Programme syllabus

Master's Programme, Interactive Systems Engineering, 120 credits
Masterprogram, teknik för interaktiva system
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

Knowledge and understanding
For a Master’s degree in Interactive Systems Engineering the student shall:

- show knowledge and understanding in the area of Interactive Systems Engineering, comprising a wide knowledge of the area as well as more profound knowledge of some parts of the area, and insight into current research and development work, and

- show in depth knowledge about methodology in Interactive Systems Engineering

Skills and abilities
For a Master’s degree in Interactive Systems Engineering the student shall:

- show ability to critically and systematically integrate knowledge and to analyze, evaluate and handle complex occurrences, issues and situations even with limited information

- show ability to critically, independently and creatively identify and formulate issues, to plan and with adequate methods perform qualified tasks within given time limits and thereby contribute to the evolution of knowledge as well as asses the work

- show ability, in domestic and international venues, to orally and in writing present and discuss conclusions and the knowledge and the arguments on which these are based, in dialogue with different groups, and

- show such skills which are required for participation in research and development work or in other independent work of a qualified nature.

Ability to make judgements and adopt a standpoint
For a Master’s degree in Interactive Systems Engineering the student shall:

- show ability to make assessments taking into account relevant scientific, societal and ethic aspects as well as show awareness of ethical aspects of research and development work

- show insight into the possibilities and limitations of science, its role in society and the responsibility of humans for its use,

- show ability to identify her/his need for additional knowledge and take responsibility for the development of his/her own knowledge.
See local degree policy of the Royal Institute of Technology (the KTH-Handbook).

**Extent and content of the programme**

The educational program comprises two years, and a Master’s degree is awarded after completion of the course requirements of 120hp. The education is on the advanced level (second cycle). All students follow the same line of study. The language of the entire education is English.

**Eligibility and selection**

The basic requirement for admission to a Master’s program at advanced level is a national university degree at basic level (first cycle) of at least 180hp or an equivalent international degree. A good knowledge of written and spoken English is required.

The specific requirements for admission to the Master’s program in Interactive Systems Engineering is a Bachelor's degree in Computer Science, Information Technology or equivalent degree. A combination of courses (equivalent to at least an extent of 90 ECTS) in: Computer Programming, Databases or File Structures, Network Architecture, Computer System Modelling, Operating Systems, Algorithms, Data Communication or/and Software Engineering.

The admission of students in the Master’s program in Interactive systems engineering follows an evaluation of merits based mainly on the applicant’s knowledge, previous education, the university where the studies have been performed, especially meriting previous subjects, study motivation, and references. The knowledge of the applicant is given preference in this evaluation. Eligible applicants are ranked according to the evaluation and admission is granted according to the number available positions determined for the program.

See local admission policy of the Royal Institute of Technology (the KTH-handbook).

**Implementation of the education**

**Structure of the education**

The programme consists of two academic years, each comprising about 9 months and divided into two terms with two study periods per term. Each study period ends in an examination period.

The programme has 82.5 credits compulsory courses and 37.5 credits conditionally elective courses. Compulsory courses cover Interaction Design, Programming of Interactive Systems, Ubiquitous Computing and Collaborative Computing. The programme also includes two methodological courses which provide a good basis for post-graduate studies: Philosophy of Science and Research Methodology and Scientific Communication. Elective courses also covers general Programming, HMI, Artificial Intelligence and Cognitive Science.

**Courses**

The programme is course-based. Lists of courses are included in appendix 1.

The education is organized in courses. Lists of courses are found in appendix 1. The courses are either compulsory or conditionally elective. After application, students may be allowed to take extra courses in addition to the compulsory or conditionally elective courses.

**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.

At KTH a grading scale with seven levels A-F is used for final grades in advanced level courses and for the thesis. A-E are passing grades where A is the highest grade.

The grades pass (P) and fail (F) are for partial grades in some courses, for example for laboratory assignments, and as final grades in small conditionally elective courses.
Conditions for participation in the programme

Each student who has been admitted to the Master’s program in Interactive Systems Engineering is admitted to the compulsory courses belonging to a specific program term after registration on this term. Conditionally elective courses are chosen by the student prior to the second term of the first year and prior to each of the two terms of the second year. The choice is limited to the courses stated as conditionally elective in the course list. Students who are term registered are considered as expected students in all compulsory courses and in chosen elective courses. Students announce their participation in an individual course to the teacher responsible for the course in the beginning of the course. Students announce possible interruptions in their studies to the teacher responsible for the course.

The condition for promotion to the second year is completion of 30 hp in the first year.

The condition for starting the Master’s thesis project is 60 hp.

Recognition of previous academic studies

See policy of the Royal Institute of Technology (the KTH-handbook).

Studies abroad

The Master’s thesis project in the second year may be performed at universities or companies abroad.

Degree project

To be awarded a Master’s degree in Interactive Systems Engineering the student must, within the course requirements, have fulfilled an independent work (the master’s thesis project) of at least 30hp in Interactive Systems Engineering. The subject for the thesis project may be chosen by the student to be performed at KTH, at other universities, or in industry. A student who has been promoted to the second year may apply to start a thesis project. The thesis is graded on the scale A-F according to the guidelines (criteria: technical content, process and presentation) determined by KTH and by the School of ICT.

See policy of the Royal Institute of Technology (the KTH-handbook).

Degree

The Master’s degree is obtained after completion of the courses and the thesis with a total of at least 120hp. The degree is “Teknologie magisterexamen”, translated into English as "Degree of Master of Science (two years)". The degree is awarded after application from the student.

See policy of the Royal Institute of Technology (the KTH-handbook).

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

Master's Programme, Interactive Systems Engineering, 120 credits (TISYM), Programme syllabus for studies starting in autumn 2008

**General courses**

**Year 1**

**Mandatory courses (37.5 credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT2140</td>
<td>Multimodal Interaction and Interfaces</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2003</td>
<td>Research Methodology and Scientific Communication</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2005</td>
<td>Methodology of Interaction Design</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2007</td>
<td>Collaborative Computing</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2010</td>
<td>Programming of Interactive Systems</td>
<td>7.5</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>IC1007</td>
<td>Human-computer Interaction: Principles and Design</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IC2006</td>
<td>Cognitive and Social Science: HMI</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2008</td>
<td>Affective Interaction</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2009</td>
<td>Principles of Visualization</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC2010</td>
<td>Advanced Individual Course in Human-Computer Interaction</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID1006</td>
<td>Java Programming</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID2009</td>
<td>Artificial Intelligence: Principles and Techniques</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2011</td>
<td>Microsimulation</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
Year 2

Mandatory courses (7.5 credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>IC2002</td>
<td>Philosophy of Science</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Optional courses for both years:

IC2006 Cognitive and Social Science in HMI
ID2011 Mikrosimulering
IC2008 Känslobaserad interaktion
IC2010 Avancerad individuell kurs i ITK/människa-datorinteraktion
Appendix 2: Specialisations

Master's Programme, Interactive Systems Engineering, 120 credits (TISYM),
Programme syllabus for studies starting in autumn 2008

This programme has no specialisations.