Programme syllabus

Master's Programme, Human-Computer Interaction, 120 credits
Masterprogram, människa-datorinteraktion
120.0 credits

Valid for students admitted to the education from autumn 11 (HT - Autumn term; VT - Spring term).

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

Programme objectives

The aim of the programme is, first and foremost, to educate Master of Science in Engineering and Master students for professional roles, both nationally and internationally, as an interaction designer (overall responsibility for design projects with focus on design, concrete design work which also includes advanced user-centered design and customer competence and design critique), multi-modal interaction engineer, and visualization engineer. For these roles, the students should be able to create and evaluate visual, acoustical and haptic user interfaces. They should master techniques for both acquisition of different types of visual, acoustical, and haptic information from a user and presentation of such information for the user. Both development and evaluation should be based on solid theoretical foundations pertaining to human perception, communication, mediated communication, and human-computer interaction in order to promote the efficiency, usability, and intuitiveness of the user-interface. The students should be able to use their knowledge for different applications within interaction, communication and visualization in a broad sense.

Knowledge and understanding

The programme has the goal of providing the student with:

- knowledge about human perception and cognition, about design processes and about technology and research within multi-modal interfaces
- theories and methods for analyzing and understanding a specific situation and a specific group of users. Especially, the programme should provide knowledge about how one meets different requirements on the user-interface for different types of applications and users. The programme includes everything from knowledge about human cognition and perception, about design processes to technologies and research about multi-modal interfaces

Skills and abilities

The programme has the goal to provide the student with:
• the ability to work as a consultant, entrepreneur, or employee within larger companies or institutions which have their own groups of interaction designers and/or usability experts.
• the ability to independently initiate user-centered design projects, analyse specific usage situations and give recommendations for innovative design and/or re-design

**Ability to make judgements and adopt a standpoint**

The programme has the goal to provide the student with:

• the ability to evaluate the quality of scientific studies and show a reflecting and critical approach to both scientific and non-scientific texts
• through personal development, maintain a professional ability during a professional carrier
• follow discussions about technology in society and also contribute to it

Beyond this, there are similar goals for Master’s degrees defined in the higher education ordinance.

**Extent and content of the programme**

The programme comprises 120 ECTS credits, which, at normal study rate, corresponds to two years. The programme is in the second cycle and is given mainly in Swedish. Some courses can be given in English. Much of the course literature is in English.

The programme provides the following tracks:

• Interaction design
• Multi-modal interaction technology
• Visualization

There is also the possibility to, in collaboration with the programme co-ordinator, form an individual study plan, for example in order to be able to take courses which are required in order to receive the Master of Science in Engineering degree.

**Eligibility and selection**

*Students in the Master of Science and Engineering programme where the Master’s programme in Human-Computer interaction entitles to a degree in the Master of Science in Engineering programme.*

Students in the Master of Science and Engineering programme at KTH where the Master’s programme in Human-Computer interaction entitles the student to a Master of Science in Engineering degree at KTH may start the programme if, at the start of the semester, they have completed at least 150 ECTS credits from study year 1-3 including the Bachelor degree project and have the specific knowledge stated under the specific entry requirements below. They are guaranteed a place in the programme. Applications must be submitted according to instructions of the CSC school.

*Other students*
General admission requirements: See KTH’s admission requirements for Master’s programmes, link below

Specific admission requirements: A Bachelor’s degree and programming knowledge (basic knowledge in some programming language and practical experience). For the tracks Multi-modal interaction technology (MIT) and Visualization (VIS), knowledge in computer science (DD1320 Applied Computer Science or DD1345 Introduction to Computer Science, or the corresponding) and fundamental knowledge in mathematics (SF1625 Single-variable calculus, SF1626 Multi-variable calculus and SF1624 Algebra, or the corresponding) are additionally required.

The application must be done via www.studera.nu, April 15th at the latest.

Selection: If the number of applicants exceeds the number of places there will be a selection. The selection is based on university, grades and an evaluation of completed courses within the subject area.

KTH regulations:

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/1.27191

Implementation of the education

Structure of the education

The KTH academic year is 40 weeks, divided into four periods. Each study period is followed by an examination period. There are also three re-examination periods.

