



Programme syllabus

Degree Programme in Design and Product Realisation
Civilingenjörsutbildning i design och produktframtagning
300.0 credits

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 objectives specified in the Swedish Higher Education Ordinance, a graduate Master of Science in Engineering from Design and Product Realisation at KTH shall ...

Knowledge and understanding

- possess extensive knowledge of the product realisation process so as to be able to produce products that are tailored to people, technology and society. This includes, for example, material selection, energy sources, production methods, assessment of economic and environmental impact, etc.
- have a good grounding in natural and engineering sciences with a second-cycle specialisation within one area of application within the chain: design – construction – production, all with a life-cycle perspective.

Skills and abilities

- have the ability to combine and transform the traditional natural and engineering sciences foundation in the education to construction and design aspects as a basis for the development of attractive products and services
- possess the requisite personal and professional skills, such as in the area of language, leadership, project management and communication, to work as an engineer in a management position or as a leader within a technology-intensive company
- have significantly developed their own innovative capability through design thinking and creative methods as a complement to the analytical approach

Ability to make judgements and adopt a standpoint

- Have especially good understanding that engineering-related problems, considered from a system perspective, are often complex, incompletely defined and sometimes contain contradictions
- Show an understanding of responsibility and ethics relevant for all steps in the product realization process, e.g. design – construction – production/manufacturing and utilization.

The local degree ordinance of the Royal Institute of Technology can be found in the KTH Regulations. www.kth.se

Extent and content of the programme

The Degree Programme in Design and Product Realisation comprises 300 higher education credits, which corresponds to 5 years of full-time studies at a normal study pace (10 semesters).

The programme's first three years (180 credits) are primarily first cycle.

During the two final years (120 credits), the student undertakes a Master's programme.

Master's programme courses are conducted primarily in the second cycle.

The academic year 2018/2019 offers the following Master's programmes for a Degree of Master of Science in Design and Product Realisation *

- Integrated Product Design
- Production Engineering and Management
- Engineering Design
- Industrial Engineering and Management
- Sustainable Energy Engineering
- Aerospace Engineering
- Vehicle Engineering
- Naval Architecture
- Engineering Mechanics

* The range of offered Master's programmes may be revised. An updated list of elective Master's programmes can be found on the KTH student web for each respective academic year.

Language of instruction

The language of instruction for the first three years of first cycle is mainly Swedish, and the language of instruction in the second cycle for the final two years is mostly English.

Eligibility and selection

Admission to the Degree Programme in Design and Product Realisation requires the general entry requirements for higher education, and also special admission requirements as follows:

Upper-secondary education before 1 July 2011 and upper-secondary adult education before 1 July 2012

Field-specific entry requirement 9

Specific admission requirements corresponding to:

Mathematics E, Physics B and Chemistry A.

In each of the subjects, a minimum grade of Pass or 3 is required.

Upper-secondary education from 1 July 2011 and upper-secondary adult education from 1 July 2012 (Gy11 /Vux12)

Field-specific entry requirement A9

Specific admission requirements corresponding to:

Mathematics 4, Physics 2 and Chemistry 1.

A grade of E is required as a minimum in each of the subjects.

* For more information on field-specific entry requirements, see www.uhr.se

For entry requirements and selection principles, see the KTH admission regulations, www.kth.se.

Implementation of the education

Structure of the education

Programme arrangement

The academic year comprises 40 weeks and is divided into four periods. If necessary, instruction may be provided outside the parameters of the academic year.

The division of the academic year is presented on the KTH student web, <http://www.kth.se>

Years 1-3, studies at first cycle

The programme syllabus consists of the compulsory foundation block in the years 1-3 in the first cycle, and also of a Master's programme in the second cycle, years 4 and 5, which concludes with a degree project of 30 credits.

The programme is organised around courses in applied subjects relating to mathematics, engineering science and technology. The teaching and use of professional skills and abilities of great importance to a certified engineer, for example, communication, project work, systems thinking, ethics, entrepreneurship, sustainable development, corporate and societal aspects, are integrated into the courses.

To create a unified whole, the programme emphasises cooperation between different subjects, both within a specific year and between years. This is achieved, inter alia, through the programme-specific courses including project assignments where knowledge gained from other courses is integrated and applied in a product realisation perspective.

Mathematical natural science courses

This block contains basic courses in mathematics and natural science and is chiefly located in year 1 and year 2.

Technology courses

This block includes basic engineering science courses within the field of mechanical engineering, such as solid mechanics, thermodynamics, engineering materials and production. This block is begun in year 1 and concluded in year 3.

