



Programme syllabus

Degree Programme in Mechanical Engineering Civilingenjörsutbildning i maskinteknik *300.0 credits*

Valid for students admitted to the education from autumn 17 (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 Mechanical Engineering at KTH shall:

Knowledge and understanding

- demonstrate broad knowledge within the chosen technical field, including knowledge in mathematics and natural science, and substantial specialised knowledge within certain parts of the field
- possess good knowledge and expertise in the issues and areas of sustainable development, gender equality, equal opportunities and diversity

Specific objectives for the Mechanical Engineering Degree Programme:

- have a broad scientific foundation that enables them to work within a number of technical fields with product development, production and manufacturing technology and energy issues. This may include material selection, energy sources, production methods of the assessment of economic and environmental impact, etc.

Specific objectives for the Industrial Technology and Sustainability Degree Programme:

- have a broad scientific foundation that enables them to work within a chosen technical field
- possess extensive technical and mathematical knowledge within production, logistics and maintenance
- have substantial applicable scientific knowledge for the management of work within production, logistics and maintenance
- have substantial knowledge of what promotes sustainability for work and productivity within production, logistics and maintenance.

Skills and abilities

- demonstrate a good ability to, independently and in a group, apply knowledge and skills in practice while taking into account relevant scientific, professional/profession-related and societal assessments and standpoints
- demonstrate proficiency in being able to formulate, analyse, evaluate and manage technical problems and issues from a systems perspective, with a holistic view of their life cycle, from concept/requirements to specification, development, operation and decommissioning, and an ability to set boundaries, minimise necessary resource consumption and manage processes for problem-solving/realisation
- show some ability to lead operations at different organisational levels, in different types of organisational life-cycle stages, within different types of logical frameworks
- possess the requisite personal and professional skills, such as in the area of language, leadership, project management, sustainable systems analysis, gender equality, equal opportunities and communication, to work as an engineer in a management position or as a leader within a technology-intensive company

Specific objectives for the Industrial Technology and Sustainability Degree Programme:

- demonstrate proficiency in applying mathematically-based methods for analysing, modelling, optimising and evaluating industrial technology, processes and flows in the areas of production, logistics and maintenance.
- demonstrate an ability to integrate technical and human aspects within socio-technical systems, for increased productivity and sustainability.

Ability to make judgements and adopt a standpoint

- have a particularly good understanding of the fact that engineering problems are often complex, can be incompletely defined and sometimes involve conflicting conditions
- adopt a reflective approach
- demonstrate accountability with regard to issues within technical, organisational, economic, ecological and societal systems.

The KTH local Degree Ordinance can be found in the KTH regulatory framework www.kth.se

Extent and content of the programme

The Degree Programme in Mechanical Engineering comprises 300 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.

International profile

The Degree Programme in Mechanical Engineering contains an international study profile. This profile is chosen during the spring semester of year 1. Year 2 offers language studies in German, French or Spanish with subsequent exchange studies in year 3 at one of the European universities involved in the cooperation. The course package offered during the stay abroad is integrated in the Degree Programme in Mechanical Engineering and corresponds to courses normally taken in year 3 at KTH.

The academic year 2018/2019 offers the following Master's programmes for a Degree of Master of Science in Mechanical Engineering*:

- Aerospace Engineering
- Vehicle Engineering
- Sustainable Energy Engineering
- Industrial Management
- Production Engineering Management
- Engineering Design
- Integrated Product Design
Track, Innovation Management and Product Development
- Nuclear Energy Engineering
- Naval Architecture
- Applied and Computational Mathematics
- Engineering Mechanics
- Sustainable Technology

*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.

For students undertaking any of the following Master's programmes:

Industrial Management, Applied and Computational Mathematics or Sustainable Technology, a supplementary engineering profile is required to obtain a Degree of Master of Science in Mechanical Engineering

The following international Master's programmes also leads to a Degree of Master of Science in Mechanical Engineering, but the student applies in an admissions round in competition with all other applicants.

There is no guarantee of places for these programmes:

- Environomical Pathways for Sustainable Energy Systems (SELECT)
- Turbomachinery Aeromechanic University Training (THRUST)
- Management and Engineering of Environment and Energy (ME3)

Language of instruction

The language of instruction for the first three years of first cycle is mainly Swedish, but English literature is common. The courses in the final two years are mostly conducted in English.

The following applies to the Industrial Technology and Sustainability Degree Programme:

Master's programmes that lead to a Degree of Master of Science in Mechanical Engineering within the Industrial Technology and Sustainability Degree Programme are:

Sustainable Production Development

Sustainable Energy Engineering

Industrial Engineering and Management

Production Engineering and Management

Applied and Computational Mathematics

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, but English literature is common. The courses in the final two years are mostly conducted in English.

Eligibility and selection

Admission to the Degree Programme in Mechanical Engineering 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, <https://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/1-antagningsordning-for-utbildning-pa-grundniva-och-avancerad-niva-1.27186>

Implementation of the education

Structure of the education

Programme arrangement

Academic year

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>

The Industrial Technology and Sustainability Degree Programme is mainly located in Södertälje. Certain parts of the programme may take place at another KTH campus.

Years 1-3, studies at first cycle

1. The programme consists of compulsory courses in years 1-3 in the first cycle (G).

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, corporate and societal aspects, communication and sustainable development, 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 through courses being coordinated on the schedule, via joint degree projects and written assignments.

The programme is designed so that the student, after three years, has the opportunity to obtain a technical Degree of Bachelor: This is to increase mobility and make it easier for the student to continue their studies at KTH or another university in Sweden or abroad.

The first 3 years conclude with a degree project for a Degree of Bachelor worth 15 credits within a chosen technical field. After successfully completing 180 credits, the student can apply for a technical Degree of Bachelor. If the qualification requirements are met, a Degree of Bachelor of Science is obtained.

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

For the Mechanical Engineering Degree Programme, this block includes basic engineering science courses within the field of mechanical engineering, such as solid mechanics, thermodynamics and engineering design. This block is begun in year 1 and concluded in year 3.

