Programme syllabus

Degree Programme in Computer Science and Engineering
Civilingenjörsutbildning i datateknik
300.0 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

Computer Science and Engineering is the most influential factor on society and will remain so during the foreseeable future. An essential usage of Computer Science and Engineering is the efficiency of resource usage and communication in society for a sustainable development.

The Master of Science in Computer Science and Engineering programme at KTH aims to give the student the prerequisites and abilities to participate in and lead work with appraisal, development and influence of new Computer Science and Engineering technologies.

Knowledge and understanding

The programme has the goal that a Master of Computer Science and Engineering should:

- have fundamental knowledge within Computer Science and Engineering
- have profound knowledge in mathematics, i.e. have the ability to explain and carry out mathematical reasoning and define and analyze mathematical models.
- have knowledge in human and natural sciences, especially such knowledge which has consequences for design of computerized systems.
- have knowledge about industrial entrepreneurship and relevant legislation.

Skills and abilities

The programme has the goal that a Master of Computer Science and Engineering should:

- have prerequisites and abilities to participate in and develop the practices which are applied in industry, administration, and academic research.
- have the ability to independently define and solve computer-related construction problems.
• have the prerequisites for successful work in international and multidisciplinary project groups which consist of people from both technical and non-technical backgrounds. This includes the ability to orally, and in writing, present as well as argue in Swedish and English.

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

The programme has the goal that a Master of Computer Science and Engineering should:

• Independently analyze and adopt a standpoint on economical, societal, environment-related and ethical consequences of computer science applications, and to design systems concerning this.
• Through self-development, retain one’s professional abilities during a professional career.
• Follow and promote the discussion concerning technology in society.

**Extent and content of the programme**

The Master of Computer Science and Engineering is composed of 300 ECTS credits, which, at normal study rate, corresponds to 5 years of full-time study (10 semesters).

The first three years (180 ECTS credits) are on the first level.

**Master's programs**

The last two years the student takes a master's program of his/her choice. The master's programs consist of courses mainly in the second level. The education leads to a master's degree as well as a "civilingenjör" degree.

Each year a list of master's programs that the students can choose from is presented.

**International profiles**

There are two international profiles for asiatic languages: one for Chinese and one for Japanese. There is also an international profile for European languages where one of the languages French, Spanish, and German is studied.

The international profiles have special application codes at studera.nu.

**Language of instruction**

The language of instruction, during the first three years of the programme is mostly Swedish; although English literature will be used. The concluding two years some courses are given in Swedish and some in English. For each course the language of instruction is found in the Course and program directory on the KTH student web site.

**Eligibility and selection**

In order to be accepted to the Master of Computer Science and Engineering programme the basic eligibility requirements as well as the following requirements must be met: Mathematics E, Physics B, Chemistry A (according to the swedish school system). All with at least a grade of Godkänd (Passed).
For eligibility requirements and selection, see the KTH admission policy
http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/antagning/1.27186

Implementation of the education

Structure of the education

The syllabus for the Master of Computer Science and Engineering program consists of

- compulsory first level courses during study years 1–3 concluded by a first level degree project.
- courses within the master's program that the student has chosen for study years 4–5, concluded by a second level degree project.
- elective first and second level courses giving the education the profile desired by the student.

Specialization in language engineering

The specialisation in Language Engineering begins in the fall semester in study year 2 with courses in linguistics taken at Stockholm University. These courses replace some of the compulsory courses. (See appendix 2)

International profile

The programme plan for the Master of Computer Science in Engineering with the international profile starts with compulsory courses in study years 1-3 and courses within the specialisation language. Study year three is concluded by a first level degree project. In study years 4–5 the student follows a master's program of his/her choice. Within this program additional language courses are taken. Study year 5 is concluded by a second level degree project.

The student is offered to spend two semesters at one of the KTH partner universities using the language of the specialization. These semesters are allocated to the portion of the programme which is given on the second level.

