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 17 (HT - Autumn term; VT - Spring term).

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

Programme objectives

Thematically, the students should obtain basic disciplinary knowledge, skills and competencies during the first three years of the education in the core areas of information and communication technology: mathematics, electronics, computer, communication and software engineering.

In addition to the requirements of the Higher Education Ordinance the following apply:

Knowledge and understanding

To be awarded an engineering degree in information and communication technology, the student should be able to:

- apply mathematics and basic natural sciences within information and communication technology.
- follow and utilize the knowledge development within the field of technology.

Skills and abilities

To be awarded an engineering degree in information and communication technology, the student should be able to:

- apply creative and critical working methods to formulate and explore problems within the area of information and communication technology with modern methods and tools.
- analyze technical problems from a systems perspective with an overall view on technical systems and their life cycle from conception, design, implementation, possibly production, operation, maintenance and phasing-out.
- adopt a problem-solving perspective based on the need and functionality of the product and service, considering the individuals using the product as well as the technology interplay within the society.
- discuss technical problems and present work results in oral and written form, in English, to different target groups, as needed for an international career.

Ability to make judgements and adopt a standpoint

For an engineering degree in information and communication technology, the student should:

- by exercise and reflection have developed an ability to work efficiently in groups of different compositions, nationalities and abilities.


Extent and content of the programme

The education comprises three years and 180 credits.
The three years are for first-cycle studies. The education is given in english.

**Eligibility and selection**

Eligibility is determined by modified specific entry requirements 9:

Mathematics course E (4), Physics course B (2), English B

Entry requirements and admission take place according to KTH's admission regulations, see KTH's regulatory framework http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning.

**Implementation of the education**

**Structure of the education**

The academic year division in semesters, periods etc. are described in KTH's regulatory framework https://intra.kth.se/styrning/regelverk/utbildning-pa-grund-och-avancerad-niva-1.660818.

The courses in school years 1-3 should help the student to acquire a solid foundation of mathematics/natural sciences, basic technological sciences and professional skills.

**Courses**

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

Courses are either compulsory, conditionally elective or elective. These are scheduled so that primarily two courses are read and completed in the same period.

In school year 3 the first elective courses of 21 HE credits are chosen. The space for elective courses within the programme can be used to study pre-requisite courses for different master programmes in case there are such requirements.

**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 registration**

All students following an education programme at KTH must register for each semester. Registration per semester is performed by the student via the personal menu at www.kth.se. Semester registration is necessary for enabling the registration of results from the studies and is a pre-requisite for granted student finance payment (CSN medel).

**The rules for promotion to the next school year**

The rules for promotion to the next school year for the Bachelor's Programme in Information and Communication Technology are:

- From school year 1 to school year 2 - 45 HE credits completed from school year 1.
- From school year 2 to school year 3 - 90 HE credits completed from school year 1 and 2, of which at least 50 HE credits from school year 1.

**Recognition of previous academic studies**

Student that has read some courses at another university or higher education institution can apply to transfer the credits to the Bachelor's Programme in Information and Communication Technology. The transferred courses may not overlap with any course already read at KTH.
For recognition of a compulsory course, documented knowledge of at least the same extent for the equivalent subject must be demonstrated.

Application documents for transfer or change of courses should be delivered to the study adviser for assessment and decision by the programme co-ordinator of the Bachelor's Programme in Information and Communication Technology. The application should include attested copies of academic transcripts for invoked courses and course descriptions (course syllabus). Decisions for such applications are normally available within a couple of weeks from the date of the application. A copy of the decision is always mailed to the applicant.

Reference to the policy that is in KTH's regulatory framework http://intra.kth.se/regelverk/utbildning--forskning/grundutbildning.

Studies abroad

To qualify for exchange studies within the scope of the agreements established with selected foreign universities the following applies:

Students in school year 2 may not have more than two courses unfinished.


Degree project

For a BSc degree, a degree project of 15 HE credits within the field of technology should be carried out. The degree project is normally carried out at the end of the education and cannot be started until the student has achieved at least 120 HE credits within the education.

The selection of a suitable degree project is made in consultation with the examiner.

The degree project is graded P/F (Pass/Fail). In order to pass, the degree project must show high quality as tested against the relevant examination objectives, often all national examination objectives. Directives and criteria for passing and grading are available at:


Specific directives and criteria for grading is available in the official course syllabus.

