Programme syllabus

Master's Programme, Management and Engineering of Environment and Energy, 120 credits
Masterprogram, teknik och ledning för energi- och miljösystem
120.0 credits

Valid for students admitted to the education from autumn 09 (HT - Autumn term; VT - Spring term).

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

Programme objectives

Beyond the objectives which are specified in the Higher Education Degree Ordinance, there are also specific goals for this programme. After completing the programme, the student will:

Knowledge and understanding

• Have a broad, scientific foundation to be able to work within the energy engineering area. It should comprise knowledge about sustainable systems, energy sources and usage, and judgements of technical, economical, and environmentally-related consequences related to different energy re-usage processes.

• Show broad knowledge within this technical area, including knowledge in mathematics and natural science, and essentially deepened knowledge within certain parts of the area.

Skills and abilities

• Show a good ability to, independently as well as in a group, be able to apply knowledge and abilities in practical activities with regards to relevant scientific professional and social judgements and viewpoints.

• Show good ability to analyze, formulate and manage the technical problems from a system perspective, with a holistic view of their life cycle, from concept / requirements to specification, development, operation and decommissioning, and the ability to set limits, determine the necessary resource usage and manage processes for problem solving / realization

• Possess individual and professional skills like languages, leadership, project management, and communication for work as an engineer in a leadership role or as a leader in a technical intensive company, or in order to be able to continue toward a research career.
**Ability to make judgements and adopt a standpoint**

- Have especially good understanding that engineering-related problems are often complex, can be incompletely defined and sometimes contain conflicting conditions.

- Be aware of the responsibility and the ethical viewpoints which can arise in connection with different technical, organisational, economical, ecological and social activities.

Reference to the local degree ordinance of the Royal Institute of Technology (The KTH Regulations).

**Extent and content of the programme**

The programme consists of 120 credits which correspond to two years full time studies. The courses of the programme are mainly on the second level. The language of instruction for the programme is English.

**Eligibility and selection**

**Basic eligibility requirements**

A Bachelor degree equivalent to a Swedish Bachelor's degree (180 ECTS), from a university recognized by government or accredited by other recognized organization. Students in their final year of undergraduate education may also apply and if qualified, receive a conditional acceptance. A good knowledge of written and spoken English is required. Applicants must provide proof of their proficiency in English. KTH accepts a TOEFL test score of a minimum of 550 (213 in the computer-based test, 79 in the internet based test) or an IELTS score of at least 6.0, no band lower than 5.0 (both general and academic accepted). English proficiency tests are waived for applicants with English as language of instruction (minimum 3 years of full-time higher education studies). A relevant certificate from the university has to be enclosed with the application. For EU citizens from KTH’s partner universities, a certificate from the University language department or the relevant Head of department stating the student's good level of English will be enough.

**Specific eligibility requirements**

In order to be eligible to the master’s programme, a relevant higher education degree of at least 180 higher education credits, degree of bachelor in science and engineering or technical bachelor’s degree preferably within Mechanical Engineering or Chemical Engineering is required. Other corresponding technical or natural scientific degrees on the first level can also give eligibility, providing that courses in technical thermodynamics, heat transference and technical Electro-mechanics are included.

**Selection criteria**

The selection to the programme is done by the programme’s scientific committee in consultation with admission entities at the respective educational sites and in accordance with the directive which the European commission mandates for the Erasmus Mundus programme.

**Implementation of the education**
Structure of the education

Study years, terms, and study period descriptions can be found in the KTH Regulations.

The program is conducted over four semesters where the first semester is at UPM in Madrid, the second semester at EMNantes, and the third at KTH. During the fourth semester students carry out thesis work which are supervised by one of the universities. The first semester courses can are fundamental in the field of industrial management in which students are given an introduction to organizational theory, economics, and leadership. The second semester is focused in the field of environmental technology with emphasis on process studies. The third semester is coordinated with the master program Sustainable Energy Engineering and includes courses in renewable energy, sustainable power generation, and energy and environment aspects. During the fourth semester students apply their theoretical knowledge in the context of their thesis work, preferably done in cooperation with partners from industry.

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

For studies in study year 2:

At least 45 higher education credits from study year 1 must be completed by the exam period in August.

Students which have not fulfilled this requirement must consult the study counsellor and set up an individual study plan. The main goal with the study plan is that the student should complete the remaining elements during the next study year. In the study plan, the remaining elements and also suitable courses

Recognition of previous academic studies

The student has the possibility to receive credit from courses taken at another university/higher education institution both in Sweden and from abroad.

Studies abroad

The student in the programme has the possibility to carry out the project work in Europe.

Degree project

KTH’s rules for the degree project can be found in the KTH Regulations.

Generally, the degree project work can be started only after a large portion of the studies have been completed.
Degree

In order to graduate with the Degree of Master of Science (Two Years), a passing grade must be achieved in all courses which are in the student’s study plan. The study plan must constitute 120 credits including a degree project consisting of 30 credits.

KTH’s local degree ordinance can be found in the KTH Regulations.

Appendix 1 Lists of courses and possible specialisations.

Appendix 1 - Course list
Appendix 2 - Programme syllabus descriptions
Appendix 1: Course list

Master's Programme, Management and Engineering of Environment and Energy, 120 credits (TEEEM), Programme syllabus for studies starting in autumn 2009

General courses

Year 2

Mandatory courses (30.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ2405</td>
<td>Sustainable Power Generation</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2407</td>
<td>Sustainable Energy Utilisation</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2411</td>
<td>Renewable Energy Technology</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2413</td>
<td>Energy and Environment</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
Appendix 2: Specialisations

Master's Programme, Management and Engineering of Environment and Energy, 120 credits (TEEEM), Programme syllabus for studies starting in autumn 2009

This programme has no specialisations.