Since the students on the international profile take language courses during study years 4-5 the choice of master programs is more limited. The student has three possibilities:

1. Take the master program in Computer science that offers a sufficient number of credits for elective courses.
2. In consultation with the program co-ordinator and the international co-ordinator investigate the possibilities of choosing another master program.
3. In consultation with the program co-ordinator and the international co-ordinator skip some of the mandatory courses from the selected master program and only receive the degree of Master of Science in Engineering degree (civilingenjör) and not the degree of Master of Science.

The international specialisation is special because the language courses start in the first year and are taken continuously throughout the programme. In total, 60 ECTS credits in Japanese or Chinese or 40 ECTS credits in French, Spanish, or German are taken. Compared to the normal Computer Science programme, three courses are omitted for students on the international specialisation.

Bachelor's degree
The programme is designed in such a manner that the student after three years of studies can obtain a bachelor's degree. The student can then continue his/her studies on the Computer science and engineering program, continue his/her studies in another program at KTH or another University in Sweden or abroad or start his/her work career.

**Academic year**

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](http://www.kth.se/student/schema/1.1007?l=en_UK)

**Courses**

The programme is course-based. Lists of courses are included in [appendix 1](#).

The course goals, prerequisites, contents and examination requirements are found in the course syllabus in the Course and program directory on the KTH student web. The programme consists of compulsory, conditionally elective and elective courses. The compulsory courses are defined in course lists for each study year.

Elective courses can be chosen from KTH’s course selection for Master of Science in Engineering programmes. Courses from other universities can be recognized for credit, if the degree requirements are fulfilled.

For elective courses, the following restrictions apply:

- Elective courses can not be taken in study year 1
- Only under certain circumstances can elective courses be taken in study year 2.
- The number of higher education credits which can be taken per semester can be limited.

**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 courses

From study year 3 and on the student is responsible for applying to all courses he/she wishes to take. This also applies to compulsory courses. 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.

Admission to compulsory courses during study years 1–2 is, in most cases, automatic. Students wishing to study an individual specialization or choosing among alternative compulsory courses have to submit a special form.

Choice of master's program

The student must apply for the master's program he/she wishes to follow during study years 4–5 according to instructions given by the CSC program office.

Course registration

Course registration is done by the school/department giving the course. It can only be done if the course has been selected.

The student must, at the first scheduled lecture, register for the course. Course registration for compulsory as well as elective courses must be done individually. If the student registers for a course and then decides to not continue, the student must notify the school/department giving the course as soon as possible.

Conditions for being promoted to the next level

The following promotion requirements apply in order to participate in the next level of the education.

Requirements for promotion from study year 1 to study year 2:
A total of at least 45 ECTS credits from study year 1 must be completed.

Requirements for promotion from study year 2 to study year 3:
A total of at least 90 ECTS credits from study years 1 and 2 must be completed whereof at least 50 higher education credits from study year 1.
Requirements for promotion from study year 3 to study year 4:
A total of at least 150 ECTS credits from study years 1-3 must be completed whereof 110 ECTS credits from study year 1-2, and the first level degree project.

Requirements for promotion from study year 4 to study year 5:
In addition to what applies for promotion to study 4, at least 45 higher education credits from study year 4 must be completed.

Individual study plan

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

Please see the KTH regulations: http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/1.27217?l=en_UK

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 at the Master of Science in Engineering in Computer Science and Engineering programme have the opportunity to study one or two semesters abroad through agreements KTH has with universities within and outside the EU. Exchange studies are appropriate during the fourth or fifth study years. It is also possible to make the final degree project (second cycle) abroad.

For more information contact the international coordinator at CSC.

Degree project

Degree project, first cycle
A degree project of 15 ECTS credits (first cycle) is done during study year 3.

KTH comprehensive rules and guidelines for degree projects of 15 ECTS credits for Degree of Bachelor of Science 180 ECTS credits, and grading of the project are found in the KTH regulations.