For the Industrial Technology and Sustainability Degree Programme, this block includes basic engineering science courses within manufacturing process, maintenance techniques, logistics and work science. This block is begun in year 1 and concluded in year 3.

Years 4-5 Studies at 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 Mechanical Engineering Programme can choose from a range of Master's programmes with programme syllabuses established in advance. There is no restriction on the number of places for students on the Mechanical Engineering Programme.

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" above.

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.
- The number of credits that may be chosen per semester is limited to 35.
- 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.

A seven-grade criterion-referenced grading scale A-F is used for courses at KTH as final grades for courses at first and second cycle. A–E are grades corresponding to a pass, with A being the highest grade. The grades pass (P) and fail (F) are used as final grades when there are special reasons.

The grade F and Fx can be given for sections in a course. Fx implies a time-limited possibility of supplementing the work to achieve a grade of E

Conditions for participation in the programme

Semester registration

At the beginning of the semester, the student must submit a compulsory semester registration via their personal login at www.kth.se

Semester registration is required to take new courses and for credits awarded to be reported, and for any payments of student aid to be made by CSN.

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 at www.kth.se

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. In addition to the general conditions for participation in the

teaching of studies in year 4, second cycle, there are special entry requirements for each Master's programme. The assessment of the conditions and special entry requirements is performed by the admissions office.

Conditions for participation in the instruction

For studies in the next year, there are certain moving-up/performance requirements according to the programme's course list. Students who do not fulfil these requirements must establish an individual study plan together with the study advisor.

Requirements for moving up from year 1 to year 2:

- At least 45 credits from year 1

according to the course list of the programme syllabus for the Degree Programme in Mechanical Engineering. This is to be achieved by the end of the re-examination period in August.

For studies in year 2 with an international specialisation (Mechanical Engineering Degree Programme only)

In addition to the requirements for studies in year 2, the student must be proficient in either Spanish, German or French equivalent to level A1 and demonstrated through a compulsory placement test taken prior to the choice of courses.

When applying for an exchange semester, refer to the KTH regulatory framework for exchange studies www.kth.se.

Requirements for moving up from year 2 to year 3:

- At least 90 credits from year 1 and 2, of which
- at least 50 credits are from year 1,

according to the course list of the programme syllabus for the Degree Programme in Mechanical Engineering. This is to be achieved by the end of the re-examination period in August.

For studies in year 3 with an international specialisation (only the Mechanical Engineering Degree Programme)

In addition to the requirements for studies in year 3, the student must be proficient in either Spanish, German or French equivalent to level B1.

Students must also fulfil any requirements of the host university and be formally accepted as an exchange student there.

Requirements for moving up from year 3 to year 4/year 1 of the Master's Programme:

- At least 150 credits from years 1-3, of which

- at least 110 credits are from years 1-2, and
- a passed Bachelor's degree project (15 credits),

according to the course list of the programme syllabus for the two different Degree Programmes: Mechanical Engineering; and Industrial Technology and Sustainability. This is to be achieved by the end of the re-examination period in August.

Requirements for moving up from year 4 to year 5/year 1 to year 2 of the Master's Programme:

In addition to what is required for moving up to year 4/year 1 of the Master's Programme,

- at least 45 credits* from year 4/year 1 of the Master's Programme must be completed by the end of the re-examination period in August,

according to the course list of the programme syllabus for the two different Degree Programmes: Mechanical Engineering; and Industrial Technology and Sustainability.

* In addition to compulsory courses, optional courses that are included in the degree may also be counted.

Individual study plan

Students who do not meet the above requirements should, in consultation with the programme's study advisor, establish an individual study plan for the continuing studies.

An individual study plan may mean that the student cannot be guaranteed full-time studies. See the KTH regulatory framework: www.kth.se

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.

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

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

Studies abroad

Students in the Program have the possibility to study abroad through the contracts KTH has with universities within EU and outside. Exchange studies can normally not be done in the first or second year. It is also possible to do the degree project work abroad.

The application deadline for studies abroad is around December 15th.

Degree project

Degree Project, First Cycle

The Degree Programme in Mechanical Engineering includes a degree project for a Degree of Bachelor of Science which comprises 15 credits. The degree project will be conducted during the spring term in study year 3.

In order to be eligible for the degree project, the following requirements are reported in Ladok before the degree project starts

- Promoted to grade 3.
- At least 120 credits of the program's mandatory courses.
- Specific requirements for the degree project course

In order to enable the approval of the exam in good time before the degree project begins in period 3, there is the possibility of meeting an alternative qualification requirement for degree projects that start spring term 2020. For this alternative eligibility, the following requirements are reported in Ladok at the latest, December 1, 2019

- Promoted to grade 3.
- At least 105 credits of the program's mandatory courses.
- Specific requirements for the degree project course

KTH's General Regulations for Degree Projects, first cycle, 15 credits for a Degree of Bachelor of Science 180 credits, are in KTH's regulations. www.kth.se

Degree project, Second Cycle

The Degree Programme in Mechanical Engineering includes a degree project for a Degree in Master of Science in Engineering, which comprises 30 credits. The degree project is usually done during the spring term in study year 5. To begin the degree project is required

- At least 240 credits completed courses that may be included in the Degree in Master of Science in Engineering.
- Maximum 2 unfinished courses (mandatory and conditionally elective) from study year 1 - 3
- The requirement for studies in study year 5 are met.

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 Mechanical Engineering, 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 mechanical engineering 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 Mechanical Engineering (CMAST), Programme syllabus for studies starting in autumn 2017

General courses

Year 1

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
MJ1103	Introduction to Mechanical Engineering	10.5 hp	First cycle
SF1511	Numerical Methods and Basic Programming	9.0 hp	First cycle
SF1624	Algebra and Geometry	7.5 hp	First cycle
SF1625	Calculus in One Variable	7.5 hp	First cycle
SF1626	Calculus in Several Variable	7.5 hp	First cycle
SG1130	Mechanics I	9.0 hp	First cycle
SK1112	Physics I	9.0 hp	First cycle

Year 2

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
MF1016	Basic Electrical Engineering	9.0 hp	First cycle
MF1044	Machine Components	6.0 hp	First cycle
MG1026	Manufacturing Technology	6.0 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
SE1010	Solid Mechanics, Basic Course with Project	12.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle
SG1140	Mechanics II	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MG1028	Introductory 3D CAD Mandatory for students admitted from COPEN	1.5 hp	First cycle

Supplementary information

Only students admitted to study year 2, Degree Programme in Mechanical Engineering 300 credits, from Degree Programme Open Entrance, must take the conditionally elective course MG1028 Introductory 3D CAD, 1,5 credits.

