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 20 (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 shall:

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 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
- 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

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**

**Academic year**
Each academic year consists of two semesters which are 20 weeks each. Each semester is divided into two study periods.

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.

The type of instruction and examination format vary between the courses and these are indicated in each official course syllabus.

**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.

Grading scale is found in the course syllabus.

**Conditions for participation in the programme**

Participation requires admission to courses within the programme and course registration.

For studies at a higher study year there are specific admission requirements for the courses. Admission requirements are specified in the course syllabus.

The application for elective courses (in addition to the program) is done in consultation with the program coordinator.

**Degree project**

The degree project is the final part of the education. The project work may begin when special admission requirements for the course are fulfilled.
In order to fulfill specific admission requirements for a Degree Project, Second Cycle, 30 credits, courses corresponding to at least 60 credits, second cycle, must be completed. The courses at the second cycle shall include courses in the programme relevant to the degree project, as well as courses in science theory and research methodology.

**Degree**

**Conditions for a Degree of Master, 120 credits**

A Degree of Master of Science is obtained after completing the degree programme. The programme is designed so that the student, when they graduate, has fulfilled the national qualification requirements with a passing grade in all courses included in the student's study plan of 120 credits, of which

- at least 90 credits are attained in the second cycle, which includes at least 60 credits (including a 30 credit degree project) of specialised studies within the programme's main field of study.

**Title of general qualification at second cycle**

Degree of Master of Science (120 credits), Teknologe masterexamen

[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 2020

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>MJ2475</td>
<td>Theory and Methodology of Science for Energy Research</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Also a Language course can be chosen in agreement with program coordinator.
Appendix 2: Specialisations

Master's Programme, Management and Engineering of Environment and Energy, 120 credits (TEEEM), Programme syllabus for studies starting in autumn 2020

This programme has no specialisations.