Programme syllabus

Bachelor's Programme in Information and Communication Technology
Kandidatprogram, informations- och kommunikationsteknik

180.0 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

Information and communication technology is one of the strongest forces driving the changes of our society. The Internet, computers and communication technology has a global impact on society. Technology advancements is the basis for new products and business opportunities in mobile services, tele and data communication, medical technology, automotive industry, product development processes and computer gaming. ICT also opens for sustainable development. The program gives the student a solid basis for future employment and work within these areas but also for continued studies on Master level. After completion of the program students are qualified to seek admission to later parts of the Information technology and the Computer Science integrated B.Sc. and M.Sc. programs at KTH.

Knowledge and understanding

The students should:

- show that they have acquired knowledge and understanding of the area of Information and Communication Technology including knowledge on the scientific basis of the area, knowledge of appropriate methods within the area, and

- acquire progressive knowledge within the area of their selected major and basic understanding of relevant research.

Skills and abilities

The students should:

- show ability to retrieve, gather, evaluate and interpret relevant information related to a problem and to discuss events, questions and events,
- independently indentify, isolate and solve problems and tasks within given time limits,
- show the ability to present and discuss information, problems and solutions orally and in writing to
different groups, and
- show such skills necessary to independently work within the area of ICT

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

To be awarded the degree of Bachelor of Technology of Information and Communication Technology the student should:

- show the ability that within the area of ICT make decisions based on relevant scientific, societal and ethical aspects
- show insight to the role of knowledge and technology in society and the responsibility of the human for its usage, and
- show the awareness of being able to recognize his/hers need to further enhance knowledge and competences

Further information on the requirements to be awarded a B.Sc. degree from KTH is found in http://intra.kth.se/regelverk/utbildning-forskning/utbildning-och-forskning-1.30435?l=en_UK

**Extent and content of the programme**

The program requires courses corresponding to 180 ECTS credits, corresponding to three years of full time studies. The program is on basic level with some courses on advanced level in the third year. The courses are, with few exceptions, taught in Swedish. Literature in English is common.

**Eligibility and selection**

Eligibility to enter the program is given by basic eligibility (grundläggande behörighet) as defined by Swedish law and KTH local decision on special eligibility (särskild behörighet). The special eligibility are education corresponding to: Math C, Science B and Social Sciences A. Science B can be replaced by Physics A and Chemistry A. For each of the subjects a grade of at least Pass or 3 is required. For further information refer to: http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning?l=en_UK

**Implementation of the education**

**Structure of the education**

The academic year at KTH is divided into four reading periods of app. 7 weeks duration. Each period is followed by an examination period of app. one week. In addition to the four reading periods there are three re-examination periods in: the beginning of January, at the end of May and immediately before the start of the first reading period in the fall semester. Written examination of individual courses are normally offered twice in the academic year.
The curricula for the B.Sc. program in ICT contains mandatory courses in academic years 1 and 2. In the third year the students should define a set of courses of at least 20 ECTS credits as an area of specialization. These courses are selected from a set of conditionally elective courses. A degree project of 15 ECTS credits is required.

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

Course selections and signing up must be actively made by all students intending to study next (following) semester.

This signing up procedure is a basis for registration and tuition basis for decisions on promotion to the following semester. Course Registration is done via a web-based tools “Studera.nu”. Signing up for fall semester are made by 15 May and for spring semester by 15 November.

Promotion in the program are:

• From year 1 to year 2, 45 credits is needed

• From year 2 to year 3, 90 credits is needed.

Course registration, in course, is done before the third week of the course starting date in order for the notified students to declared that they intend to follow the course.

Recognition of previous academic studies

Recognition of previous academic studies will be done according to KTH regulations, see http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/prestationer?l=en_UK

Degree project

More detailed description of the requirements for the degree project course can be found in the course syllabus of the chosen degree course.
See KTH regulations for general requirements  
http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete?l=en_UK

**Degree**

After completing the study programme the student needs to apply for a Degree Certificate. This degree is entitled “Teknologie kandidatexamen” - Bachelor of Science. The text on the degree certificate states the educational programme completed by the student.

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

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

Bachelor's Programme in Information and Communication Technology (TKOMK), Programme syllabus for studies starting in autumn 2011

## General courses

### Year 1

**Mandatory courses (60.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1004</td>
<td>Object-oriented Programming</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1005</td>
<td>Algorithms and Data Structures</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IE1204</td>
<td>Digital Design</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>II1300</td>
<td>Engineering Skills</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1200</td>
<td>Computer Hardware Engineering</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IX1300</td>
<td>Introduction in Mathematics</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IX1303</td>
<td>Algebra and Geometry</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IX1304</td>
<td>Calculus</td>
<td>7.5 hp</td>
<td>First cycle</td>
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**Optional courses**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
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<tbody>
<tr>
<td>II1310</td>
<td>Introduction to Computer Studies</td>
<td>1.5 hp</td>
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### Year 2

**Mandatory courses (45.0 Credits)**

<table>
<thead>
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<th>Course code</th>
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<th>Credits</th>
<th>Edu. level</th>
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<tbody>
<tr>
<td>ID1218</td>
<td>Applied Programming</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IK1203</td>
<td>Networks and Communication</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1350</td>
<td>Operating Systems</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>Course code</td>
<td>Course name</td>
<td>Credits</td>
<td>Edu. level</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------</td>
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<td>------------</td>
</tr>
<tr>
<td>IV1302</td>
<td>IT-project, part 1 method</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IX1500</td>
<td>Discrete Mathematics</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IX1501</td>
<td>Mathematical Statistics</td>
<td>7.5 hp</td>
<td>First cycle</td>
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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>
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<tbody>
<tr>
<td>ID1003</td>
<td>Project IT</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1204</td>
<td>IT Project Course, part 2</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IV1013</td>
<td>Introduction to Computer Security</td>
<td>7.5 hp</td>
<td>First cycle</td>
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</table>

Year 3

Optional courses

<table>
<thead>
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<th>Course code</th>
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<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID2202</td>
<td>Compilers and Execution Environments</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2216</td>
<td>Developing Mobile Applications</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IK2206</td>
<td>Internet Security and Privacy</td>
<td>7.5 hp</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>DD1352</td>
<td>Algorithms, Data Structures and Complexity</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1361</td>
<td>Programming Paradigms</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1368</td>
<td>Database Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD2385</td>
<td>Software Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2418</td>
<td>Language Engineering</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2431</td>
<td>Machine Learning</td>
<td>6.0 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>IC1007</td>
<td>Human-computer Interaction: Principles and Design</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1217</td>
<td>Concurrent Programming</td>
<td>7.5 hp</td>
<td>First cycle</td>
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<tr>
<td>ID2207</td>
<td>Modern Methods in Software Engineering</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2212</td>
<td>Network Programming with Java</td>
<td>7.5 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IK1550</td>
<td>Internetworking</td>
<td>6.0 hp</td>
<td>First cycle</td>
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<tr>
<td>IV1351</td>
<td>Data Storage Paradigms</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>
Appendix 2: Specialisations

Bachelor's Programme in Information and Communication Technology (TKOMK), Programme syllabus for studies starting in autumn 2011

This programme has no specialisations.