Year 3

Mandatory courses (18.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
AL126X	Degree Project in Technology and Sustainable Development, First Cycle	15.0 hp	First cycle
MF130X	Degree Project in Machine Design, First Cycle	15.0 hp	First cycle
MF131X	Degree Project in Integrated Product Development, First Cycle	15.0 hp	First cycle
MF133X	Degree Project in Mechatronics, First Cycle	15.0 hp	First cycle
MG110X	Degree Project in Production Engineering, First Cycle	15.0 hp	First cycle
MJ146X	Degree Project in Sustainable Energy Engineering, First Cycle	15.0 hp	First cycle
SA118X	Degree Project in Mechanical Engineering, First Level	15.0 hp	First cycle

Supplementary information

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditionally elective courses).

Master's programmes leading to Master of Science in Engineering degree:

- Aerospace Engineering
- Vehicle Engineering

- Sustainable Energy Engineering
- Industrial Management (*Technical Profile: Engineering Design, Energy, Production or Solid Mechanics*)
- Integrated Product Design
Track, Innovation Management and Product Development
- Production Engineering Management
Recommended profiles: Industrial IT-systems, Industrial welding, Production engineering and management and Production development
- Engineering Design
Track, Combustion Engineering
Track, Machine Design
Track, Mechatronics
- Nuclear Energy Engineering
- Applied and Computational Mathematics (*Technical Profile: Production and Energy or Solid Mechanics*)
- Naval Architecture
- Sustainable Technology (*Technical Profile: Engineering Design, Energy, Production or Solid Mechanics*)
- Engineering Mechanics
Track, Fluid Mechanics
Track, Solid Mechanics
Track, Sound and Vibrations

Some Masterprograms require specific courses during study year 3.

Year 4

Supplementary information

Information is based upon the curriculum for academic year 2018/2019. Changes may occur.

Master's programmes leading to Master of Science in Engineering degree:

- Aerospace Engineering
- Vehicle Engineering
- Sustainable Energy Engineering
- Industrial Management (*Technical Profile: Engineering Design, Energy, Production or Solid Mechanics*)
- Integrated Product Design
Track, Innovation Management and Product Development
- Production Engineering Management
- Engineering Design
Track, Combustion Engineering
Track, Machine Design
Track, Mechatronics
- Nuclear Energy Engineering
- Applied and Computational Mathematics (*Technical Profile: Production and Energy or Solid Mechanics*)
- Naval Architecture

- Sustainable Technology (*Technical Profile: Engineering Design, Energy, Production or Solid Mechanics*)
- Engineering Mechanics
Track, Fluid Mechanics
Track, Solid Mechanics
Track, Sound and Vibrations

Some Masterprograms require specific courses during year 3.

Year 5

Supplementary information

Information is based upon the curriculum for academic year 2014/15. Changes may occur.

Master's programmes leading to Master of Science in Engineering degree:

- Aerospace Engineering
- Vehicle Engineering
- Sustainable Energy Engineering
- Industrial Management
- Integrated Product Design (Tracks Integrated product design and Product innovation)
- Production Engineering Management
- Engineering Design
- Nuclear Energy Engineering
- Mathematics (Track Mathematical statistics and financial mathematics, Track Computational mathematics and Track Optimization and systems theor)
- Naval Architecture
- Sustainable Technology
- Engineering Mechanics

Some Masterprograms require specific courses during year 3.

Master, Aerospace Engineering (AEE)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
EL1010	Automatic Control, General Course	6.0 hp	First cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
SG1217	Fluid Mechanics, Basic Course One of the courses SG1217 or SG1220 must be chosen.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers One of the courses SG1220 or SG1217 must be chosen.	6.0 hp	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle

Information regarding conditionally elective courses

One of the conditionally elective courses SG1217 or SG1220 must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Vehicle Engineering (FOR)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
EL1010	Automatic Control, General Course	6.0 hp	First cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least one of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Industrial Management (INE)

Year 3

Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
ME2063	Team Leadership and Human Resource Management	6.0 hp	Second cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle

MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Supplementary information

CMAST-students at Masters programme, Industrial Management (TINEM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Construction**

Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:

MF2101 Machine Design 6 credits

MF2102 Machine Design Project 6 credits

MF2010 Component Design 6 credits

MF2011 Systems Engineering 9 credits

MF2019 CAD 3D-modelling and Visualization 6 credits *

MF2024 Robust and Probabilistic Design 6 credits

** will be able to study in period 2 and 4*

- **Technical profile Energy**

MJ2413 Energy and Environment 6 credits

MJ2411 Renewable Energy Technology 6 credits *

MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits

**can also be chosen study year 5*

- **Technical profile Production**

MG2029 Production Engineering - Planning and Control 6 credits

(MG1024 Production in study year 3, is the eligibility course for MG2029)

One of the following two courses must be chosen:

MG2028 CAD and Other IT Tools in Industrial Processes 6 credits

MG2130 Modelling and Simulation of Industrial Processes 9 credits

As well as one of the following courses must be chosen, either study year 4 or 5:

MG2009 Advanced Manufacturing Technology 6 credits

MG2109 Advanced Manufacturing Technology, Extended Course 9 credits

MG2110 Advanced Metrology 9 credits

MG2022 Advanced CAD Modelling and Rapid Prototyping 6 credits *
 MG2135 PLM - Product Lifecycle Management 9 credits
 MG2036 Computer Aided Manufacturing - CAM 6 credits
 MG2038 Digital Factories 6 credits **
 MG2010 Modern Industrial Metrology 6 credits *
 * MG2028 prerequisites
 ** MG2130 prerequisites

- **Technical profile Solid Mechanics**

SE1025 FEM for Engineering Applications 6 credits

One of the following two courses must be chosen:

SE2126 Material Mechanics 9 credits

SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

SE2860 FEM Modelling 8 credits

SE2137 Fatigue 6 credits

SE2139 Fracture Mechanics 6 credits

SE2134 Dynamic Problems in Solid Mechanics 7,5 credits

SE2121 Introduction to Biomechanics 9 credits

Information regarding conditionally elective courses

At least one of the conditionally elective courses must be chosen.

