Programme syllabus

Degree Programme in Materials Design and Engineering
Civilingenjörsutbildning i materialdesign
300.0 credits

Valid for students admitted to the education from autumn 13 (HT - Autumn term; VT - Spring term).

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

Programme objectives

Beyond those objectives that are specified in the Higher Education Ordinance, a graduate of Degree Program in Materials Design and Engineering at KTH will…

Knowledge and understanding

- have a broad knowledge in Materials Engineering in order to be able to develop and manufacture future materials based on metals, ceramics, polymers and fiber materials
- have deep knowledge within the area, of material science which consists of the relation between the materials’ production, structure, properties and usage. The scientific point-of-view should contain all length scales from the nano-meter level to the micrometer level to the component levels in the final product.

Skills and abilities

- have experimental skills which are trained in material synthesis and analysis, analytical abilities and system thinking which are trained in material selection, and in design of new materials and processes
- have a full view with respect to material selection, development and usage based on an industrial and ecological approach. It includes a system of thinking where function, performance, reliability and economy are weaved together with sustainability aspects such as environmental stress, environmental cycle considerations, and availability.
- have individual and professional skills such as language, leadership, project-management and communication for work as an engineer in a leadership position or as a leader in a technically intensive company.

Ability to make judgements and adopt a standpoint
have a good understanding that engineering-related problems, seen from a system perspective, are often complex, incompletely defined and sometimes contain contradictions

- show an reflective understanding of responsibility and ethics in relation to technical, ecological and societal activities
- The local degree ordinance of the Royal Institute of Technology can be found in the KTH Regulations
  intra.kth.se/regelverk

**Extent and content of the programme**

The program consists of 300 credits which correspond to five years of full-time studies.

The program’s level consists of first-cycle courses in year 1-3 and second-cycle level/master level in year 4-5 and is completed with a degree project worth 30 hp.

**Master’s program leading to Master of Science degree:**

- Engineering Material Science (track Industrial Materials)
- Sustainable Energy Engineering
- Industrial Management
- Macromolecular Materials
- Nanotechnology
- Naval Architecture (Track Lightweight Structures)
- Nuclear Energy Engineering
- Production Engineering Management
- Sustainable Technology
- Engineering Mechanics (Track Solid Mechanics)

The language of instruction in the first cycle is mainly Swedish.
The language of instruction in the second cycle is mainly English

**Eligibility and selection**

In order to study at KTH, basic eligibility requirements must be fulfilled. In addition, the following special eligibility requirements must be fulfilled for KTH's Masters of Science in Engineering programmes: Mathematics course E, Physics course B and Chemistry course A or the corresponding equivalents. All of the courses must have been completed with at least a grade of pass (godkänd) or 3. If the applicant refers to other studies or work experiences that may show competences then they will be assessed accordingly.

More information regarding KTH’s admission policy can be found in the KTH Regulations intra.kth.se/regelverk

**Implementation of the education**

**Structure of the education**

Academic year, terms, and study periods can be found in the KTH Regulations intra.kth.se/regelverk
Study years 1-3, studies in the first-cycle

The study programme consists of the mandatory courses in years 1-3 in the first-cycle (G), and a Master Programme in the second-cycle (A) in years 4 and 5, which concludes with 30 credits degree project.

The programme is organised around courses in the mathematical, technically scientific and technical application subjects. The education in and usage of professional skills and abilities of significant importance for a Master of Science in Engineering, for example: communication, ethics, entrepreneurship, sustainable development, company- and societal aspects, are integrated into the courses.

In order to make the programme comprehensive, collaboration is emphasized between the different subjects and throughout the entire programme. The courses are scheduled and coordinated such a way that this is done through common project work and hand-in assignments, etc.

The students study together throughout year 1 and 2 and parts of year 3. Before the conclusion of the first cycle, the student must choose a Master programme. Within the chosen Master programme, the student will study a limited area of applied Materials Engineering.