For details about the structure of the academic year see http://www.kth.se/student/schema/1.1007?l=en_UK

The first semester compulsory courses are taken. Then the student follows one of the three tracks during the second and third programme semesters. The last semester is devoted to the degree project.

Courses

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

Elective courses are chosen from a list of courses. After approval from the programme co-ordinator, other relevant courses can be chosen. The number of credits for elective courses depends on which track the student chooses.

Examinations are done in many ways, for example home assignments which are presented orally and in writing, laboratory work, project work or traditional written examinations.

After every course, the students’ opinions are collected and analysed by the teacher in a course analysis which is normally published on the web, see KTH regulations for course analysis http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/kursanalys
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

Semester enrollment

No later than November 15 and May 15 the student is required to make a study enrollment for the next semester at the CSC Program Office.

This study enrollment is required in order for the exam results to be registered.

Approved leave from studies

Approved leave from studies means that the student does not participate in the education during at least one study period. The student has the right to return to the education at a time agreed upon, and has the right to participate in the examination of non-finished courses.

Application for an approved leave is done on according to instructions from the CSC program office. When the student decides to return to the education, he/she is required to re-enroll to the studies.

Selection of track is done according to instructions from the CSC school.

Selection of courses

The student is required to apply for admission to all courses he/she wishes to take during the next semester. The student is responsible for having the recommended prerequisites. The application for admission to a course is done according to instructions from the CSC school no later than

May 15th for the fall semester
November 15th for the spring semester

Applications made after this date are only granted if there are vacancies in the courses. Applications to language courses with prerequisites should be preceded by a qualification test.

In a few courses, the number of participants is limited. Selection is done by the school responsible for the course.

Course registration

The student must register with the school responsible for the course at the start of each course, and also report to the school responsible for the course if the studies are discontinued.

Registration to a course requires formal acceptance to the course (by the school responsible for the course). Applications should be according to instructions from the CSC school.

Promotion to second year
At least 45 ECTS credits have to be completed during the first academic year in order for the student to be promoted to the second year of the program.

Students who do not fulfill these requirements must – in cooperation with the CSC program office – make an individual study plan for continued studies.

**Recognition of previous academic studies**

Credits for studies at another university can be received. An application form can be found on the KTH Student pages.

The application form is submitted to the CSC program office.

For in-depth information about the KTH policy for crediting previous studies, see http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/prestationer/1.27200?l=en_UK

**Studies abroad**

Students of the program have the possibility to spend one or two semesters of study at a foreign university through agreements KTH has with universities within and outside the EU. It is also possible to make the final degree project abroad.

For more information contact the international coordinator at CSC.

More information can be found on KTH’s student web at : http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/utbytesstudier

**Degree project**

An individual study in the form of a degree project corresponding to 30 ECTS credits is included in the program.

It is the responsibility of the student to find a suitable project task.

More information about the rules for degree projects at KTH can be found at http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27212?l=en_UK

**Degree**

After completing the program, the student may apply for the Degree of Master of Science (Two Years), in Swedish: teknologie masterexamen.

Information on the application process can be found on the KTH Student pages.

**Requirements for the Degree of Master of Science (Two Years)**

The Degree of Master of Science (Two Years) is obtained after completion of the program. The program is designed so that students, when they graduate, have fulfilled the national requirements for a degree. This
means that the students have completed courses comprising 120 ECTS credits, of which at least 90 ECTS credits are second cycle, and at least 60 ECTS credits (including a 30 ECTS credits degree project) constitute indepth studies in the main field of study.

See also the KTH regulations http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examina/1.27227?l=en_UK

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

Master's Programme, Human-Computer Interaction, 120 credits (THCIM), Programme syllabus for studies starting in autumn 2011

## General courses

### Year 1

### Mandatory courses (33.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DH2320</td>
<td>Introduction to Visualization and Computer Graphics</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td>Introduction to visualization</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH2408</td>
<td>Evaluation Methods in Human-Computer Interaction</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td>Introduction to interaction design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DH2610</td>
<td>Theory and Methodology of Science in Human-Computer Interaction</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DT2140</td>
<td>Multimodal Interaction and Interfaces</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td></td>
<td>Introduction to multimodal interaction</td>
<td></td>
<td></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>DD2257</td>
<td>Visualization</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2427</td>
<td>Image Based Recognition and Classification</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2321</td>
<td>Information Visualization</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2323</td>
<td>Computer Graphics and Interaction</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2466</td>
<td>Advanced, Individual Course in Human-Computer Interaction</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2626</td>
<td>Interaction Design 1</td>
<td>15.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2632</td>
<td>Human-Computer Interaction, Research Seminars</td>
<td>3.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2641</td>
<td>Interaction Programming</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2660</td>
<td>Haptics</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DT2112</td>
<td>Speech Technology</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
DT2213  Musical Communication and Music Technology  7.5 hp  Second cycle