Degree

The conditions for higher education qualification are satisfied when the course requirements in the program are satisfied. The study programme that the student has finished is stated in the degree certificate.

The application for degree is made via the Personal menu at www.kth.se.


Appendix 1 - Course list
Appendix 2 - Programme syllabus descriptions
Appendix 1: Course list
Bachelor's Programme in Information and Communication Technology (TCOMK), Programme syllabus for studies starting in autumn 2017

General courses

Year 1

Mandatory courses (66.0 credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1018</td>
<td>Programming I</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IE1204</td>
<td>Digital Design</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IE1206</td>
<td>Embedded Electronics</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>II1304</td>
<td>Engineering Skills for ICT</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1200</td>
<td>Computer Hardware Engineering</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1610</td>
<td>Discrete Mathematics</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1684</td>
<td>Algebra and Geometry</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1685</td>
<td>Calculus in One Variable</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1690</td>
<td>Basic Course in Mathematics</td>
<td>6.0</td>
<td>First cycle</td>
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</table>

Year 2

Mandatory courses (58.5 credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID1019</td>
<td>Programming II</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1020</td>
<td>Algorithms and Data Structures</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>II1304</td>
<td>Engineering Skills for ICT</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>II1305</td>
<td>Project in Information and Communication Technology</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IK1203</td>
<td>Networks and Communication</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IV1303</td>
<td>Modern Software Development</td>
<td>6.0</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1686</td>
<td>Calculus in Several Variable</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
</tbody>
</table>
### Course code | Course name | Credits | Edu. level
---|---|---|---
SK1118 | Electromagnetism and Waves | 7.5 | First cycle

**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>ID2216</td>
<td>Developing Mobile Applications</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>II1303</td>
<td>Signal Processing</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>LS1419</td>
<td>English for Employment</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1033</td>
<td>Open and User Innovation</td>
<td>7.5</td>
<td>First cycle</td>
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</tbody>
</table>

**Supplementary information**

Elective Course 7.5 credits belong to study year 2.

**Year 3**

**Mandatory courses (49.5 credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AG1815</td>
<td>Sustainable Development, ICT and Innovation</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1206</td>
<td>Operating Systems</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>II1304</td>
<td>Engineering Skills for ICT</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>II143X</td>
<td>Degree Project in Information and Communication Technology, First Cycle</td>
<td>15.0</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1003</td>
<td>Industrial Management, Basic Course</td>
<td>6.0</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1900</td>
<td>Probability Theory and Statistics</td>
<td>6.0</td>
<td>First cycle</td>
</tr>
</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>DD2352</td>
<td>Algorithms and Complexity</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2372</td>
<td>Automata and Languages</td>
<td>6.0</td>
<td>Second cycle</td>
</tr>
<tr>
<td>DD2401</td>
<td>Neuroscience</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IC1007</td>
<td>Human-computer Interaction: Principles and Design</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1212</td>
<td>Network Programming</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1214</td>
<td>Artificial Intelligence and Applied Methods</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ID1217</td>
<td>Concurrent Programming</td>
<td>7.5</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>
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<tr>
<td>ID2202</td>
<td>Compilers and Execution Environments</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2213</td>
<td>Logic Programming</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>ID2216</td>
<td>Developing Mobile Applications</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>II1303</td>
<td>Signal Processing</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IK1330</td>
<td>Wireless Systems</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IK1552</td>
<td>Internetworking</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>IK2206</td>
<td>Internet Security and Privacy</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>IS2202</td>
<td>Computer Systems Architecture</td>
<td>7.5</td>
<td>Second cycle</td>
</tr>
<tr>
<td>LS1419</td>
<td>English for Employment</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1033</td>
<td>Open and User Innovation</td>
<td>7.5</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME2063</td>
<td>Team Leadership and Human Resource Management</td>
<td>6.0</td>
<td>Second cycle</td>
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<tr>
<td>SF1811</td>
<td>Optimization</td>
<td>6.0</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Elective Courses 13.5 credits belong to study year 3.

**Year 4**
Appendix 2: Specialisations

Bachelor's Programme in Information and Communication Technology (TCOMK),
Programme syllabus for studies starting in autumn 2017

This programme has no specialisations.