The programme is structured in such a way that a student can choose to get a Degree of Bachelor of Science in Engineering after three years or study. This makes it possible for students to continue their studies abroad or at other universities in Sweden.

Mathematically natural science courses

Most of the courses in basic mathematical and natural science are in the first year. The remainder is in the second year.

Technical courses

Throughout years 1-3, the student will study basic technical scientific courses in Materials sciences such as strength of materials and solid mechanics, thermodynamics, material’s science and manufacturing processes for metals, ceramics, polymers, and fibre-based materials.

The first three years conclude with 15 credits of degree project work for the Degree of Bachelor of Science in Engineering in the chosen technical area. After completing 180 credits, the student can get a Degree of Bachelor of Science in Engineering if the degree requirements are fulfilled.

Study years 4-5, studies in the second cycle

The Master programme mainly consists of advanced courses and degree project work within one specific technical scientific area. Students in the program can choose between different Master programmes with set study plans. The student is guaranteed a place in any Master programme they choose.

The Graduated Engineer's knowledge about the environment and sustainable development is deepened and solidified due to the integration of these subjects in the programme’s courses with special aspects: for example, life-cycle analysis, environmental effects, and materials selection, which are characteristic for the chosen Master programmes.
One purpose with the Master programme structure is to give the student a possibility to make contacts within the departments and the research groups where the degree project work will be done.

Except for the previously mentioned work-related skills and abilities, knowledge about entrepreneurship is integrated into the courses during years 4 and 5.

Master's program leading to Master of Science degree:

- Engineering Material Science (track Industrial Materials)
- Sustainable Energy Engineering
- Industrial Management
- Macromolecular Materials
- Nanotechnology
- Naval Architeecture (Track Lightweight Structures)
- Nuclear Energy Engineering
- Production Engineering Management
- Sustainable Technology
- Engineering Mechanics (Track Solid Mechanics)

Courses

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

Grading system

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

Conditions for participation in the programme

Term Enrolment and Course Application

A prerequisite to be allowed to participate in the studies is that the student verifies enrollment for courses the coming term every spring and fall. This is done via www.antagning.se between the 1st and 15th of November and the 1st and 15th of May.

Requirements for participation in each year of the program:

For studying in year 2:

A minimum of 45 credits from year 1 must be completed by the end of the exam period in August. Students who don’t fulfill this requirement must devise an individual study plan with a guidance counselor.

For studying in year 3:
A minimum of 90 credits from years 1 and 2 must be completed by the end of the exam period in August. Students who don’t fulfill this requirement must devise an individual study plan with a guidance counselor.

For studying in year 4:

A minimum of 150 credits from years 1-3 must be completed by the end of the exam period in August. Within these 150 credits, a degree project worth 15 credits and a minimum of 110 credits from compulsory courses from years 1 and 2 must be completed. Students who don’t fulfill this requirement must devise an individual study plan with a guidance counselor.

For studying in year 5:

A minimum of 195 credits from years 1, 2, 3 and 4 of which at least 45 credits from year 4 must be completed by the end of the exam period in August. Students who don’t fulfill this requirement must devise an individual study plan with a guidance counselor.

Prior to year 4 (Master’s level), students choose a Masters program within the context of their Master of Science in Engineering program. This is done during May 1-15. Selection of master is directed by the admissions office within the department of student services at KTH. In addition to the general requirements for studies in year 4, specific admission requirements apply for every Master’s program. Judgments of these requirements are reviewed by the department of Student Services at KTH.

**Recognition of previous academic studies**

The student has the possibility to apply to receive credit for results from previous studies at another university within the country or abroad. The form is available on KTH’s website.

KTH’s policy for receiving credit from previous academic studies is available in its entirety in the KTH Regulations [intra.kth.se/regelverk](http://intra.kth.se/regelverk)

**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 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**

A Degree project on the Bachelor level consisting of 15 credits and a Degree project of 30 credits are a requirement for the program.

In order for a student to begin the degree project on the Bachelor level a minimum of 120 credits must be met. Plus the general requirements for studies within the 3rd year must be met.
Students are required to have a minimum of 240 credits before beginning the Final Project.