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examsarbete/1.27211?l=en_UK

Degree project, second cycle
A second degree project of 30 ECTS credits (second cycle) is done during study year 5.
KTH comprehensive rules and guidelines for degree projects of 30 ECTS credits for Degree of Master of Science in Engineering, Degree Programme in Computer Science and Technology 300 ECTS credits, and grading of the project is found in the KTH regulations.

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/examensarbete/1.27205

*Second cycle degree project for the Degree of Master of Science in Engineering can be performed in the following subjects:* Computer science, Biomedical engineering, Human-computer interaction, Media technology, Numerical analysis, Musical acoustics, Electroacoustics, Speech communication, Computer and systems sciences, Teleinformatics and Industrial control systems.

Other subjects for the degree project may be considered upon application. For more information, contact the CSC program office.

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

**Degree**

*Application for graduation*
Students may apply for the following degrees: Degree of Bachelor of Science and Degree of Master of Science in Engineering, Degree Programme in Computer Science. Students can also request for Degree of Master of Science (Two Years) if the requirements for this degree are met.

Instructions for the application are available on the KTH student web.

*Conditions for the Degree of Bachelor of Science 180 ECTS credits*
The Degree of Bachelor of Science is received if the student applies for graduation after the completion of the 3rd study year and fulfills the national degree requirements and and has completed all courses within the program corresponding to 180 ECTS credits, including

- courses of at least 25 ECTS credits within mathematics-natural sciences,
- courses of at least 90 ECTS credits (including 15 ECTS credits from the degree project) with successive progression in the main field of education.

*Degree name*
Teknologie kandidatexamen
Degree of Bachelor of Science

*Conditions for the Degree of Master of Science in Engineering 300 ECTS credits*
The Master of Science in Engineering degree is received after completing the programme. The programme is designed so that the student fulfills the national degree requirements and has completed courses corresponding to 300 ECTS credits, including

- courses of at least 45 ECTS credits within mathematics-natural sciences, and, in addition, courses of at least 180 higher ECTS credits (including 30 ECTS credits from the degree project) in the subjects central to the technical area
• courses of at least 90 ECTS credits in the second cycle, whereof at least 60 ECTS credits (including 30 ECTS credits from degree project) in the subjects central to the technical area

Degree name
Civilingenjörsexamen
Degree of Master of Science in Engineering, Degree Programme in Computer Science and Technology

Conditions for Degree of Master of Science (Two Years) 120 ECTS credits.
See KTH regulations (see link below).

Degree name
Teknologie masterexamen
Degree of Master of Science (Two Years)

Information on degree requirements in 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

Degree Programme in Computer Science and Engineering (CDATE), Programme syllabus for studies starting in autumn 2011

General courses

Year 1

Mandatory courses (64.0 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1341</td>
<td>Introduction to Computer Science</td>
<td>16.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1390</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DH1600</td>
<td>Communication in Engineering Sciences</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1604</td>
<td>Linear Algebra</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1625</td>
<td>Calculus in One Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1626</td>
<td>Calculus in Several Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1659</td>
<td>Mathematics, Basic Course</td>
<td>4.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1131</td>
<td>Physics: Waves and Particles</td>
<td>7.5 hp</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>SF1611</td>
<td>Introductory Course in Mathematics I</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

Supplementary information

Batch 11 take the first study year during 2011/12.

Year 2

Mandatory courses (63.0 Credits)
<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1350</td>
<td>Logic for Computer Science</td>
<td>6.0 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></td>
<td><strong>Programme Integrating Course in Computer Science Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD1390</td>
<td>3 cr belong to study year 2; distribution over the periods: 0,1; 0,3; 0,6; 2,0</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1396</td>
<td>Parallel and Concurrent Programming in Introduction to Computer Science</td>
<td>3.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DH1620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DN1241</td>
<td>Numerical Methods, Basic Course III</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1500</td>
<td>Computer Organization and Components</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1010</td>
<td>Organization and Knowledge-Intensive Work</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the second study year during 2012/13.