Notice: You need *MG1024 Production* for eligibility to the course *MG2029 Production Engineering - Planning and Control*, which is a mandatory course for students attending the Master's Programme Industrial Management (TINEM), Technical profile: Production

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Year 4

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2010	Component Design Technical profile - Construction	6.0 hp	Second cycle
MF2011	Systems Engineering Technical profile - Construction	9.0 hp	Second cycle
MF2019	CAD 3D-modelling and Visualization Technical profile - Construction	6.0 hp	Second cycle
MF2024	Robust and Probabilistic Design Technical profile - Construction	6.0 hp	Second cycle

MF2101	Machine Design Technical profile - Construction	6.0 hp	Second cycle
MF2102	Machine Design Project Course Technical profile - Construction	6.0 hp	Second cycle
MG2009	Advanced Manufacturing Technology Technical profile - Production	6.0 hp	Second cycle
MG2010	Modern Industrial Metrology Technical profile - Production	6.0 hp	Second cycle
MG2022	Advanced CAD Modelling and Rapid Prototyping, Project Course Technical profile - Production	6.0 hp	Second cycle
MG2028	CAD and Other IT Tools in Industrial Processes Technical profile - Production	6.0 hp	Second cycle
MG2029	Production Engineering - Planning and Control Technical profile - Production	6.0 hp	Second cycle
MG2036	Computer Aided Manufacturing - CAM Technical profile - Production	6.0 hp	Second cycle
MG2038	Digital Factories Technical profile - Production	6.0 hp	Second cycle
MG2109	Advanced Manufacturing Technology, Extended Course Technical profile - Production	9.0 hp	Second cycle
MG2110	Advanced Metrology Technical profile - Production	9.0 hp	Second cycle
MG2130	Modelling and Simulation of Industrial Processes Technical profile - Production	9.0 hp	Second cycle
MG2135	PLM - Product Lifecycle Management Technical profile - Production	9.0 hp	Second cycle
MJ2380	Introduction to Energy Systems Analysis and Applications Technical profile - Energy	9.0 hp	Second cycle
MJ2411	Renewable Energy Technology Technical profile - Energy	6.0 hp	Second cycle
MJ2413	Energy and Environment Technical profile - Energy	6.0 hp	Second cycle
SE1025	FEM for Engineering Applications Technical profile - Solid Mechanics	6.0 hp	First cycle
SE2121	Introduction to Biomechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2126	Material Mechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2132	Applied Elasticity with FEM Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2134	Dynamic Problems in Solid Mechanics Technical profile - Solid Mechanics	7.5 hp	Second cycle
	Fatigue		

SE2137	Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2139	Fracture Mechanics Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2860	FEM Modelling Technical profile - Solid Mechanics	8.0 hp	Second cycle

Supplementary information

CMAST-students at Masters programme, Industrial Management (TINEM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Construction**

Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:

MF2101 Machine Design 6 credits

MF2102 Machine Design Project Course 6 credits

MF2010 Component Design 6 credits

MF2011 Systems Engineering 9 credits

MF2019 CAD 3D-modelling and Visualization 6 credits *

MF2024 Robust and Probabilistic Design 6 credits

** will be able to study in period 2 and 4*

- **Technical profile Energy**

MJ2413 Energy and Environment 6 credits

MJ2411 Renewable Energy Technology 6 credits *

MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits

**can also be chosen study year 5*

- **Technical profile Production**

MG2029 Production Engineering - Planning and Control 6 credits

(MG1024 Production in study year 3, is the eligibility course for MG2029)

One of the following two courses must be chosen:

MG2028 CAD and Other IT Tools in Industrial Processes 6 credits

MG2130 Modelling and Simulation of Industrial Processes 9 credits

As well as one of the following courses must be chosen, either study year 4 or 5:

MG2009 Advanced Manufacturing Technology 6 credits

MG2109 Advanced Manufacturing Technology, Extended Course 9 credits

MG2110 Advanced Metrology 9 credits

MG2022 Advanced CAD Modelling and Rapid Prototyping 6 credits *

MG2135 PLM - Product Lifecycle Management 9 credits

MG2036 Computer Aided Manufacturing - CAM 6 credits

MG2038 Digital Factories 6 credits **

MG2010 Modern Industrial Metrology 6 credits *

** MG2028 prerequisites*

*** MG2130 prerequisites*

- **Technical profile Solid Mechanics**
SE1025 FEM for Engineering Applications 6 credits

One of the following two courses must be chosen:

SE2126 Material Mechanics 9 credits

SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

SE2860 FEM Modelling 8 credits

SE2137 Fatigue 6 credits

SE2139 Fracture Mechanics 6 credits

SE2134 Dynamic Problems in Solid Mechanics 7,5 credits

SE2121 Introduction to Biomechanics 9 credits

Information regarding conditionally elective courses

Technical profile Construction

Courses corresponding to at least 18 credits, listed below, within the profile, shall be taken during study year 4-5.

Technical profile Energy

Courses listed below, within the profile, shall be taken during study year 4-5.

Technical profile Production

Within the profile, the course *MG2029* should be read, as well as **one** of the courses *MG2028* or *MG2130*. In addition to these courses, **one** of the other conditionally optional courses within the profile, should be read in year 4-5.

Technical profile Solid Mechanics

Within the profile, the course *SE1025* should be read, as well as **one** of the courses *SE2126* or *SE2132*. In addition to these courses, **one** of the other conditionally optional courses within the profile, should be read in year 4-5.

