Programme syllabus

Degree Programme in Industrial Engineering and Management
Civilingenjörsutbildning i industriell ekonomi

300.0 credits

Valid for students admitted to the education from autumn 15 (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 Swedish Higher Education Ordinance, a graduate engineer from KTH who has been awarded a Master of Science in Engineering in the Degree Programme in Industrial Engineering and Management will be able to…

Knowledge and understanding

- Display advanced skills in mathematics, natural science and technology within a selected technical specialisation (second-cycle)

- Display advanced skills in Industrial Economics and Management, as well as the relationships between engineering, economics and society.

- Display expertise in how economic activities and their legal and institutional frameworks can be described, measured, developed and administered.

- Display expertise in how different types of established and new technologies can support or further the development of such activities.

- Display expertise in established methods, models and theories within the field of management entailing the planning, business development, follow-ups and leadership of different types of industrial and technology-based activities.

- Display expertise in the management and development of activities originating from different stakeholders such as shareholders, customers, employees and the surrounding society, as well as display insight into possible areas of conflict.

- Display expertise in scientific tools to analyse, process and evaluate facts, as well as familiarity with how knowledge is developed within natural science, technology and social science.
Skills and abilities

- Display the ability, independently as well as in groups, to convert knowledge and capabilities into practical actions as viewed from relevant scientific, professional and social assessments and standpoints.

- Display the ability to analyse, formulate, apply and develop and manage technical and economic problems based upon a systems perspective, as well as the ability to define scope, determine the demand for resources manage processes for problem-solving and implementation.

- Display the ability to assess whether proposed technical systems and activities contribute to developing a sustainable society.

- Possess both individual and professional abilities such as leadership, project management, teamwork and communication necessary for a job as an engineer in management position or as a leader in technology-intensive companies.

Ability to make judgements and adopt a standpoint

- Possess a reflective standpoint towards assuming responsibility and issues of ethics in technical, organisational, economic, ecological and societal activities.

- Display awareness of how personal values and standpoints affect definitions and assessments of technical, organisational and economic problems.

- Display critical standpoints towards established methods and theories as well as towards how knowledge is developed within the natural sciences, technology and social sciences.

KTH's local degree ordinance can be found in the KTH Regulations, www.kth.se.

Extent and content of the programme

The programme consists of 300 credits, corresponding to five years of full-time studies, of which courses in the first, second and third years of study are at the first cycle level and the courses in the fourth and fifth years of study are at the second cycle level. The language of instruction in the first cycle level is primarily Swedish. The language of instruction in the second cycle level is primarily English.

The programme is characterised by the students taking courses in industrial economics and management in parallel with courses in mathematics and the natural sciences, as well as courses from within the framework of a selected technical specialisation. In addition, courses in a number of programme-specific subjects continue through year 1-5.

The programme features five broad technical specialisations within the first cycle level, these provide the eligibility requirements for different specialisations within the selected technical specialisation at the second cycle level.

At present, the following technical specialisations are offered within the programme (1):
Computer Science and Communications for Industrial Engineering

Energy Systems and Sustainable Development for Industrial Engineering

Product Realisation for Industrial Engineering

Applied Mathematics for Industrial Engineering

The technical specialisation Biotechnology for Industrial Engineering is dormant as from the academic year 14/15 as the School of Biotechnology is planning to implement majorstructural changes in the programme Master of Science in Engineering in Biotechnology.

The last two years of the programme are conducted within the framework of the Master's Programme in Industrial Engineering and Management (TIEMM), where courses within the chosen technical specialisation and within the subject of Industrial Economics and Management continue at the second-cycle level.

(1) If it is decided that the number of nominal seats in program enhances during the academic year 13/14 reserves the ITM school the right to increase the number of engineering specializations at the undergraduate level in order to allow a reasonable amount of students per technical specialisation.

(2) The ITM-school and program management for CINEK will have to wait for the School of Biotechnology's development work to be completed in order to determine whether it is still possible to be able to offer a technical specialisation in biotechnology.

Eligibility and selection

In order to study at KTH, basic eligibility requirements for studies at university level must be fulfilled. In addition, the following special eligibility requirements must be fulfilled for KTH's Master of Science in Engineering programmes: Mathematics 4, Physics 2 and Chemistry 1 or the corresponding. All of the courses must have been completed with at least a grade of pass (godkänd). Other studies or work experience will be assessed on the basis of the actual competence adduced.

More information regarding KTH’s admission policy can be found in the KTH Regulations, www.kth.se

Implementation of the education

Structure of the education

Structure of the programme

Academic year, terms, and study periods can be found in the KTH Regulations, www.kth.se.

Study years 1-3, studies in the first-cycle

The first three years of the programme consist of studies in the first-cycle within the Technical Major of Industrial Engineering and Management. This portion of the programme consists of courses in mathematics and natural science, industrial economics and management and courses in programme-
specific subjects. As of the second year of study, courses are also taken within the selected/chosen technical specialisation (see above) the program is carried out within the technical area of Industrial Engineering and Management. The technical area of Industrial Engineering and Management is a combination of Industrial Economics and Management and another technical area.