Supplementary information

The fall of study year 1 includes five compulsory courses, 30 credits.

For the spring semester the student chooses one of three tracks. Each track has a number of compulsory courses and a number of elective courses. After approval of the program co-ordinator the student may choose other courses than those listed as elective for the track.

The tracks are described in detail on the KTH Education web site, http://www.kth.se/utbildning/program/master-magisterutbildning/master-magisterprogram-svenska/svenska-master-magisterprogram/manniskadatorinteraktion/kurser-1.51745

_The following courses belong to each track:_

**Interaction design:**

Compulsory: DH2626

Elective: DH2466, DH2632, DH2641, DH2660

**Multimodal interaction technology:**

Compulsory: DH2323, DH2641, DT2112

Elective: DD2427, DH2632, DH2660, DT2213

**Visualization:**

Compulsory: DH2321, DH2323

Elective: DD2257, DH2641, DH2660

The list below shows all the courses, compulsory and elective, that belong to the tracks.

**Year 2**

**Mandatory courses (39.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits Edu. level</th>
</tr>
</thead>
</table>

Study Programme for Master's Programme, Human-Computer Interaction, 120 credits batch autumn 11.
DH224X  Degree Project in Human-Computer Interaction, Second Cycle 30.0 hp  Second cycle
DH2655  Cooperative IT-design 9.0 hp  Second cycle

### Track, Interaction Design (HCIA)

#### Year 2

**Mandatory courses (15.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
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</thead>
<tbody>
<tr>
<td>DH2627</td>
<td>Interaction Design 2</td>
<td>15.0 hp</td>
<td>Second cycle</td>
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**Optional courses**

<table>
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<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD2418</td>
<td>Language Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2400</td>
<td>Physical Interaction Design and Realization</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2466</td>
<td>Advanced, Individual Course in Human-Computer Interaction</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2632</td>
<td>Human-Computer Interaction, Research Seminars</td>
<td>3.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

### Track, Multimodal Interaction Technology (HCIB)

#### 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>DT2300</td>
<td>Sound in Interaction</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
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</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>DD2418</td>
<td>Language Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2425</td>
<td>Robotics and Autonomous Systems</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2400</td>
<td>Physical Interaction Design and Realization</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2413</td>
<td>Advanced Graphics and Interaction</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2632</td>
<td>Human-Computer Interaction, Research Seminars</td>
<td>3.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2650</td>
<td>Computer Game Design</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DT2410</td>
<td>Audio Technology</td>
<td>7.5 hp</td>
<td>Second cycle</td>
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Track, Visualization (HCIC)

Year 2

Optional courses

<table>
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<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
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<tbody>
<tr>
<td>DD2418</td>
<td>Language Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
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<tr>
<td>DD2425</td>
<td>Robotics and Autonomous Systems</td>
<td>9.0 hp</td>
<td>Second cycle</td>
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<td>DD2429</td>
<td>Computational Photography</td>
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<tr>
<td>DD2465</td>
<td>Advanced, Individual Course in Computer Science</td>
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<td>DH2400</td>
<td>Physical Interaction Design and Realization</td>
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<td>Second cycle</td>
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<tr>
<td>DH2413</td>
<td>Advanced Graphics and Interaction</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2466</td>
<td>Advanced, Individual Course in Human-Computer Interaction</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DH2650</td>
<td>Computer Game Design</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DT2300</td>
<td>Sound in Interaction</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>
Appendix 2: Specialisations

Master's Programme, Human-Computer Interaction, 120 credits (THCIM), Programme syllabus for studies starting in autumn 2011

Track, Interaction Design (HCIA)

Track, Multimodal Interaction Technology (HCIB)

Track, Visualization (HCIC)