International Profile, french (INTF)

Year 2

Mandatory courses (63.0 Credits)

Course code	Course name	Credits	Edu. level
LS1433	French A2 for Engineers	7.5 hp	First cycle
LS1434	French B1 for Engineers	7.5 hp	First cycle

MF1016	Basic Electrical Engineering	9.0 hp	First cycle
MF1044	Machine Components	6.0 hp	First cycle
MG1026	Manufacturing Technology	6.0 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
SE1010	Solid Mechanics, Basic Course with Project	12.0 hp	First cycle
SG1140	Mechanics II	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MG1028	Introductory 3D CAD Mandatory for students admitted from COPEN	1.5 hp	First cycle

Supplementary information

Only students admitted to study year 2, Degree Programme in Mechanical Engineering 300 credits, from Degree Programme Open Entrance, must take the conditionally elective course MG1028 Introductory 3D CAD, 1,5 credits.

Year 3

Mandatory courses (12.0 Credits)

Course code	Course name	Credits	Edu. level
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle

Supplementary information

During study year 3, students at an international profile choose one of the specialisations included in the regular curriculum for the degree programme in Mechanical Engineering.

The course *SF1915 Probability Theory and Statistics*, should not be read by students attending the international profile.

Instead the course *SF1633 Differential Equations* should be read.

The exchange semester is during year 3 fall or spring, depending on the exchange university.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

International Profile, spanish (INTS)

Year 2

Mandatory courses (63.0 Credits)

Course code	Course name	Credits	Edu. level
LS1443	Spanish A2 for Engineers	7.5 hp	First cycle
LS1448	Spanish B1 for Engineers	7.5 hp	First cycle
MF1016	Basic Electrical Engineering	9.0 hp	First cycle
MF1044	Machine Components	6.0 hp	First cycle
MG1026	Manufacturing Technology	6.0 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
SE1010	Solid Mechanics, Basic Course with Project	12.0 hp	First cycle
SG1140	Mechanics II	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MG1028	Introductory 3D CAD Mandatory for students admitted from COPEN	1.5 hp	First cycle

Supplementary information

Only students admitted to study year 2, Degree Programme in Mechanical Engineering 300 credits, from Degree Programme Open Entrance, must take the conditionally elective course MG1028 Introductory 3D CAD, 1,5 credits.

Year 3

Mandatory courses (12.0 Credits)

Course code	Course name	Credits	Edu. level
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle

Supplementary information

During study year 3, students at an international profile choose one of the specialisations included in the regular curriculum for the degree programme in Mechanical Engineering.

The course *SF1915 Probability Theory and Statistics*, should not be read by students attending the international profile.

Instead the course *SF1633 Differential Equations* should be read.

The exchange semester is during year 3 fall or spring, depending on the exchange university.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

International Profile, german (INTT)

Year 2

Mandatory courses (64.5 Credits)

Course code	Course name	Credits	Edu. level
LS1423	German A2 for Engineers	7.5 hp	First cycle
LS1424	German B1 for Engineers	7.5 hp	First cycle
MF1016	Basic Electrical Engineering	9.0 hp	First cycle
MF1044	Machine Components	6.0 hp	First cycle
MG1026	Manufacturing Technology	6.0 hp	First cycle
MG1028	Introductory 3D CAD Mandatory for students admitted from COPEN	1.5 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
SE1010	Solid Mechanics, Basic Course with Project	12.0 hp	First cycle
SG1140	Mechanics II	6.0 hp	First cycle

Supplementary information

Only students admitted to study year 2, Degree Programme in Mechanical Engineering 300 credits, from Degree Programme Open Entrance, must take the conditionally elective course MG1028 Introductory 3D CAD, 1,5 credits.

Year 3

Mandatory courses (12.0 Credits)

Course code	Course name	Credits	Edu. level
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle

Supplementary information

During study year 3, students at an international profile choose one of the specialisations included in the regular curriculum for the degree programme in Mechanical Engineering.

The course *SF1915 Probability Theory and Statistics*, should not be read by students attending the international profile.

Instead the course *SF1633 Differential Equations* should be read.

The exchange semester is during year 3 fall or spring, depending on the exchange university.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Innovation Management and Product Development (IPDE)

Year 3

Mandatory courses (18.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Combustion Engineering (IPUA)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
EL1010	Automatic Control, General Course	6.0 hp	First cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least one of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Machine Design (IPUB)

Year 3

Mandatory courses (18.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Mechatronics (IPUC)

Year 3

Mandatory courses (33.0 Credits)

Course

code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Supplementary information

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Industrial Technology and Sustainability (ITSY)

Year 1

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
ML1500	Introduction to Industrial Technology	7.5 hp	First cycle
ML1501	Industrial Systems I	7.5 hp	First cycle
ML1502	Sustainability for Industry	7.5 hp	First cycle
SF1624	Algebra and Geometry	7.5 hp	First cycle
SF1625	Calculus in One Variable	7.5 hp	First cycle

SF1626	Calculus in Several Variable	7.5 hp	First cycle
SG1117	Engineering Mechanics	7.5 hp	First cycle
SK1117	Electromagnetism and Waves	7.5 hp	First cycle

Year 2

Mandatory courses (60.0 Credits)

Course code	Course name	Credits	Edu. level
DD1310	Programming Techniques	6.0 hp	First cycle
ME1003	Industrial Management, Basic Course	6.0 hp	First cycle
MJ1112	Applied Thermodynamics	9.0 hp	First cycle
ML1018	Fundamental Industrial Statistics	6.0 hp	First cycle
ML1503	Industrial Systems II	6.0 hp	First cycle
ML1504	Logistics in Production	6.0 hp	First cycle
ML1505	Industrial Systems III	9.0 hp	First cycle
SF1546	Numerical Methods, Basic Course	6.0 hp	First cycle
SF1633	Differential Equations I	6.0 hp	First cycle

Supplementary information

Based upon the curriculum for academic year 2018/2019. Changes may occur.