The first three years conclude with a Bachelor's degree specialisation work/degree project within the selected technical specialisation at the institution responsible for the other technical courses (chosen technical specialisation) in collaboration with the institution for Industrial Economics and Management.

**Study years 4-5 - specialisation in the second cycle**

The last two years of the programme consist of a second cycle specialisation within the framework of the Master's Programme in Industrial Engineering and Management (TIEMM). The specialisations entail courses in industrial economics and management, the selected technical specialisation and courses in programme-specific subjects, mainly at the second-cycle level. Within each technical specialisation at first-cycle level the student can choose between at least 2 technical specialisations at the second-cycle level. In addition, there are general elective courses.

The programme concludes with a degree project consisting of 30 credits, which corresponds to roughly twenty weeks of full-time studies. The degree project may be performed within the discipline of Industrial Economics and Management or within the selected technical specialisation. To be enrolled to the degree project at least 240 credits and the conditions for participation in year 5 must be completed.

**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 Enrollment 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.

By verifying his/her enrollment, the student has submitted his/her intention to continue studying and participating in the programme. After that it is possible for the student to:

- registered for courses
- have results reported

**Conditions for participation in the programme**

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. Of these 90 credits, at least 50 credits must be from Year 1. 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.

Specialisation selection

Selection of technical specialisation, electives within Industrial Economics and Management and general elective courses

A technical specialisation is selected during the autumn term during year 2. Students who have completed at least 45 credits of the mandatory courses in the first year of study of the Degree Programme in Industrial Engineering and Management even the re-exam period in August are eligible to select a technical specialisation in year 2. At the first cycle level, there are no limitations on the number of available places in the different technical specialisations. Certain courses at the second-cycle level may have a limited number of places.

In addition, there are general elective courses.

Selection of Master programmes

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
Students have the possibility to apply to have credits recognised for results from previous studies at another university in Sweden or abroad. KTH’s policy for recognising credits from previous academic studies can be found in its entirety in the KTH Regulations, www.kth.se.

Studies abroad

Students in the programme have the possibility to study abroad through the agreements KTH has with universities both inside and outside the EU. Normally, exchange studies may not occur during the first or second years of study. It is also possible to do the degree project work abroad.

The application deadline for studies abroad is around 15 December.

Degree project

Degree Project, First Cycle
The Degree Programme in Industrial Engineering and Management 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 2018. For this alternative eligibility, the following requirements are reported in Ladok at the latest, December 1, 2017

- 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 Industrial Engineering and Management 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 Industrial Engineering and Management, 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 Industrial Engineering and Management 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 Industrial Engineering and Management (CINEK), Programme syllabus for studies starting in autumn 2015

General courses

Year 1

Mandatory courses (60.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1315</td>
<td>Programming Techniques and Matlab</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1305</td>
<td>Introduction to Industrial Engineering and Management</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1306</td>
<td>Industrial Project Management</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1307</td>
<td>Industrial Marketing for I</td>
<td>7.5 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>SG1109</td>
<td>Mechanics</td>
<td>8.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Information is based upon the curriculum for academic year 2013/2014. Changes may occur.

Computer Science and Communications (DKOI)

Year 2

Mandatory courses (61.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1320</td>
<td>Applied Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1377</td>
<td>Low Level Programming and Computer Architecture</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD2385</td>
<td>Software Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
ME1308  Operations Strategy for I 6.0 hp  First cycle
ME1309  Industrial Management Control for I 6.0 hp  First cycle
ME1312  Understanding the Interface of Technology and Business 6.0 hp  First cycle
SF1545  Numerical Methods, Basic Course 6.0 hp  First cycle
SF1633  Differential Equations I 6.0 hp  First cycle
SF1901  Probability Theory and Statistics 6.0 hp  First cycle
SK1110  Electromagnetism and Waves 7.5 hp  First cycle

Year 3

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>DD1334</td>
<td>Database Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1396</td>
<td>Parallel and Concurrent Programming in Introduction to Computer Science</td>
<td>3.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1418</td>
<td>Language Engineering with Introduction to Machine Learning</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD152X</td>
<td>Degree Project in Computer Science, Communication and Industrial Management, First Level</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD2395</td>
<td>Computer Security</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2620</td>
<td>Human-Computer Interaction, Introductory Course HT17 P1 (4.0 hp), P2 (2.0 hp)</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ME1310</td>
<td>Economics for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1311</td>
<td>Corporate Finance</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1313</td>
<td>Industrial and Technical Transformation</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Supplementary information

The course DH2620 should be read autumn term 2017. (HT17 P1 (4,0 hp), P2 (2,0 hp)).

*Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM*

*See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM*

www.kth.se/student/kurser/program/tiemm/

Year 4

Supplementary information
Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Year 5

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Energy Systems and Sustainable Development (EHUI)

Year 2

Mandatory courses (60.0 Credits)

<table>
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<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits Edu. level</th>
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</thead>
<tbody>
<tr>
<td>ME1308</td>
<td>Operations Strategy for I</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>ME1309</td>
<td>Industrial Management Control for I</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>ME1312</td>
<td>Understanding the Interface of Technology and Business</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>MJ1112</td>
<td>Applied Thermodynamics</td>
<td>9.0 hp First cycle</td>
</tr>
<tr>
<td>MJ1145</td>
<td>Energy Systems</td>
<td>7.5 hp First cycle</td>
</tr>
<tr>
<td>SF1545</td>
<td>Numerical Methods, Basic Course</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>SF1633</td>
<td>Differential Equations I</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp First cycle</td>
</tr>
<tr>
<td>SK1110</td>
<td>Electromagnetism and Waves</td>
<td>7.5 hp First cycle</td>
</tr>
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</table>

Year 3

Mandatory courses (61.5 Credits)

Course
<table>
<thead>
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<th>code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
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<tbody>
<tr>
<td>EG2205</td>
<td>Power Generation Operation and Planning</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ME1310</td>
<td>Economics for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1311</td>
<td>Corporate Finance</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1313</td>
<td>Industrial and Technical Transformation</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MF1017</td>
<td>Basic Electrical Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MJ1141</td>
<td>Energy Systems and Sustainability</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MJ1401</td>
<td>Heat Transfer</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<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>

**Supplementary information**

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

**Year 4**

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within the Master program Industrial Engineering and Management - TIEMM

See Course and programme directory: Master program Industrial Engineering and Management - TIEMM (Industrial Engineering and Management):

www.kth.se/student/kurser/program/tiemm/

**Year 5**

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within the Master program Industrial Engineering and Management - TIEMM

See Course and programme directory: Master program Industrial Engineering and Management - TIEMM (Industrial Engineering and Management):

www.kth.se/student/kurser/program/tiemm/
## Product Realisation (PFRI)

### 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>ME1308</td>
<td>Operations Strategy for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1309</td>
<td>Industrial Management Control for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1312</td>
<td>Understanding the Interface of Technology and Business</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MF1016</td>
<td>Basic Electrical Engineering</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MF1039</td>
<td>Design and Product Realization, Components</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>SF1545</td>
<td>Numerical Methods, Basic Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1633</td>
<td>Differential Equations I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 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>
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</table>

### Year 3

**Mandatory courses (60.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
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<tbody>
<tr>
<td>DD1320</td>
<td>Applied Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1324</td>
<td>Applied Programming and Computer Science, Part 2</td>
<td>3.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>EL1010</td>
<td>Automatic Control, General Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1310</td>
<td>Economics for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1311</td>
<td>Corporate Finance</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1313</td>
<td>Industrial and Technical Transformation</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>MG1026</td>
<td>Manufacturing Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>MG115X</td>
<td>Degree Project in Product Realization and Industrial Engineering, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

### Supplementary information

Degree project, first cycle, within technical track Product Realisation. Admitted students may choose a degree project directed to production or mechatronics.
Year 4

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Year 5

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Mathematics (TMAI)

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>
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<td>Applied Computer Science</td>
<td>6.0 hp</td>
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<td>ME1308</td>
<td>Operations Strategy for I</td>
<td>6.0 hp</td>
<td>First cycle</td>
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ME1309  Industrial Management Control for I  6.0 hp  First cycle
ME1312  Understanding the Interface of Technology and Business  6.0 hp  First cycle
SF1545  Numerical Methods, Basic Course  6.0 hp  First cycle
SF1633  Differential Equations I  6.0 hp  First cycle
SF1901  Probability Theory and Statistics  6.0 hp  First cycle
SF1904  Markov Processes, Basic Course  3.0 hp  First cycle
SF2701  Financial Mathematics, Basic Course  7.5 hp  Second cycle
SK1110  Electromagnetism and Waves  7.5 hp  First cycle

Year 3

Mandatory courses (61.5 Credits)

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<td>ME1311</td>
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<td>ME1313</td>
<td>Industrial and Technical Transformation</td>
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<td>SF100X</td>
<td>Degree Project in Applied Mathematics and Industrial Economics, First Cycle</td>
<td>15.0 hp</td>
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<td>SF1811</td>
<td>Optimization</td>
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Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Year 4

Supplementary information
Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/

Year 5

Supplementary information

Studies on advanced level, year 4 and 5, within the MSc in Engineering programme Industrial Engineering and Management takes place within framework of the Master program Industrial Engineering and Management - TIEMM

See Course and Programme Directory: Master's Programme, Industrial Engineering and Management - TIEMM

www.kth.se/student/kurser/program/tiemm/
Appendix 2: Specialisations

Degree Programme in Industrial Engineering and Management (CINEK), Programme syllabus for studies starting in autumn 2015

Computer Science and Communications (DKOI)

Energy Systems and Sustainable Development (EHUI)

Product Realisation (PFRI)

Mathematics (TMAI)