The first 3 years conclude with a degree project for a Degree of Bachelor worth 15 credits within a chosen technical field.

Years 4-5 in the second cycle

The Master's programmes consist mainly of advanced courses and a degree project within one and the same engineering science discipline. Students on the Degree Programme in Design and Product Realisation can choose from a wide range of Master's programmes with programme syllabuses established in advance. There is no restriction on the number of places on these Master's programmes for students on the Degree Programme in Design and Product Realisation.

Professional skills and abilities in, for example, entrepreneurship, engineering skills and innovation, are deepened in the engineering courses in years 4 and 5, where labour market links are also of great importance for the final degree project.

The engineer's knowledge of the environment and sustainable development is deepened and concretised through integrating the special aspects of, for example, life-cycle analysis, environmental impact and material selection, which are characteristic of the chosen Master's programmes, in the programme's courses.

Elective Master's programmes that lead to a Degree of Master of Science in Engineering are found under the heading "Scope and content of the programme".

Courses

The programme is course-based. Lists of courses are included in [appendix 1](#).

The programme consists of compulsory, conditionally elective, recommended and optional courses. The compulsory and conditionally elective 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.
- There is a limit imposed on the number of credits that may be chosen per semester
- 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. Course registration is done via the personal menu at www.kth.se

For students starting their education from the autumn semester 2018, previous promotion requirements have been replaced with special admission requirements to each course. Admission requirements are specified in the course syllabus.

Application for courses on the programme

Prior to each semester, the student must apply for all courses the student intends to take.

Course applications are made via www.antagning.se

- 1 - 15 May for autumn semesters
- 1 - 15 November for spring semesters

If the student does not apply via www.antagning.se, the application is only considered subject to availability.

The student can obtain information on how to apply from the school's office of student affairs.

Course registration

Course registration requires that the student is admitted to the course. At course start, the student must register on the course to which they have been admitted.

Course registration must be done individually, either via the student's personal login at www.kth.se or according to instructions from the school offering the course.

A person who has registered on a course, but has subsequently decided not to proceed with the course, must inform the school offering the course as soon as possible or, within three weeks, remove the course registration via the personal login.

Course registration requires that the student has been admitted to the course.

Choice of Master's programme

Prior to year 4/ Master's programme year 1, second cycle, the student chooses a Master's programme within the framework of their Degree Programme.

Choice of Master's programme is made during the period 1-15 May.

Choice of Master's programme is made by the students within the Degree Programme according to instructions from the KTH admissions office.

Admission requirements for Master programmes

According to the KTH Admission regulations 2018 (Dnr. V-2017-1014)

"In order to be eligible for advanced level studies within the integrated Master of Science programmes at KTH, you are required to complete 150 credits from year one through three. Of these, 110 credits must be from the year 1 and 2 curriculum. In addition to these credits, the bachelor thesis needs to be completed before Master's level studies commence."

Recognition of previous academic studies

Students have the opportunity to apply to be given credit for results from a course or courses at another higher education institution/university within or outside the country.

An application is made by submitting a form to the school's office of student affairs.

The entire KTH policy for credit transfer is included in the KTH regulatory framework.www.kth.se

As the grading systems differ between countries and universities, grades are not translated to the KTH grading scale during credit transfer.

Studies abroad

Students have the opportunity to study abroad through the agreements that KTH and ITM have with universities within and outside the EU. Exchange studies normally cannot be pursued during the first or second year. It is also possible to do a degree project abroad.

The application deadline for studies abroad is around 15 December for the following academic year.

Degree project

Degree Project, First Cycle

The Degree Programme in Design and Product Realisation includes a degree project for a Degree of Bachelor of Science which comprises 15 credits.

The degree project is the final part of the education. The project work may begin when special admission requirements for the course are fulfilled.

In order to fulfill specific admission requirements for a Degree Project, first cycle, courses corresponding to at least 135 credits within the study programme, study year 1-3, first cycle, must be completed.

Degree project, Second Cycle

The Degree Programme in Design and Product Realisation includes a degree project for a Degree in Master of Science in Engineering, which comprises 30 credits.

The degree project is the final part of the education. The project work may begin when special admission requirements for the course are fulfilled.

In order to fulfill specific admission requirements for a Degree Project, second cycle, 30 credits, all courses in study year 1-3, first cycle, or courses required for the award of a Bachelors's degree, and courses corresponding to at least 60 credits, second cycle, must be completed. The courses at the second cycle, shall include courses in the programme relevant to the degree project, as well as courses in science theory and research methodology.