Year 3

Mandatory courses (36.0 Credits)

Course code	Course name	Credits	Edu. level
DD1320	Applied Computer Science	6.0 hp	First cycle
ML1507	Communicating Engineer	3.0 hp	First cycle
ML1508	Dependability and Operational Maintenance	6.0 hp	First cycle
ML150X	Degree Project in Industrial Technology and Sustainability, First Cycle	15.0 hp	First cycle
SF1811	Optimization	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
ME2063	Team Leadership and Human Resource Management	6.0 hp	Second cycle
MF1017	Basic Electrical Engineering	6.0 hp	First cycle

MG1002	Automation Technology	6.0 hp	First cycle
MG1016	Manufacturing Technology	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SF1632	Complementary Course in Differential Equations and Transforms	3.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers	6.0 hp	First cycle

Supplementary information

Based upon the curriculum for academic year 2018/2019. Changes may occur.

Master, Naval Architecture (MRS)

Year 3

Mandatory courses (18.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	One of the courses SG1220 or SG1217 must be chosen for eligibility to the Master's programme, Naval Architecture. Fluid Mechanics, Basic Course Fluid Mechanics for Engineers	6.0 hp	First cycle

[SG1220](#) One of the courses SG1220 or SG1217 must be chosen for eligibility to the Master's programme, Naval Architecture. 6.0 hp First cycle

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen.

Notice: At least one of the courses *SG1217 Fluid Mechanics, Basic Course* or *SG1220 Fluid Mechanics for Engineers* must be chosen for eligibility to the Master's Programme, Naval Architecture.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Mathematics (MTH)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1632	Complementary Course in Differential Equations and Transforms	3.0 hp	First cycle
SF1904	Markov Processes, Basic Course	3.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
	Fluid Mechanics, Basic Course		

SG1217	SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Supplementary information

CMAST-students at Masters programme, Applied and Computational Mathematics (TTMAM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Production and Energy**
MG2130 Modelling and Simulation of Industrial Processes 9 credits
MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits
- **Technical profile Solid Mechanics**
SE1025 FEM for Engineering Applications 6 credits
One of the following two courses must be chosen:
SE2126 Material Mechanics 9 credits
SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

- SE2860 FEM Modelling 8 credits
- SE2137 Fatigue 6 credits
- SE2139 Fracture Mechanics 6 credits
- SE2134 Dynamic Problems in Solid Mechanics 7,5 credits
- SE2121 Introduction to Biomechanics 9 credits

- **Technical profile Construction**
Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:
MF2101 Machine Design 6 credits
MF2102 Machine Design Project 6 credits
MF2010 Component Design 6 credits
MF2011 Systems Engineering 9 credits
MF2019 CAD 3D-modelling and Visualization 6 credits *
MF2024 Robust and Probabilistic Design 6 credits
** will be able to study in period 2 and 4*

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Year 4

Conditionally elective courses

Course code	Course name	Credits	Edu. level
MF2010	Component Design Technical profile - Construction	6.0 hp	Second cycle
MF2011	Systems Engineering Technical profile - Construction	9.0 hp	Second cycle
MF2019	CAD 3D-modelling and Visualization Technical profile - Construction	6.0 hp	Second cycle
MF2024	Robust and Probabilistic Design Technical profile - Construction	6.0 hp	Second cycle
MF2101	Machine Design Technical profile - Construction	6.0 hp	Second cycle
MF2102	Machine Design Project Course Technical profile - Construction	6.0 hp	Second cycle
MG2130	Modelling and Simulation of Industrial Processes Technical profile - Production and Energy	9.0 hp	Second cycle
MJ2380	Introduction to Energy Systems Analysis and Applications Technical profile - Production and Energy	9.0 hp	Second cycle
SE1025	FEM for Engineering Applications Technical profile - Solid Mechanics	6.0 hp	First cycle
SE2121	Introduction to Biomechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2126	Material Mechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2132	Applied Elasticity with FEM Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2134	Dynamic Problems in Solid Mechanics Technical profile - Solid Mechanics	7.5 hp	Second cycle
SE2137	Fatigue Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2139	Fracture Mechanics Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2860	FEM Modelling Technical profile - Solid Mechanics	8.0 hp	Second cycle

Supplementary information

CMAST-students at Masters programme, Applied and Computational Mathematics (TTMAM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Production and Energy**

MG2130 Modelling and Simulation of Industrial Processes 9 credits

MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits

- **Technical profile Solid Mechanics**

SE1025 FEM for Engineering Applications 6 credits

One of the following two courses must be chosen:

SE2126 Material Mechanics 9 credits

SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

SE2860 FEM Modelling 8 credits

SE2137 Fatigue 6 credits

SE2139 Fracture Mechanics 6 credits

SE2134 Dynamic Problems in Solid Mechanics 7,5 credits

SE2121 Introduction to Biomechanics 9 credits

- **Technical profile Construction**

Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:

MF2101 Machine Design 6 credits

MF2102 Machine Design Project Course 6 credits

MF2010 Component Design 6 credits

MF2011 Systems Engineering 9 credits

MF2019 CAD 3D-modelling and Visualization 6 credits *

MF2024 Robust and Probabilistic Design 6 credits

** will be able to study in period 2 and 4*

Information regarding conditionally elective courses

Technical profile Production and Energy

Courses listed below, within the profile, shall be taken during study year 4-5.

Technical profile Solid Mechanics

Within the profile, the course *SE1025* should be read, as well as **one** of the courses *SE2126* or *SE2132*.

In addition to these courses, **one** of the other conditionally optional courses within the profile, should be read in year 4-5.

Technical profile Construction

Courses corresponding to at least 18 credits, listed below, within the profile, shall be taken during study year 4-5.

Master, Nuclear Energy Engineering (NEE)

Year 3

Mandatory courses (26.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle
SH1012	Modern Physics	8.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen, and at least one of the courses SG1217 or SG1220 must be chosen.