KTH’s rules for the degree project are available in the KTH-Regulations, www.kth.se

**Degree**

In order to graduate as a Master of Science in Engineering, Degree program in Materials Design and Engineering, the student must be approved in every course that is included in the student’s study plan. The study plan must consist of 300 credits including 30 credits of degree project work.

Reference to the local degree policy is available in the KTH Regulations.

[Appendix 1 - Course list](#)
[Appendix 2 - Programme syllabus descriptions](#)
# Appendix 1: Course list

Degree Programme in Materials Design and Engineering (CMATD), Programme syllabus for studies starting in autumn 2013

## General courses

### Year 1

#### Mandatory courses (60.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>KD1260</td>
<td>Chemistry of Materials</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1070</td>
<td>Perspectives on Materials Design</td>
<td>13.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1624</td>
<td>Algebra and Geometry</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1625</td>
<td>Calculus in One Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1626</td>
<td>Calculus in Several Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SG1130</td>
<td>Mechanics I</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1110</td>
<td>Electromagnetism and Waves</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

#### Recommended courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>SF1611</td>
<td>Introductory Course in Mathematics I</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

### Year 2

#### Mandatory courses (60.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF1050</td>
<td>Polymeric Materials</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1010</td>
<td>Thermodynamics of Materials</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1015</td>
<td>Analysis and Design of Materials</td>
<td>8.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1020</td>
<td>Ceramics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>
MH1024  Fundamentals of Materials Science - Metallic Materials  6.0 hp  First cycle
SE1020  Solid Mechanics, Basic Course  9.0 hp  First cycle
SF1518  Numerical Methods and Basic Programming  9.0 hp  First cycle
SF1633  Differential Equations I  6.0 hp  First cycle

Year 5

Supplementary information

In year 4 and 5 CMATD studentes have to choose 18 hp Technical Courses on advanced level at alternative 1 or 2.

Alternative 1:
One of the Technical profiles

Alternative 2:
At least 18 hp of the MHXXX--courses in year 4 or 5 (not MH2501)

Recommended Technical profile:

Process Sciences:
MH2039 Process Engineering
MH2041 Applied Thermodynamics and Kinetics, part 2
MH2049 Advanced Course in Process Sciences

Materials Design:
MH2100 Powder Metallurgy
MH2040 Applied Thermodynamics and Kinetics part 1
MH2048 Advanced Course in Materials Design

Energy Processing:
MJ2691 Thecnology and Sustainable Development
MH2600 Combustion in industrial Processes
MH2045 Energy and Materials Sustainability

Master, Industrial Management (INE)

Year 3

Mandatory courses (43.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp  First cycle</td>
</tr>
<tr>
<td>ME2015</td>
<td>Project Management: Leadership and Control</td>
<td>6.0 hp  Second cycle</td>
</tr>
<tr>
<td>ME2063</td>
<td>Team Leadership and Human Resource Management</td>
<td>6.0 hp  Second cycle</td>
</tr>
</tbody>
</table>
MH1018  Transport Phenomena 6.0 hp  First cycle
MH1022  Fabrication Processes of Metals and Bio Fibres 7.0 hp  First cycle
MH2017  Micro and Nanostructures 6.0 hp  Second cycle
MH2050  Mechanical Properties of Materials 6.0 hp  Second cycle

Conditionally elective courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH101X</td>
<td>Degree Project in Materials and Process Design, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Attn: Study year information concerning grading system

According to the President of the University’s decision on July 1, 2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1, 2007, and through June 30, 2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TINEM/HT16/arskurs2

Master, Macromolecular Materials (MMM)

Year 3

Mandatory courses (38.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>KF2200</td>
<td>Physical Polymer and Cellulose Chemistry</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
Conditionally elective courses

Course code  Course name                                                                                       Credits Edu. level

MH101X Degree Project in Materials and Process Design, First Cycle                                         15.0 hp First cycle
  One of the Degree projects 15 hp must be chosen. Attn: Study year information concerning grading system

