opportunity to create an education with an individual profile.

The education is completed with a degree project.

## **Courses**

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

## **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**

### **Enrolment**

A precondition for participating in the studies is that the student each spring and autumn must enrol for the coming semester. This is done according to KTH's instructions.

With the enrolment, the technology student has reported the intention to study and participate in the education. After that, it is possible for the student to:

- register for the semester
- register for courses

- get results reported
- have the possibility to receive student aid from CSN

## **Course application**

Course applications within the programme are made by the student before each semester according to KTH's instructions.

## **Conditions for promotion**

### *For studies in year 2:*

At least 45 HE credits from school year 1 should be completed by the examination period in August. Students who do not fulfil this requirement should establish an individual study plan in consultation with a study adviser.

### *For studies in year 3:*

At least 90 HE credits from year 1 and 2 completed by the examination period in August. Students who do not fulfil this requirement should establish an individual study plan in consultation with a study adviser.

## **Recognition of previous academic studies**

Students may apply to include credit results from course/courses at other higher education institution /university within or outside of the country. Application can be found on KTH's website.

KTH's policy for inclusion can be found in full in KTH's regulatory framework, [www.kth.se](http://www.kth.se)

## **Studies abroad**

Students at the Mechanical Engineering Programme have the opportunity to study abroad through the agreements KTH has with universities within and outside of the EU. Exchange studies may normally not be done during the first or second year. It is also possible to carry out the degree project abroad.

Application deadline for studying abroad is around the 15th of January.

## **Degree project**

The degree project comprises 15 HE credits.

*The following applies for the degree project:*

- It may be started, at the earliest, after having achieved 120 HE credits, and when final grades exist in relevant courses that concern the contents of the degree project
- It may be started after that the assignment has been approved by the examiner
- It is based on the knowledge that has been acquired during the education and should normally be carried out during semester 6
- It should constitute proof of an independent work comprising theoretical and/or experimental work with accompanying report writing and oral presentation
- The supervisor is appointed by the examiner

KTH's rules for degree projects can be found in KTH's regulatory framework, [www.kth.se](http://www.kth.se)

## Degree

To complete a Bachelor of Science in Engineering, Degree Programme in Mechanical Engineering, passing grades in all courses that are included in the student's study plan are required. The study plan consists of the compulsory courses, the elective courses that the student has opted for and the degree project. The study plan should comprise at least 180 HE credits.

KTH's local degree ordinance can be found in KTH's regulatory framework. [www.kth.se](http://www.kth.se)

Appendix 1 - Course list

Appendix 2 - Programme syllabus descriptions



# Appendix 1: Course list

## Degree Programme in Mechanical Engineering (TIMAS)

### General courses

### Industrial Business Administration and Manufacturing (IEPS)

#### Year 1

#### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1000</a>	Engineering Materials and Production 1	7.5 hp	First cycle
<a href="#">HM1001</a>	Strength of Materials with Statics	7.5 hp	First cycle
<a href="#">HM1002</a>	Computerized Tools in Design Process	7.5 hp	First cycle
<a href="#">HM1003</a>	Engineering Materials and Production 2	7.5 hp	First cycle
<a href="#">HM1007</a>	Computer Programming	7.5 hp	First cycle
<a href="#">HN1900</a>	Engineering and Information Skills	7.5 hp	First cycle
<a href="#">HN1901</a>	Mathematics I	7.5 hp	First cycle
<a href="#">HU1900</a>	Business Economics and Organizational Behaviour	7.5 hp	First cycle

## Optional courses

Code	Name	Credits	Edu. level
<a href="#">HN1009</a>	Introduction to Mathematics	1.5 hp	First cycle
<a href="#">HN1010</a>	Introduction to Computer Studies	1.5 hp	First cycle

## Year 2

### Mandatory courses (60.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1005</a>	Quality Assurance	7.5 hp	First cycle
<a href="#">HM1006</a>	Electrical and Control Engineering	7.5 hp	First cycle
<a href="#">HM1013</a>	Mechanical Design and Energy Technology	7.5 hp	First cycle
<a href="#">HM1016</a>	Manufacturing Process, Intermediate Course 1	7.5 hp	First cycle
<a href="#">HN1002</a>	Applied Mathematics	7.5 hp	First cycle
<a href="#">HU1000</a>	Industrial Marketing	7.5 hp	First cycle
<a href="#">HU1901</a>	Engineering Practice and Development	7.5 hp	First cycle
<a href="#">MJ1506</a>	Sustainable Development and Working Environment	8.0 hp	First cycle

