Programme syllabus

Master's Programme, Sustainable Technology, 120 credits
Masterprogram, teknik och hållbar utveckling

120.0 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 the objectives which are specified in the Higher Education Degree Ordinance, there are also specific goals for this programme.

A graduate from the programme must...

Knowledge and understanding

- Have a broad scientific and system based knowledge and understanding within the area of Sustainable Development and Industrial Ecology, including knowledge and understanding of today’s global society’s developments and their affects on the world’s ecosystem
- Have a fundamental knowledge about and understanding of strategies and tool to work with technology and sustainable development within a number of industry areas, for example environmental management, environmental consequences, waste management, risk management, environmental engineering, and environmental analyses
- Show a deep knowledge within the frame work of sustainable development

Skills and abilities

- Show a good ability to analyse and formulate technology’s role for a sustainable development
- Show a good ability to critically analyse, formulate, and handle an environmental problem from a system perspective
- Show a good ability to, in a fundamental way, apply the most important tools which are used within the knowledge area “Industrial Ecology”
- Independently, as well as in a group, be able to apply knowledge and abilities in a practical context with regards taken to relevant scientific, professional and job-related aspects and social judgements and approaches
- Show a good ability to orally, and in writing, present one’s own completed work

Ability to make judgements and adopt a standpoint

- have especially good understanding that engineering-problems with sustainable development and Industrial ecology are often complex, can be incompletely defined and sometimes contain contradictions
- Be aware about the responsibility and the ethical standpoints which can occur in working life as well as the society general

KTH’s local degree ordinance can be found in KTH’s guidelines, www.kth.se.
Extent and content of the programme

The programme consists of 120 credits which correspond to two years full time studies. The programme is mainly on the second level.

The programme consists of compulsory and conditionally optional courses and the devide on the track

The language of instruction for the programme is English. Certain courses are also offered in Swedish.

Eligibility and selection

In order to be eligible for the Master’s programme, a relevant higher education degree, technical Bachelor degree, or other corresponding technical, natural or other science degree relevant for the programme in the first cycle, comprising 180 higher education credits is required.

Other studies or work experiences are assessed based on the competence referred to.

Selection into the programme is based on an evaluation of the following criteria: University/higher education institution, grades, proposal for degree project, courses relevant to the programme, personal letter, work experience and references.

For more information, refer to KTH’s degree ordinance which can be found in KTH’s guidelines, www.kth.se

Implementation of the education

Structure of the education

Study years, terms, and study periods are described in KTH’s guidelines, www.kth.se

Structure of the education

The programme’s first three terms consist of theoretical courses, most of which are compulsory for all students. The studies are, to a large extent, project-based works and case studies which means that a large focus will be on training, communication, critical thinking and oral and written presentations. The courses are linked to practical knowledge through collaboration with different companies and authorities. The programme is concluded with a degree project in the fourth term.

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

A condition in order to participate in the studies is that the student, each spring and autumn must enrol for the coming term. This is done through “My Pages”, between the 1st and 15th of November and the 1st and 15th of May, respectively.

By completing term enrolment, the student has confirmed their intention to study and participate in the programme. Only after that may the student be able to:

• Register for the term
• Register for courses
• Get reported results

Course registration
The student registers courses before each term according to KTH’s central guidelines

Conditions for participation in the lectures

For studies in study year 2:

At least 45 higher education credits must be completed from study year 1 by the end of the examination period in August. Students who have not fulfilled this requirement must, in collaboration with a study adviser, create an individual study plan. The main intent with the individual study plan is that the student will complete the remaining elements during the next coming study year. In the study plan, the remaining elements should be included as well as suitable courses from the next study year. Special consideration should be given to the courses’ prerequisites.

Recognition of previous academic studies

Students have the possibility to apply for recognition of previous academic studies from course(s) at another higher education institution or university, both national and international.

KTH’s entire policy for recognition of previous academic studies can be found in KTH’s guidelines, www.kth.se

Studies abroad

In certain cases, the Master Thesis can be done abroad.

Degree project

KTH’s rules for the degree project for the Master’s degree can be found in the KTH Guidelines, www.kth.se.

Generally, a large portion of the studies must be completed before the degree project can be started.

Degree

In order to earn Degree of Master of Science (Two Years), passing grades in all courses which are included in the student’s study plan are required. The study plan must comprise 120 higher education credits which include a degree project consisting of 30 higher education credits, in the second cycle.

KTH’s local degree ordinance can be found at www.kth.se.

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

Master's Programme, Sustainable Technology, 120 credits (TSUTM), Programme syllabus for studies starting in autumn 2013

General courses

Year 1

Mandatory courses (48.0 credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ2611</td>
<td>Introduction Industrial Ecology</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2640</td>
<td>Cleaner Production</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2655</td>
<td>Technology and Ecosystems</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2658</td>
<td>Technology and Ecosystems for CENMI</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td><em>Replace MJ2655 and MJ2659, can not be combined with MJ2655 or MJ2659. Only for Degree Progr. in Energy and Environment.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MJ2663</td>
<td>Environmental Management</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2682</td>
<td>Applied Environmental System Analysis</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2691</td>
<td>Technology and Sustainable Development</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2696</td>
<td>Ecological Economics, advanced course</td>
<td>6.0</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>MJ2624</td>
<td>Project in Environmental Technology</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td><em>Can not be chosen by Degree Progr. Energy and Environment. At least two Conditionally elective courses must be chosen in year I</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MJ2630</td>
<td>Waste Management, Advanced Course</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td><em>At least two Conditionally elective courses must be chosen in year I</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MJ2656</td>
<td>Applied Ecology</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td><em>At least two Conditionally elective courses must be chosen in year I</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MJ2664</td>
<td>Environmental Management II, Advanced Course</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td><em>At least two Conditionally elective courses must be chosen in year I</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course code</td>
<td>Course name</td>
<td>Credits</td>
<td>Edu. level</td>
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<td>---------------</td>
</tr>
<tr>
<td>MJ2685</td>
<td>Smart Cities and Climate Mitigation Strategies- Project Based Only for Degree Progr. Energy and Environment</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

At least three of the Conditionally Elective courses must be chosen in year 1 or 2, whence two of the courses MJ2641, MJ2681, MJ2664 have to be included for a Degree.

At least two of the Conditionally elective courses must be chosen in year 1: MJ2630, MJ2656, MJ2664

**Year 2**

**Mandatory courses (43.5 credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AL2101</td>
<td>Applied Industrial Ecology</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2673</td>
<td>Research Methodology and Theory of Science</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ273X</td>
<td>Degree Project in Industrial Ecology, Second Cycle</td>
<td>30.0</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>AL2135</td>
<td>Environmental Modelling: Introduction with Application Examples</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2641</td>
<td>Cleaner Production II entry requirements AL2140</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2681</td>
<td>Applied Environmental Systems Analysis II entry requirements AL2181</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

The Master Program Sustainable Technology, TSUTM, has three routes of entry as below;
* Input for the international and KTH external students, "direct entrance"
* Input from the Degree Programme in Energy and Environment (CENMI)
* Input from ITM school’s Degree Programs in:Design and Product Realisation (CDEPR), Mechanical Engineering (CMAST), Materials Design and Engineering (CMATD)

**Note!**

At least three of the Conditionally Elective courses must be chosen in year 1 or 2, which two of the courses MJ2664, MJ2641 or MJ2681 have to be included for a Degree.
Appendix 2: Specialisations

Master's Programme, Sustainable Technology, 120 credits (TSUTM), Programme syllabus for studies starting in autumn 2013

This programme has no specialisations.