Supplementary information

Attn: Study year information concerning grading system

According to the President of the University’s decision on July 1,2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1,2007, and through June 30,2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TMMMM/HT16/arskurs2

Master, Naval Architecture (MRS)

Year 3

Mandatory courses (49.0 Credits)

Course code  Course name                                                                                       Credits Edu. level

ME1003 Industrial Management, Basic Course                                                                6.0 hp First cycle
MH1018 Transport Phenomena                                                                                6.0 hp First cycle
MH1022 Fabrication Processes of Metals and Bio Fibres                                                      7.0 hp First cycle
MH2017 Micro and Nanostructures                                                                           6.0 hp Second cycle
MH2050 Mechanical Properties of Materials                                                                  6.0 hp Second cycle
SF1901 Probability Theory and Statistics                                                                   6.0 hp First cycle
SG1140 Mechanics II                                                                                       6.0 hp First cycle
SG1217 Fluid Mechanics, Basic Course                                                                       6.0 hp First cycle
  Can be replaced by SG1220

Conditionally elective courses
Course code | Course name | Credits | Edu. level
---|---|---|---
**SA119X** | Degree Project in Materials Science and Engineering, First Level | 15.0 hp | First cycle

Attn: Study year information concerning grading system

According to the President of the University´s decision on July 1, 2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1, 2007, and through June 30, 2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

**Year 5**

**Supplementary information**

Year 2:

https://www.kth.se/student/kurser/program/TMRSM/HT16/arskurs2

**Master, Nuclear Energy Engineering (NEE)**

**Year 3**

**Mandatory courses (51.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ME1003</strong></td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td><strong>MH1018</strong></td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td><strong>MH1022</strong></td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td><strong>MH1026</strong></td>
<td>Materials Physics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td><strong>MH2017</strong></td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td><strong>MH2050</strong></td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td><strong>SG1217</strong></td>
<td>Fluid Mechanics, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td><strong>SH1012</strong></td>
<td>Modern Physics</td>
<td>8.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Can be replaced by SG1220

One of the courses SH1012 or SH1009 must be chosen

**Conditionally elective courses**

| Course |
code       Course name                                                                                             Credits Edu. level
MH101X     Degree Project in Materials and Process Design, First Cycle                                            15.0 hp First cycle

Supplementary information

Attn: Study year information concerning grading system

According to the President of the University’s decision on July 1, 2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1, 2007, and through June 30, 2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TNEEM/HT16/arskurs2

Master, Nanotechnology (NTE)

Year 3

Mandatory courses (37.0 Credits)

| Course code | Course name                                                                                             Credits Edu. level |
|-------------|---------------------------------------------------------------------------------------------------------|---------------------|
| ME1003      | Industrial Management, Basic Course                                                                     | 6.0 hp First cycle  |
| MH1018      | Transport Phenomena                                                                                     | 6.0 hp First cycle  |
| MH1022      | Fabrication Processes of Metals and Bio Fibres                                                           | 7.0 hp First cycle  |
| MH1026      | Materials Physics                                                                                        | 6.0 hp First cycle  |
| MH2017      | Micro and Nanostructures                                                                                 | 6.0 hp Second cycle |
| MH2050      | Mechanical Properties of Materials                                                                      | 6.0 hp Second cycle |

Conditionally elective courses

| Course code | Course name                                                                                             Credits Edu. level |
|-------------|---------------------------------------------------------------------------------------------------------|---------------------|
| MH101X      | Degree Project in Materials and Process Design, First Cycle                                            | 15.0 hp First cycle |

Supplementary information
Attn: Study year information concerning grading system

According to the President of the University’s decision on July 1, 2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1, 2007, and through June 30, 2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TNTEM/HT16/arskurs2

Master, Production Engineering and Management (PRM)

Year 3

Mandatory courses (44.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MG1002</td>
<td>Automation Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MG1016</td>
<td>Manufacturing Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MG1028</td>
<td>Introductory 3D CAD</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Conditionally elective courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MH101X</td>
<td>Degree Project in Materials and Process Design, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Attn: Study year information concerning grading system
According to the President of the University´s decision on July 1,2015, grades pass (P) and fail (F) will be used for the Bachelor thesis. Students who have begun studies on July 1,2007, and through June 30,2015, also have the option to use the grading scale of A-F, for their Bachelor thesis. Registration must be done before the course registration and before the thesis work starts.

Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TPRMM/HT16/arskurs2

Master, Sustainable Energy Engineering (SUE)

Year 3

Mandatory courses (37.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>SG1217</td>
<td>Fluid Mechanics, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
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</table>

Can be replaced by SG1220

Conditionally elective courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ146X</td>
<td>Degree Project in Sustainable Energy Engineering, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

One of the Degree projects 15 hp must be chosen. Attn: Study year information concerning grading system

Supplementary information

Attn: Study year information concerning grading system

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Year 5

Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TSUEM/HT16/arskurs2

Master, Sustainable Technology (SUT)

Year 3

Mandatory courses (37.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
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<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2613</td>
<td>Sustainable Development</td>
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Conditionally elective courses

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<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
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</thead>
<tbody>
<tr>
<td>AL126X</td>
<td>Degree Project in Technology and Sustainable Development, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
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</table>

One of the Degree projects 15 hp must be chosen. Attn: Study year information concerning grading system

Supplementary information

Attn: Study year information concerning grading system

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Year 5

Supplementary information
YEAR 2:

https://www.kth.se/student/kurser/program/TSUTM/HT16/arskurs2

## Track, Solid Mechanics (TEMB)

### Year 3

#### Mandatory courses (37.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
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<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
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<td>SE1025</td>
<td>FEM for Engineering Applications</td>
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#### Conditionally elective courses

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<tbody>
<tr>
<td>SA119X</td>
<td>Degree Project in Materials Science and Engineering, First Level</td>
<td>15.0 hp</td>
<td>First cycle</td>
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One of the Degree projects 15 hp must be chosen. Attn: Study year information concerning grading system

#### Supplementary information

Attn: Study year information concerning grading system

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### Year 5

#### Supplementary information

YEAR 2:

https://www.kth.se/student/kurser/program/TTEMM/HT16/arskurs2

## Master, Engineering Materials Science (TMV)
Year 3

**Mandatory courses (46.0 Credits)**

<table>
<thead>
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<th>Credits</th>
<th>Edu. level</th>
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</thead>
<tbody>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1018</td>
<td>Transport Phenomena</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1019</td>
<td>Advanced Course in Metallic Materials</td>
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<td>First cycle</td>
</tr>
<tr>
<td>MH1022</td>
<td>Fabrication Processes of Metals and Bio Fibres</td>
<td>7.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH1026</td>
<td>Materials Physics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MH2017</td>
<td>Micro and Nanostructures</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MH2050</td>
<td>Mechanical Properties of Materials</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

**Conditionally elective courses**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
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<td>MH10IX</td>
<td>Degree Project in Materials and Process Design, First Cycle</td>
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</tr>
</tbody>
</table>

One of the Degree projects 15 hp must be chosen. Attn: Study year information concerning grading system

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Year 5

**Supplementary information**

YEAR 2:

https://www.kth.se/student/kurser/program/TTMVM/HT16/arskurs2
Appendix 2: Specialisations

Degree Programme in Materials Design and Engineering (CMATD), Programme syllabus for studies starting in autumn 2013

Master, Industrial Management (INE)
Master, Macromolecular Materials (MMM)
Master, Naval Architecture (MRS)
Master, Nuclear Energy Engineering (NEE)
Master, Nanotechnology (NTE)
Master, Production Engineering and Management (PRM)
Master, Sustainable Energy Engineering (SUE)
Master, Sustainable Technology (SUT)
Track, Solid Mechanics (TEMB)
Master, Engineering Materials Science (TMV)