## Year 3

### Mandatory courses (7.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">HU1001</a>	Business Calculation and Decision Models	7.5 hp	First cycle



## Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">HM101X</a>	Degree Project in Industrial Business Administration and Manufacturing, First Cycle	15.0 hp	First cycle
<a href="#">HM1021</a>	Quality Tools for Continual Improvement	7.5 hp	First cycle
<a href="#">HM1026</a>	Logistics	7.5 hp	First cycle
<a href="#">HM102X</a>	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
<a href="#">HU1903</a>	Management	7.5 hp	First cycle
<a href="#">HU1904</a>	Account and Entrepreneurship	7.5 hp	First cycle
<a href="#">HU1905</a>	Civil and Commercial Law for Engineers	7.5 hp	First cycle
<a href="#">ML2200</a>	Manufacturing Process, Intermediate Course 2	7.5 hp	Second cycle

## Innovation and Industrial Design (IODS)

### Year 1

### Mandatory courses (60.0 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1000</a>	Engineering Materials and Production 1	7.5 hp	First cycle
<a href="#">HM1001</a>	Strength of Materials with Statics	7.5 hp	First cycle
<a href="#">HM1002</a>	Computerized Tools in Design Process	7.5 hp	First cycle
<a href="#">HM1003</a>	Engineering Materials and Production 2	7.5 hp	First cycle
<a href="#">HM1007</a>	Computer Programming	7.5 hp	First cycle
<a href="#">HM1009</a>	Industrial Design with Colour and Craft	7.5 hp	First cycle
<a href="#">HN1900</a>	Engineering and Information Skills	7.5 hp	First cycle
<a href="#">HN1901</a>	Mathematics I	7.5 hp	First cycle

## Optional courses

Code	Name	Credits	Edu. level
<a href="#">HN1009</a>	Introduction to Mathematics	1.5 hp	First cycle
<a href="#">HN1010</a>	Introduction to Computer Studies	1.5 hp	First cycle

## Year 2

### Mandatory courses (60.5 Credits)

Code	Name	Credits	Edu. level
<a href="#">HM1006</a>	Electrical and Control Engineering	7.5 hp	First cycle
<a href="#">HM1008</a>	Mechanics II	7.5 hp	First cycle
<a href="#">HM1010</a>	Functional Elements	7.5 hp	First cycle
<a href="#">HM1018</a>	Innovation and Design Process	7.5 hp	First cycle
<a href="#">HN1002</a>	Applied Mathematics	7.5 hp	First cycle
<a href="#">HU1900</a>	Business Economics and Organizational Behaviour	7.5 hp	First cycle
<a href="#">HU1901</a>	Engineering Practice and Development	7.5 hp	First cycle
<a href="#">MJ1506</a>	Sustainable Development and Working Environment	8.0 hp	First cycle

## Year 3

### Optional courses

Code	Name	Credits	Edu. level
<a href="#">HM1026</a>	Logistics	7.5 hp	First cycle
<a href="#">HU1905</a>	Civil and Commercial Law for Engineers	7.5 hp	First cycle

## Conditionally elective courses

Code	Name	Credits	Edu. level
<a href="#">HM1004</a>	Solid Mechanics, Intermediate Course	7.5 hp	First cycle
<a href="#">HM100X</a>	Degree Project in Innovation and Design, First Cycle	15.0 hp	First cycle
<a href="#">HM1011</a>	Ergonomics in Product Development	7.5 hp	First cycle
<a href="#">HM1012</a>	Industrial Design with Colour and Form, Intermediate Course	7.5 hp	First cycle
<a href="#">HM1015</a>	Integrated Product Development, Project Course	15.0 hp	First cycle
<a href="#">HM1016</a>	Manufacturing Process, Intermediate Course 1	7.5 hp	First cycle
<a href="#">HM1023</a>	Applied Mechanics	7.5 hp	First cycle
<a href="#">HM102X</a>	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
<a href="#">HM103X</a>	Degree Project in Mechanical Design, First Cycle	15.0 hp	First cycle
<a href="#">HS1027</a>	Light, Acoustics and Design	7.5 hp	First cycle
<a href="#">ML2201</a>	Computerized Tools in Mechanical Design, Intermediate Course	7.5 hp	Second cycle
<a href="#">ML2202</a>	Computerized Tools in Design Process, Intermediate Course	7.5 hp	Second cycle



# Appendix 2: Specialisations

Degree Programme in Mechanical Engineering  
(TIMAS)

Industrial Business Administration and  
Manufacturing (IEPS)

No information entered.

Innovation and Industrial Design (IODS)

No information entered.