**Year 3**

**Mandatory courses (51.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1352</td>
<td>Algorithms, Data Structures and Complexity</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1365</td>
<td>Software Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td></td>
<td><strong>Programme Integrating Course in Computer Science Engineering</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD1390</td>
<td>1 cr belongs to study year 3; distribution over the periods: 0,1; 0,2; 0,3; 0,4</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD143X</td>
<td>Degree Project in Computer Science, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD2395</td>
<td>Computer Security</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>SF1630</td>
<td>Discrete Mathematics</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the third study year during 2013/14.

**Year 4**

**Supplementary information**
During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established. The list for 2011/12 contained 15 master programs.

Year 5

Supplementary information

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established. The list for 2011/12 contained 15 master programs.

International Profile (INT)

Year 1

Mandatory courses (56.5 Credits)

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1341</td>
<td>Introduction to Computer Science</td>
<td>16.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td></td>
<td>Programme Integrating Course in Computer Science</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DD1390</td>
<td>Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td></td>
<td>Only 2 cr belong to study year 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SF1604</td>
<td>Linear Algebra</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1625</td>
<td>Calculus in One Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1626</td>
<td>Calculus in Several Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1659</td>
<td>Mathematics, Basic Course</td>
<td>4.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1131</td>
<td>Physics: Waves and Particles</td>
<td>7.5 hp</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>SF1611</td>
<td>Introductory Course in Mathematics I</td>
<td>1.5 hp</td>
<td>First 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>DS1323</td>
<td>German, Advanced Beginners Level</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1339</td>
<td>French, Advanced Beginners Level</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1343</td>
<td>Spanish, Advanced Beginners Level</td>
<td>7.5 hp</td>
<td>First cycle</td>
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</tbody>
</table>

Supplementary information
One of the language courses is taken.

**Year 2**

**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>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>DD1390</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1396</td>
<td>Parallel and Concurrent Programming in Introduction to Computer Science</td>
<td>3.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DH1620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1500</td>
<td>Computer Organization and Components</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1010</td>
<td>Organization and Knowledge-Intensive Work</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp</td>
<td>First 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>DD1350</td>
<td>Logic for Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DN1241</td>
<td>Numerical Methods, Basic Course III</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1324</td>
<td>Technical German, Intermediate Level</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1334</td>
<td>Technical French, Intermediate Level</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1348</td>
<td>Technical Spanish, Intermediate Level</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the second study year during 2012/13.

A course in the language chosen must be taken.

At least one of the courses DN1241 Numerical methods and DD1350 Logic must be taken. If both are taken then DD2395 Computer security can be skipped in study year 3.

**Year 3**

**Mandatory courses (45.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1352</td>
<td>Algorithms, Data Structures and Complexity</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>
DD1365  **Software Engineering**  
Programme Integrating Course in Computer Science  
6.0 hp  First cycle

DD1390  **Degree Project in Computer Science, First Cycle**  
1 cr belongs to study year 3; distribution over the periods: 0,1; 0,2; 0,3; 0,4  
6.0 hp  First cycle

DD143X  **Degree Project in Computer Science, First Cycle**  
15.0 hp  First cycle

SF1630  **Discrete Mathematics**  
9.0 hp  First cycle

### 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>DD2395</td>
<td>Computer Security</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>LS2326</td>
<td>German B2</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>LS2336</td>
<td>French B2</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
<tr>
<td>LS2349</td>
<td>Spanish B2</td>
<td>9.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

### Supplementary information

Batch 11 take the third study year during the academic year 2013/14.

**DD2395** *May be skipped if both DN1241 and DD1350 was taken during year 2*

### Year 4

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

Note that the elective courses shall be within scientific computing for a degree in master of science in engineering. Please contact the study adviser for more information.