Notice: At least one of the courses *SG1217 Fluid Mechanics, Basic Course* or *SG1220 Fluid Mechanics for Engineers* must be chosen for eligibility to the Master's Programme, Nuclear Energy Engineering.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Production Engineering and Management (PRM)

Year 3

Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Supplementary information

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Sustainable Energy Engineering (SUE)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle

[SF1915](#) [Probability Theory and Statistics](#) 6.0 hp First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
SG1217	Fluid Mechanics, Basic Course One of the courses SG1217 or SG1220 must be chosen.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers One of the courses SG1220 or SG1217 must be chosen.	6.0 hp	First cycle

Recommended courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle

Information regarding conditionally elective courses

One of the conditionally elective courses SG1217 or SG1220 must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Master, Sustainable Technology (SUT)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
AL2113	Sustainable Development in theory and practise	6.0 hp	Second cycle
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle

[SF1915](#) [Probability Theory and Statistics](#) 6.0 hp First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Supplementary information

CMAST-students at Masters programme, Sustainable Technology (TSUTM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Construction**

Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:

MF2101 Machine Design 6 credits

MF2102 Machine Design Project 6 credits

MF2010 Component Design 6 credits

MF2011 Systems Engineering 9 credits

MF2019 CAD 3D-modelling and Visualization 6 credits *

MF2024 Robust and Probabilistic Design 6 credits

** will be able to study in period 2 and 4*

- **Technical profile Energy**

MJ2413 Energy and Environment 6 credits

MJ2411 Renewable Energy Technology 6 credits *

MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits

**can also be chosen study year 5*

- **Technical profile Production**

MG2029 Production Engineering - Planning and Control 6 credits
(MG1024 Production in study year 3, is the eligibility course for MG2029)

One of the following two courses must be chosen:

MG2028 CAD and Other IT Tools in Industrial Processes 6 credits

MG2130 Modelling and Simulation of Industrial Processes 9 credits

As well as one of the following courses must be chosen, either study year 4 or 5:

MG2009 Advanced Manufacturing Technology 6 credits

MG2109 Advanced Manufacturing Technology, Extended Course 9 credits

MG2110 Advanced Metrology 9 credits

MG2022 Advanced CAD Modelling and Rapid Prototyping 6 credits *

MG2135 PLM - Product Lifecycle Management 9 credits

MG2036 Computer Aided Manufacturing - CAM 6 credits

MG2038 Digital Factories 6 credits **

MG2010 Modern Industrial Metrology 6 credits *

* MG2028 prerequisites

** MG2130 prerequisites

- **Technical profile Solid Mechanics**

SE1025 FEM for Engineering Applications 6 credits

One of the following two courses must be chosen:

SE2126 Material Mechanics 9 credits

SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

SE2860 FEM Modelling 8 credits

SE2137 Fatigue 6 credits

SE2139 Fracture Mechanics 6 credits

SE2134 Dynamic Problems in Solid Mechanics 7,5 credits

SE2121 Introduction to Biomechanics 9 credits

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Year 4

Conditionally elective courses

Course code	Course name	Credits Edu. level
	Component Design	

MF2010	Technical profile - Construction	6.0 hp	Second cycle
MF2011	Systems Engineering Technical profile - Construction	9.0 hp	Second cycle
MF2019	CAD 3D-modelling and Visualization Technical profile - Construction	6.0 hp	Second cycle
MF2024	Robust and Probabilistic Design Technical profile - Construction	6.0 hp	Second cycle
MF2101	Machine Design Technical profile - Construction	6.0 hp	Second cycle
MF2102	Machine Design Project Course Technical profile - Construction	6.0 hp	Second cycle
MG2009	Advanced Manufacturing Technology Technical profile - Production	6.0 hp	Second cycle
MG2010	Modern Industrial Metrology Technical profile - Production	6.0 hp	Second cycle
MG2022	Advanced CAD Modelling and Rapid Prototyping. Project Course Technical profile - Production	6.0 hp	Second cycle
MG2028	CAD and Other IT Tools in Industrial Processes Technical profile - Production	6.0 hp	Second cycle
MG2029	Production Engineering - Planning and Control Technical profile - Production	6.0 hp	Second cycle
MG2036	Computer Aided Manufacturing - CAM Technical profile - Production	6.0 hp	Second cycle
MG2038	Digital Factories Technical profile - Production	6.0 hp	Second cycle
MG2109	Advanced Manufacturing Technology. Extended Course Technical profile - Production	9.0 hp	Second cycle
MG2110	Advanced Metrology Technical profile - Production	9.0 hp	Second cycle
MG2130	Modelling and Simulation of Industrial Processes Technical profile - Production	9.0 hp	Second cycle
MG2135	PLM - Product Lifecycle Management Technical profile - Production	9.0 hp	Second cycle
MJ2380	Introduction to Energy Systems Analysis and Applications Technical profile - Energy	9.0 hp	Second cycle
MJ2411	Renewable Energy Technology Technical profile - Energy	6.0 hp	Second cycle
MJ2413	Energy and Environment Technical profile - Energy	6.0 hp	Second cycle
SE1025	FEM for Engineering Applications Technical profile - Solid Mechanics	6.0 hp	First cycle
SE2121	Introduction to Biomechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle

SE2126	Material Mechanics Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2132	Applied Elasticity with FEM Technical profile - Solid Mechanics	9.0 hp	Second cycle
SE2134	Dynamic Problems in Solid Mechanics Technical profile - Solid Mechanics	7.5 hp	Second cycle
SE2137	Fatigue Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2139	Fracture Mechanics Technical profile - Solid Mechanics	6.0 hp	Second cycle
SE2860	FEM Modelling Technical profile - Solid Mechanics	8.0 hp	Second cycle

Supplementary information

CMAST-students at Masters programme, Sustainable Technology (TSUTM)

A technical profile specified within the study year plan for Degree Programme in Mechanical Engineering must be chosen

One of the following profiles can be chosen during study year 4-5:

- **Technical profile Construction**

Courses corresponding to at least 18 credits, listed below, shall be taken during study year 4-5:

MF2101 Machine Design 6 credits

MF2102 Machine Design Project Course 6 credits

MF2010 Component Design 6 credits

MF2011 Systems Engineering 9 credits

MF2019 CAD 3D-modelling and Visualization 6 credits *

MF2024 Robust and Probabilistic Design 6 credits

** will be able to study in period 2 and 4*

- **Technical profile Energy**

MJ2413 Energy and Environment 6 credits

MJ2411 Renewable Energy Technology 6 credits *

MJ2380 Introduction to Energy Systems Analysis and Applications 9 credits

**can also be chosen study year 5*

- **Technical profile Production**

MG2029 Production Engineering - Planning and Control 6 credits

(MG1024 Production in study year 3, is the eligibility course for MG2029)

One of the following two courses must be chosen:

MG2028 CAD and Other IT Tools in Industrial Processes 6 credits

MG2130 Modelling and Simulation of Industrial Processes 9 credits

As well as one of the following courses must be chosen, either study year 4 or 5:

MG2009 Advanced Manufacturing Technology 6 credits

MG2109 Advanced Manufacturing Technology, Extended Course 9 credits

MG2110 Advanced Metrology 9 credits
MG2022 Advanced CAD Modelling and Rapid Prototyping 6 credits *
MG2135 PLM - Product Lifecycle Management 9 credits
MG2036 Computer Aided Manufacturing - CAM 6 credits
MG2038 Digital Factories 6 credits **
MG2010 Modern Industrial Metrology 6 credits *
* *MG2028* prerequisites
** *MG2130* prerequisites

- **Technical profile Solid Mechanics**

SE1025 FEM for Engineering Applications 6 credits

One of the following two courses must be chosen:

SE2126 Material Mechanics 9 credits

SE2132 Applied Elasticity with FEM 9 credits

As well as one of the following courses must be chosen:

SE2860 FEM Modelling 8 credits

SE2137 Fatigue 6 credits

SE2139 Fracture Mechanics 6 credits

SE2134 Dynamic Problems in Solid Mechanics 7,5 credits

SE2121 Introduction to Biomechanics 9 credits

Information regarding conditionally elective courses

Technical profile Construction

Courses corresponding to at least 18 credits, listed below, within the profile, shall be taken during study year 4-5.

Technical profile Energy

Courses listed below, within the profile, shall be taken during study year 4-5.

Technical profile Production

Within the profile, the course *MG2029* should be read, as well as **one** of the courses *MG2028* or *MG2130*. In addition to these courses, **one** of the other conditionally optional courses within the profile, should be read in year 4-5.

Technical profile Solid Mechanics

Within the profile, the course *SE1025* should be read, as well as **one** of the courses *SE2126* or *SE2132*. In addition to these courses, **one** of the other conditionally optional courses within the profile, should be read in year 4-5.

Track, Fluid Mechanics (TEMA)

Year 3

Mandatory courses (18.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course One of the courses SG1220 or SG1217 must be chosen.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers One of the courses SG1220 or SG1217 must be chosen.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least two of the conditionally elective courses must be chosen, and at least one of the courses SG1217 or SG1220 must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Solid Mechanics (TEMB)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle

SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least one of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").

Track, Sound and Vibrations (TEMC)

Year 3

Mandatory courses (24.0 Credits)

Course code	Course name	Credits	Edu. level
MF1045	Product realization - Engineering Design	6.0 hp	First cycle
MH1004	Engineering Materials	6.0 hp	First cycle
SD1116	Design of Silent and Vibration-free Products	6.0 hp	First cycle
SF1915	Probability Theory and Statistics	6.0 hp	First cycle

Conditionally elective courses

Course code	Course name	Credits	Edu. level
DD1321	Applied Programming and Computer Science	9.0 hp	First cycle
EL1010	Automatic Control, General Course	6.0 hp	First cycle
ME2015	Project Management: Leadership and Control	6.0 hp	Second cycle
MG1002	Automation Technology	6.0 hp	First cycle
MG1024	Production	6.0 hp	First cycle
MH1023	Practical Gender Equality and Diversity Work in Scientific, Technical and Industrial Environments	6.0 hp	First cycle
MJ1401	Heat Transfer	6.0 hp	First cycle
SE1025	FEM for Engineering Applications	6.0 hp	First cycle
SG1217	Fluid Mechanics, Basic Course SG1220 can be chosen instead of SG1217.	6.0 hp	First cycle
SG1220	Fluid Mechanics for Engineers SG1217 can be chosen instead of SG1220.	6.0 hp	First cycle

Information regarding conditionally elective courses

At least one of the conditionally elective courses must be chosen.

A degree project for Degree of Bachelor must be chosen during study year 3, independently of chosen masters programme (see list of conditional elective courses presented under the heading "General courses").



Appendix 2: Specialisations

Degree Programme in Mechanical Engineering (CMAST), Programme syllabus for studies starting in autumn 2017

Master, Aerospace Engineering (AEE)

Master, Vehicle Engineering (FOR)

Master, Industrial Management (INE)

International Profile, french (INTF)

International Profile, spanish (INTS)

International Profile, german (INTT)

Track, Innovation Management and Product Development (IPDE)

Track, Combustion Engineering (IPUA)

Track, Machine Design (IPUB)

Track, Mechatronics (IPUC)

Industrial Technology and Sustainability (ITSY)

Industrial technology and sustainability is run in a unique and close collaboration with modern industry. The education focuses on the manufacturing phase. You will learn how to analyze systems and processes in order to coordinate, integrate and optimizing flows in production. Operations management, logistics and maintenance are central for the system whole. After completed education, you may work in system development, developing and designing sustainable systems for manufacturing of any type of products i.e. vehicles, pharmaceuticals, food, clothes or green technology.

Master, Naval Architecture (MRS)

Master, Mathematics (MTH)

Master, Nuclear Energy Engineering (NEE)

Master, Production Engineering and Management (PRM)

Master, Sustainable Energy Engineering (SUE)

Master, Sustainable Technology (SUT)

Track, Fluid Mechanics (TEMA)

Track, Solid Mechanics (TEMB)

Track, Sound and Vibrations (TEMC)