KTH's General Regulations for Degree Projects, second cycle, 30 credits for a Degree in Master of Science in Engineering 300 credits, are in KTH's regulations. www.kth.se

Degree

In order to complete a Degree in Master of Science in Engineering, Degree Program Design and Product Realisation, requires an approved grade in all courses included in the students study plan based on the degree programme. The study plan shall comprise 300 credits, which includes a degree project, first cycle comprising 15 credits and a degree project, second cycle comprising 30 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 300 credits that form the basis for the degree.

Optional courses will contribute to the degree programme objectives of Design and Product Realisation and the professional role.

Application for a degree certificate

The student must personally apply for a certificate. Applications are made via a personal login at www.kth.se.

The student has the possibility of applying for the following three degree:

Title of general qualification at first cycle

Bachelor of Science (180 credits)

Teknologie kandidatexamen

Title of professional qualifications at second cycle

Master of Science in Engineering

Civilingenjörsexamen

Title of general qualification at second cycle

Master of Science (120 credits)

Teknologie masterexamen

Refer to the KTH guidelines (KTH regulatory framework), local directions for higher education qualifications at first and second cycle, the local Degree Ordinance

<http://intra.kth.se/regelverk>

[Appendix 1 - Course list](#)

[Appendix 2 - Programme syllabus descriptions](#)



Appendix 1: Course list

Degree Programme in Design and Product Realisation (CDEPR), Programme syllabus for studies starting in autumn 2018

General courses

Year 1

Mandatory courses (60.0 credits)

Course code	Course name	Credits	Edu. level
MF1061	Introduction to Design and Product Realisation	9.0	First cycle
MF1062	Design and Product Realization	6.0	First cycle
SF1522	Numerical Computations	6.0	First cycle
SF1523	Analytical and Numerical Methods for Differential Equations	7.5	First cycle
SF1624	Algebra and Geometry	7.5	First cycle
SF1625	Calculus in One Variable	7.5	First cycle
SF1626	Calculus in Several Variable	7.5	First cycle
SG1130	Mechanics I	9.0	First cycle

Year 2

Mandatory courses (60.0 credits)

Course code	Course name	Credits	Edu. level
MF1039	Design and Product Realization, Components	6.0	First cycle
MF1063	Materials in Design and Product Realisation	9.0	First cycle
MF1064	Modelling and Simulation in Design and Product Realization	9.0	First cycle
MG1016	Manufacturing Technology	6.0	First cycle
MJ1112	Applied Thermodynamics	9.0	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0	First cycle
SE1020	Solid Mechanics, Basic Course	9.0	First cycle
SG1140	Mechanics II	6.0	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
MF1018	Industrial Design Prep <i>Mandatory for students admitted from COPEN</i>	3.0	First cycle
MG1028	Introductory 3D CAD <i>Mandatory for students admitted from COPEN</i>	1.5	First cycle

Year 3

Mandatory courses (24.0 credits)

Course code	Course name	Credits	Edu. level
ME1003	Industrial Management, Basic Course	6.0	First cycle
MF1016	Basic Electrical Engineering	9.0	First cycle
MF1040	Design and Product Realization Methodology	9.0	First cycle

Supplementary information

Based upon the curriculum for academic year 2019/2020. Changes may occur.

Degree project, bachelor level, 15 credits, is a compulsory course during the spring term.

During the third year 3 conditionally elective courses should be chosen.

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Design and Product Realization takes place within framework of a Master program.

Available Master programs for Design and Product Realization:

- Integrated Product Design
- Industrial Production
- Industrial Product Development
- Aerospace
- Industrial Management
- Naval Architecture
- Sustainable Energy Engineering
- Technical Mechanics
- Vehicle Engineering

Year 4

Supplementary information

Based upon the curriculum for academic year 2017/2018. Changes may occur.

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Design and Product Realization takes place within framework of a Master program.

Available Master programs for Design and Product Realization:

- Integrated Product Design
- Industrial Production
- Industrial Product Development
- Aerospace
- Industrial Management
- Naval Architecture
- Sustainable Energy Engineering
- Technical Mechanics
- Vehicle Engineering

Year 5

Supplementary information

Based upon the curriculum for academic year 2016/2017. Changes may occur.

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Design and Product Realization takes place within framework of a Master program.

Available Master programs for Design and Product Realization:

- Integrated Product Design
- Industrial Production
- Industrial Product Development
- Aerospace
- Industrial Management
- Naval Architecture
- Sustainable Energy Engineering
- Technical Mechanics
- Vehicle Engineering



Appendix 2: Specialisations

Degree Programme in Design and Product Realisation (CDEPR), Programme syllabus
for studies starting in autumn 2018

This programme has no specialisations.