### Year 5

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

### International Profile, Japanese (JAP)

### Year 1

**Mandatory courses (62.5 Credits)**
### Course code | Course name                                                                 | Credits | Edu. level  
---|---|---|---  
DD1341 | Introduction to Computer Science | 16.0 hp | First cycle  
DD1390 | Programme Integrating Course in Computer Science, Engineering | 6.0 hp | First cycle  
DS1381 | Elementary Japanese and Japanese Studies | 6.0 hp | First cycle  
SF1604 | Linear Algebra | 7.5 hp | First cycle  
SF1625 | Calculus in One Variable | 7.5 hp | First cycle  
SF1626 | Calculus in Several Variable | 7.5 hp | First cycle  
SF1659 | Mathematics, Basic Course | 4.5 hp | First cycle  
SK1131 | Physics: Waves and Particles | 7.5 hp | First cycle  

### Optional courses

| Course code | Course name | Credits | Edu. level  
---|---|---|---  
SF1611 | Introductory Course in Mathematics I | 1.5 hp | First cycle  

### Supplementary information

Batch 11 take the first study year during 2011/12.

### Year 2

#### Mandatory courses (55.5 Credits)

| Course code | Course name                                                                 | Credits | Edu. level  
---|---|---|---  
DD1361 | Programming Paradigms | 7.5 hp | First cycle  
DD1368 | Database Technology | 6.0 hp | First cycle  
DD1390 | Programme Integrating Course in Computer Science, Engineering | 6.0 hp | First cycle  
DD1396 | Parallel and Concurrent Programming in Introduction to Computer Science | 3.0 hp | First cycle  
DH1620 | Human-Computer Interaction, Introductory Course | 6.0 hp | First cycle  
DS1383 | Japanese, Advanced Beginners Level I | 6.0 hp | First cycle  
IS1500 | Computer Organization and Components | 9.0 hp | First cycle  
ME1010 | Organization and Knowledge-Intensive Work | 6.0 hp | First cycle  
SF1901 | Probability Theory and Statistics | 6.0 hp | First cycle  

#### Conditionally elective courses

| Course |  
---|---  

<table>
<thead>
<tr>
<th>code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1350</td>
<td>Logic for Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DN1241</td>
<td>Numerical Methods, Basic Course III</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the second study year during 2012/13.

At least one of the courses DN1241 Numerical methods and DD1350 Logic must be taken. If both are taken then DD2395 Computer security can be skipped in study year 3.

**Year 3**

**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>DD1352</td>
<td>Algorithms, Data Structures and Complexity</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1365</td>
<td>Software Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1390</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD143X</td>
<td>Degree Project in Computer Science, First Cycle</td>
<td>15.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>LS1385</td>
<td>Japanese A2</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1630</td>
<td>Discrete Mathematics</td>
<td>9.0 hp</td>
<td>First 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>DD2395</td>
<td>Computer Security</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the third study year during the academic year 2013/14.

Please note that study year 4 also includes a course in Japanese.

DS2395 may be skipped if both DN1241 and DD1350 was taken year 2.

**Year 4**

**Mandatory courses (9.0 Credits)**

<p>| Course | |
|--------||</p>
<table>
<thead>
<tr>
<th>code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS1386</td>
<td>Japanese B1</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

Note that the elective courses shall be within scientific computing for a degree in master of science in engineering. Please contact the study adviser for more information.

**Year 5**

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

**International Profile, Chinese (KIN)**

**Year 1**

**Mandatory courses (62.5 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>DD1341</td>
<td>Introduction to Computer Science</td>
<td>16.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1390</td>
<td>Programme Integrating Course in Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1391</td>
<td>Elementary Chinese and Chinese Studies</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1604</td>
<td>Linear Algebra</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1625</td>
<td>Calculus in One Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1626</td>
<td>Calculus in Several Variable</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1659</td>
<td>Mathematics, Basic Course</td>
<td>4.5 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SK1131</td>
<td>Physics: Waves and Particles</td>
<td>7.5 hp</td>
<td>First 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>SF1611</td>
<td>Introductory Course in Mathematics I</td>
<td>1.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**
Batch 11 take the first study year during the academic year 2011/12.

