



Programme syllabus

Master's Programme, Computer Science, 120 credits

Masterprogram, datalogi

120.0 credits

Valid for students admitted to the education from autumn 10 (HT - Autumn term; VT - Spring term).

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

Programme objectives

The aim of the Master's programme is to provide a broad education in Computer Science with the possibility of deepening and specializing within the area of computer science, the method science for construction of computer programmes including theoretical foundations as well as the practical ability to develop products and systems which include computers and software.

The programme will provide the students with the requisites and abilities to participate and lead work within evaluation, development and implementation of new technology within the field of computer science.

Knowledge and understanding

The objective of the program is to provide the student with:

- deepened knowledge within computer science and engineering,
- knowledge within at least one subject area complementary to technology.

The programme shall also provide the student with the opportunity to specialize with one of the following goals:

- provide a deepened knowledge within one or more of the areas: computer vision, robotics, artificial intelligence, and neuro-informatics,
- provide an orientation within computer security, foundations for technical computer security, and a deepened knowledge within one or more areas concerning technical aspects of computer security,
- provide a deepened knowledge within leadership and management of large IT projects and management of complex IT-environments. Also, an orientation within modeling and decision making in company-wide IT questions such as information security, modifiability, interoperability, etc.. is offered,

- provide deepened knowledge and understanding for methodology and scientific perspective within the internet technology area and provide the students with practical skills, above all, for initiation, configuration and maintenance of computer networks,
- provide deepened knowledge about software construction in a technical development context,
- provide deepened knowledge about solutions of resource-demanding computational problems and related combinatorial/statistical analysis methods,
- provide an extended understanding for existent and non-existent efficient algorithms for different computational problems,
- implement and use language knowledge in the development of programmes and systems that can recognize, interpret and generate human language.

Skills and abilities

The objective of the program is to provide the student with:

- a good analytical problem solving ability,
- the ability to independently define and solve construction problems within computer science,
- the requisites and abilities to participate in and develop practices implemented in industry, maintenance and academic research,
- the requisites for successful work in international and interdisciplinary project groups which include engineers and non-engineers. This goal includes abilities in oral and written presentation and argumentation in Swedish and English.

Ability to make judgements and adopt a standpoint

The objective of the program is that the student should:

- be able to evaluate the quality of scientific studies and show a reflective and critical approach to scientific and non-scientific texts,
- through self-development, retain his/her own professional ability during a professional career
- follow the discussion about technology in society and contribute to it.

Beyond this, there are similar goals for the Master of Science in Engineering programme which are defined by the higher education ordinance

Extent and content of the programme

The Computer Science 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 currently offers specializations within autonomous systems, computer security, industrial information and control systems, internet technology, programme system engineering, language technology and theoretical computer science.

Eligibility and selection

Students in the Master of Science in Engineering programme in Computer Science are entitled to the Master of Science in Engineering Degree

Students in the Master of Science in Engineering programme at KTH where the Master's programme in Computer Science entitles the student to a Master of Science in Engineering degree at KTH can start the programme if, at the start of the semester, at least 150 ECTS credits from study years 1-3 including Bachelor Degree project and the courses listed below under specific admission requirements are fulfilled. They are guaranteed a place in the programme. The application must be done according to the instructions of the CSC school.

Other Students

General Admission Requirements: See KTHs admission requirements for Master's Programmes, link below.

Special Admission Requirements: Beyond the general admission requirements for the Master's programme, knowledge within mathematics, programming technology and computer science corresponding to the following courses is required.

- SF1600 Calculus I (one variable)
- SF1604 Linear algebra
- SF1631 Discreet mathematics
- DD1340 Introduction to computer science, or DD1320/DD1321 Applied computer science
- DD1352 Algorithms, data structures and complexity
- DD1365/DD2385 Software engineering
- IS1200 Computer hardware engineering, or DD2377 Low level programming and computer architecture

Certain elective courses require further prerequisites.

The Application is done via www.studera.nu April 15th at the latest.

Selection is done based on the number of completed ECTS credits in the interval 150-195. In the case of a tie in merit worth, a lottery is used to choose the applicant.

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

During the first semester five compulsory courses are taken, totaling 30 ECTS credits.

Beside the compulsory courses, 30 higher education credits are required in advanced courses within a specific area of computer science. These must either be part of a recommended specialisation or compiled by the student, but in the latter case, the course selection must be approved by the programme coordinator. Within each specialisation, courses can be freely chosen but considering prerequisites, or, in certain cases, places available.

At least one technology-complementary course must be included in the programme.

The programme is concluded by a degree project comprising 30 ECTS credits.

Other courses are elective.

Courses

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

Courses are examined in many ways, for example by home assignments that are presented either using oral presentations or written reports, computer assignments, project work or traditional written exams.

After each course a student evaluation is performed and then analyzed by the course leader in the course analysis document, which is normally published on the web, see the KTH regulations of 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.

Please see the KTH regulations:

http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/registrering-uppflyttning/studieuppehall-1.27216?l=en_UK

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.

Please see the KTH regulations: http://intra.kth.se/regelverk/utbildning-forskning/grundutbildning/registrering-uppflyttning/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 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 also be found 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, Computer Science, 120 credits (TCSCM),
Programme syllabus for studies starting in autumn 2010

General courses

Year 1

Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
DA2210	Introduction to the Philosophy of Science and Research Methodology for Computer Scientists	6.0 hp	Second cycle
DD2380	Artificial Intelligence	6.0 hp	Second cycle
DD2393	Protocols and Principles of the Internet	6.0 hp	Second cycle
DD2395	Computer Security	6.0 hp	Second cycle
DD2440	Advanced Algorithms	6.0 hp	Second cycle

Supplementary information

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

For the spring semester the student chooses a track. During the spring semester of study year 1 and fall semester of study year 2 the student takes courses from the chosen track of at least 30 credits. The student must also take a non-technical course (TMS-course) The rest of the courses may be selected freely.

The tracks are presented on the KTH Education web site, <http://www.kth.se/utbildning/program/master-magisterutbildning/master-magisterprogram-svenska/svenska-master-magisterprogram/datalogi/kurser-1.51699>

Year 2

Mandatory courses (30.0 Credits)

Course code	Course name	Credits	Edu. level
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Supplementary information

The degree project is performed in the spring semester of study year 2.

During the spring semester of study year 1 and fall semester of study year 2 the student takes courses from the chosen track of at least 30 credits. The course list for the first study year shows the courses for each track. The student must also take a non-technical course (TMS-course).

The rest of the courses may be selected freely.



Appendix 2: Specialisations

Master's Programme, Computer Science, 120 credits (TCSCM),
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This programme has no specialisations.