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 08 (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 should:

Knowledge and understanding

• Have a broad, scientific knowledge and system based knowledge and understanding within the Sustainable Technology and Industrial Ecology areas, including knowledge and understanding of today's global social development and these affects on the world's ecosystems.

• Have fundamental knowledge about and understanding of strategies and tools in order to be able to work with technology and sustainable development within a number of work areas, for example, environmental management, environment consequences, waste management, risk management, environmental engineering, and environmental system analysis.

• Show a deepened ability within the chosen specialisation, environmental management respective environmental technology

Skills and abilities

• Show a good ability to analyse and formulate technology’s role for a sustainable development on a project level, as well as on a broader national or global perspective

• Show a good ability to critically analyse, formulate and handle an environmental problem from a system perspective

• Show a good ability to, on a basic level, apply the most important tools which are used within the scientific area “Industrial Ecology”

• Show a good ability to independently, as well as in a group, be able to apply knowledge and abilities in practical exercises. With regards to relevant scientific, professional, and societal judgements and standpoints, show a good ability to, in writing and orally present one’s completed work

Ability to make judgements and adopt a standpoint

• Have an especially good understanding that problems within the areas Sustainable Development and Industrial Ecology are complex and value-based, and sometimes contain conflicting conditions

• Be aware of the responsibility and the ethical viewpoints which can arise with regards to different technical, organisational, economical, ecological, and societal activities.
Reference to the local degree ordinance of the Royal Institute of Technology (The KTH-Handbook).

**Extent and content of the programme**

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

Possible specialisation areas for Sustainable Technology:

- Environmental Management
- Environmental Technology

The language of instruction for the programme is English.

**Eligibility and selection**

In order to be eligible to apply to the master’s programme, a relevant higher education degree of at least 180 higher education credits, degree of Bachelor of science and engineering, technical bachelor’s degree, or another corresponding technical or natural scientific degree in the first level must be completed. Other studies or work experiences are judged on the basis of the actual competencies which are referred to.

The selection to the programme is based on the evaluation of the following criteria: university/higher education institute, grades, courses relevant for the programme, suggestion to the degree project, recommendation letters, work experience and references.

The reference to KTH’s admission policy can be found in the KTH-Handbook.

**Implementation of the education**

**Structure of the education**

The programme’s first three terms consist of theoretical courses, the majority of which are obligatory for all students. The studies are mainly based on the project work and case studies, which inspires the heavy focus on training in communication, critical thinking as well as oral and written presentations. The courses are linked to practical knowledge through the cooperation with different companies and authorities. The programme is concluded with a project work during the fourth term.

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

**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 be able to participate in the studies is that the student must enrol for the next term every spring and fall. This is done via “Mina Sidor” on KTH’s website between November 1st and 15th and between May 1st and 15th.

With the enrolment, the student has submitted their intention of studying and participating the programme. Only after that is it possible for the student to:
- register for courses
- register for the term
- get results

**Course Selection**

Certain opportunities to take optional courses exist. The selection is done on “Mina Sidor” on KTH’s website in the same manner as the term enrolment.

**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 with 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 from the next study year are included. Special regard should be taken to the courses prerequisites.

**Recognition of previous academic studies**

The student has the possibility to apply to receive credit from courses taken at another university/higher education institution both in Sweden and from abroad. The application can be found on KTH’s website.

KTH’s policy for recognition of previous academic studies can be found entirely in the KTH-Handbook.

**Studies abroad**

In certain cases, the project work can be done abroad

**Degree project**

KTH’s rules for the degree project for the Master’s degree with specialisation can be found in the KTHHandbook.

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

KTH’s rules for the degree project can be found in the KTH-Handbook

*KTH-Handbok 2, page 15.5

www.kth.se/info/kth-handboken/II/15/5.html*

**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 comprise 120 higher education credits including a degree project consisting of 30 higher education credits.

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

*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 2008

**General courses**

**Year 1**

**Mandatory courses (54.0 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>MJ2630</td>
<td>Waste Management, Advanced Course</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>MJ2651</td>
<td>Ecology, Advanced Course</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2652</td>
<td>Environmental Effects from Technical Systems and Processes</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2663</td>
<td>Environmental Management</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2670</td>
<td>Risk Management</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2680</td>
<td>Environmental Systems 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>
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</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>MJ2620</td>
<td>Environmental Technology, Advanced Course</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2664</td>
<td>Environmental Management II, Advanced Course</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
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</table>

**Year 2**

**Mandatory courses (13.5 credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ2673</td>
<td>Research Methodology and Theory of Science</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>Course code</td>
<td>Course name</td>
<td>Credits</td>
<td>Edu. level</td>
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</tr>
<tr>
<td>MJ2694</td>
<td>Ecological Economics</td>
<td>6.0</td>
<td>Second cycle</td>
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</tbody>
</table>

Optional courses

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>MJ2635</td>
<td>Environmental Modelling: Introduction and Application Examples</td>
<td>6.0</td>
<td>Second cycle</td>
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<tr>
<td>MJ2674</td>
<td>Scenario Methods</td>
<td>6.0</td>
<td>Second cycle</td>
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<tr>
<td>MJ2681</td>
<td>Applied Environmental Systems Analysis II</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ2693</td>
<td>Sustainable Development in Theory and Practice</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>MJ271X</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>MJ2641</td>
<td>Cleaner Production II</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
  
  *For those who have finished MJ2620 in year 1*
| MJ2672      | Risk Management II                                    | 6.0     | Second cycle  |
  
  *For those who have finished MJ2664 in year 1*
Appendix 2: Specialisations

Master's Programme, Sustainable Technology, 120 credits (TSUTM), Programme syllabus for studies starting in autumn 2008

This programme has no specialisations.