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 18 (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

KTH's local degree ordinance can be found in KTH's regulatory framework,***www.kth.se***

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
Innovation and Design

Not currently active:
Robotics and Mechatronics (ROBS)
Security and Management of Advanced Systems (SLAS)

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.

Otherwise refer to the KTH admissionregulations in the KTH regulatory framework, www.kth.se

Implementation of the education

Structure of the education

Programme arrangement

Academic years, semesters and study periods are found in the KTH regulatory framework, www.kth.se

If necessary, instruction may be provided outside the parameters of the academic year.
Refer to the composition of academic years in the KTH regulatory framework, www.kth.se

Structure of the programme

The academic year is divided into 4 study periods and normally several courses are read in parallel. 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. Two specialisations are offered within the programme; Industrial Engineering and Production and Innovation and Design.

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, all specialisations involve courses within the applied subjects relating to engineering science and technology. The specialisations begin during the year. The different specialisations are described in more detail in appendix 2. During the year a specialization preparatory bundle of courses is chosen.

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.

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. Course registration is done via the personal menu at www.kth.se

A prerequisite for participating in the studies is that, each autumn and spring, the student applies for courses prior to the coming semester. Course application is done via www.antagning.se between 1 and 15 November, and 1 and 15 May, respectively.

If the student does not apply via www.antagning.se, the application is only considered subject to availability.
In addition, the student must complete their semester and course registration in conjunction with each course start via personal login at www.kth.se

Choice of specialisation is made prior to semester 4 in accordance with KTH instructions.

Degree project

Year 3 of the programme includes a degree project which is a course of 15 credits.

The degree project is the final part of the education. In order to fulfill specific admission requirements for a Degree Project, first cycle, courses corresponding to at least 135 credits within the study programme must be completed.

KTH's rules for degree projects are found in the KTH regulatory framework, www.kth.se

Degree

The student must personally apply for a certificate. Applications are made by logging on to www.kth.se where “Applications for degrees” is found under the heading “Programme”.

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.

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 consists of the compulsory courses, the elective courses that the student has followed and the degree project. The study plan must include at least 180 credits.

Application for a certificate is done according to KTH instructions, see www.kth.se

KTH's local Degree Ordinance is found in the KTH regulatory framework, www.kth.se

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
ML1000	Engineering Mathematics	11.0 hp	First cycle
ML1101	Mechanics, General Course	7.5 hp	First cycle
ML1110	Mechanical Engineering, Introduction Cource	9.0 hp	First cycle
ML1111	Business Control with Applied Statistics	9.0 hp	First cycle
ML1200	Engineering Materials and Production, General Course	10.0 hp	First cycle
ML1209	Computer Based Product Development Tools, Basic Course	7.5 hp	First cycle
ML1309	Programming and Numerical Tools	6.0 hp	First cycle

Year 2

Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
HM1006	Electrical and Control Engineering	7.5 hp	First cycle
ML1201	Strength of Materials, General Course	6.0 hp	First cycle
ML1203	Energy Technology	6.0 hp	First cycle
ML1206	Machine Components	10.5 hp	First cycle

Industrial Engineering and Production (SIEP)

Year 2

Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
HM1016	Manufacturing Process, Intermediate Course 1	7.5 hp	First cycle
ML1030	Industrial Economics and Organisation	7.5 hp	First cycle
ML1108	Decision Models and Impact Assessment	7.5 hp	First cycle
ML1906	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
HU1000	Industrial Marketing	7.5 hp	First cycle
HU1903	Management	7.5 hp	First cycle
ML1330	Financial Control in an Industrial Concept	7.5 hp	First cycle
ML2200	Manufacturing Process, Intermediate Course 2	7.5 hp	Second cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
ML100X	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
ML101X	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
ML1030	Industrial Economics and Organisation	7.5 hp	First cycle
ML1108	Decision Models and Impact Assessment	7.5 hp	First cycle
ML1213	Product Development and Design	15.0 hp	First cycle

Year 3

Mandatory courses (30.0 Credits)

Code	Name	Credits	Edu. level
ML1214	Solid Mechanics, Advanced Course	7.5 hp	First cycle
ML1332	Computer-aided Mechanical Design, Continuation Course	7.5 hp	First cycle
ML1333	Product Development, Project Course	15.0 hp	First cycle

Conditionally elective courses

Code	Name	Credits	Edu. level
ML100X	Degree Project in Mechanical Engineering, First Cycle	15.0 hp	First cycle
ML102X	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.