**Year 2**

**Mandatory courses (55.5 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>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>DD1390</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1396</td>
<td>Parallel and Concurrent Programming in Introduction to Computer Science</td>
<td>3.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DH1620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DS1393</td>
<td>Chinese, Advanced Beginners Level I</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1500</td>
<td>Computer Organization and Components</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1010</td>
<td>Organization and Knowledge-Intensive Work</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp</td>
<td>First 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>DD1350</td>
<td>Logic for Computer Science</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DN1241</td>
<td>Numerical Methods, Basic Course III</td>
<td>7.5 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the second study year during the academic year 2012/13.

At least one of the courses DN1241 Numerical methods and DD1350 Logic must be taken. If both are taken then DD2395 Computer security can be skipped in study year 3.

**Year 3**

**Mandatory courses (54.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
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<th>Edu. level</th>
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</thead>
<tbody>
<tr>
<td>DD1352</td>
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<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1365</td>
<td>Software Engineering</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1390</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>0.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>
1 cr belongs to study year 3; distribution over the periods: 0,1; 0,2; 0,3; 0,4

**DD143X**  Degree Project in Computer Science, First Cycle  15.0 hp  First cycle
**LS1395**  Chinese A2  9.0 hp  First cycle
**SF1630**  Discrete Mathematics  9.0 hp  First cycle

**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>DD2395</td>
<td>Computer Security</td>
<td>6.0 hp</td>
<td>Second cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

Batch 11 take the third study year during the academic year 2013/14.

Please note that study year 4 also includes a course in Chinese.

**Year 4**

**Mandatory courses (9.0 Credits)**

<table>
<thead>
<tr>
<th>Course code</th>
<th>Course name</th>
<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
<tbody>
<tr>
<td>LS1396</td>
<td>Chinese B1</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

Note that the elective courses shall be within scientific computing for a degree in master of science in engineering. Please contact the study adviser for more information.

**Year 5**

**Supplementary information**

During study years 4 and 5 the students follow a master program of their choice. For each year a list of master programs that may be chosen is established.

**Language Technology (STEK)**

**Year 2**

**Mandatory courses (40.0 Credits)**
<table>
<thead>
<tr>
<th>Course code</th>
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<th>Credits</th>
<th>Edu. level</th>
</tr>
</thead>
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<td>DD1368</td>
<td>Database Technology</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1391</td>
<td>Programme Integrating Course in Computer Science Engineering</td>
<td>4.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>DD1396</td>
<td>Parallel and Concurrent Programming in Introduction to Computer Science</td>
<td>3.0 hp</td>
<td>First cycle</td>
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<tr>
<td>DH1620</td>
<td>Human-Computer Interaction, Introductory Course</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>IS1500</td>
<td>Computer Organization and Components</td>
<td>9.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>ME1012</td>
<td>Organization and knowledge-Intensive Work</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
<tr>
<td>SF1901</td>
<td>Probability Theory and Statistics</td>
<td>6.0 hp</td>
<td>First cycle</td>
</tr>
</tbody>
</table>

**Supplementary information**

**Language technology specialization**

Students may choose a language technology specialization and then take three courses at Stockholm university during the fall: LIN111 Introduction to linguistics, LIN112 The Architecture of Language 1 and LIN113 The Architecture of Language 2. These students do not take DD1350, DD1361 and DN1241 during the second study year.
Appendix 2: Specialisations

Degree Programme in Computer Science and Engineering (CDATE), Programme syllabus for studies starting in autumn 2011

International Profile (INT)

The international profile is described under "Implementation of the education".

Students take courses in one of the languages German, French and Spanish and are offered to spend two semesters at one of the KTH partner universities using the language of the specialization.

International Profile, Japanese (JAP)

The international profile, Japanese, is described under "Implementation of the education".

Students take courses in Japanese and are offered to spend two semesters at one of the KTH partner universities using the Japanese language.

International Profile, Chinese (KIN)

The international profile, Chinese, is described under "Implementation of the education".

Students take courses in Chinese and are offered to spend two semesters at one of the KTH partner universities using the Chinese language.

Language Technology (STEK)