



# Utbildningsplan

Masterprogram, programvaruteknik för distribuerade system  
Master's Programme, Software Engineering of Distributed Systems,  
120 credits  
*120,0 högskolepoäng*

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*Gäller för antagna till utbildningen fr o m HT08.*

## Utbildningens mål

Development of computer networks and communication technology provides a new technological foundation for designing software systems. The systems become distributed, reconfigurable and adaptive and their components employ a high degree of autonomy. The set of devices where distributed software applications may operate ranges from workstations to Personal Digital Assistants (PDA). Distributed computer environments also assume that information sources and control can be decentralized over the network. All this makes the process of developing distributed software systems significantly more complex than for centralized systems.

New technological developments create a great demand from industry in engineers who are able to design software systems utilizing these developments. Our Master program is intended to be an educational response to such industrial demand.

The program emphasizes combination of fundamental principles of distributed computing with modern methods of software systems design.

The program gives the students state-of-the-art knowledge of the field and develops their practical skills in order to meet current industrial requirements as well as ability to adapt to new developments of tomorrow technology.

## Kunskap och förståelse

Upon successful completion of the program the students-                      Know basic modern software development methods -                      Understand a variety of approaches to software development and discuss their applicability boundaries, benefits, restriction and complementarities-                      Know basic Distributed AI methods for solving problems with decentralized control -                      Know basic concepts and principles of distributed systems, -                      Understand distributed algorithms and have orientation about distributed architectures and middleware

## Färdigheter och förmågor

Upon successful completion of the program the students are able to

- Use modern software development methods and techniques in practical system development
- Apply distributed AI methods in providing solutions to inherently distributed problems and to problems where expertise is distributed
- Design, implement and maintain distributed software systems for a wide range of applications including
  - o systems for peer-to-peer and grid computing
  - o systems with services oriented architecture
  - o internet-based systems

## Värderingsförmåga och förhållningssätt

The student shall:

- show ability to make assessments taking into account relevant scientific, societal and ethic aspects as well as show awareness of ethical aspects of research and development work
- show insight into the possibilities and limitations of science, its role in society and the responsibility of humans for its use,
- show ability to identify her/his need for additional knowledge and take responsibility for the development of his/her own knowledge.

## Utbildningens omfattning och innehåll

The program is a two year, 120 hp education. The programme is a second cycle education programme. The instruction language is English in all courses.

## Behörighet och urval

**1. Previous studies** A completed Bachelor's degree, equivalent to a Swedish Bachelor's degree (180 hp), from a university recognized by government or accredited by other recognized organization. A Bachelor's degree in Science or Engineering is required for most programs (please see the relevant program description). Applicants admitted to longer technical study programs and who have completed courses equivalent to an amount of 180 hp, will be considered on a case-by-case basis. **2. Specific admission requirements** Bachelor's degree in computer science or equivalent degree. Courses with information technology or computer science equivalent to at least 90 hp credits. **3. Language requirements** A good knowledge of written and spoken English. Applicants must provide proof of their proficiency in English. KTH accepts a TOEFL test score of a minimum of 550 (213 in the computer-based test, 79 in the internet-based test) or an IELTS score of at least 6.0, no band lower than 5.0 (both general and academic

accepted). English proficiency tests are waived for applicants with English as language of instruction (minimum 3 years of full-time higher education studies). For EU citizens from KTH's partner universities, a certificate from the University language department or the relevant Head of department stating the student's good level of English is sufficient. Knowledge of English may be taken into account in the selection process. **4. Selection process** Students who apply for more than one Master's program at KTH must place the program in order of preference. Students will only be accepted to one program, according to the priority stated on the application form. Multiple applications will not be accepted. When the application reaches KTH, it is screened by the KTH Admissions Office, which will check the general requirements and the document legacy (falsified documents will be reported to the police). The Admissions office will send an acknowledgment to the applicant when the application documents have reached KTH. The application is then screened by the Program Committee, which will check the specific requirements and nominate applicants for admission. The Program Committee will evaluate candidates according to the following criteria (the criteria are given in the order of their importance – the more important criteria first):

1. evaluation of university (for foreign students only)
2. grades from previous study
3. motivation to study
4. merit rating
5. references

The specific requirements may be assessed as not fulfilled if

1. the average grade is in the lower third on the grading scale used (above pass level)
2. the degree awarding institution is not considered to meet acceptable quality standards by the authorities of the country in which the institution is located
3. the degree does not qualify for admission to equivalent Master level in the country where the degree is awarded

## Utbildningens genomförande

### Utbildningens upplägg

The program is a two year program; each year consists of four periods. Period 1: September/October Period 2: November/December Period 3: January/ February Period 4: March/ April/May Each course in the program is offered in a specific period During the first year mostly compulsory courses are taught. Elective courses are mostly taught in second year followed by Master degree project

### Kurser

Utbildningen sker i kursform. Kurslistor finns i [bilaga 1](#).

The program is course-based. 90 hp must be obtained from the set of compulsory courses (this includes degree project) and 30 hp can be obtained from the set of elective courses. List of courses in the program is shown in the Appendix 1

### Betygssystem

För kurser på KTH används en sjugradig målrelaterad betygsskala A-F som slutbetyg för kurser på grundnivå och avancerad nivå. A-E är godkända betyg med A som högsta betyg. Betygen godkänd (P) och underkänd (F) används som slutbetyg då särskilda skäl föreligger.

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.

## **Villkor för deltagande i utbildningen**

Each student who has been admitted to the master's program is admitted to the compulsory courses belonging to a program term after program term registration. Conditionally elective courses are chosen by the student prior to the term when they are taught. Students who are term registered are considered as expected students in all compulsory courses and in chosen elective courses. Students announce their participation in an individual course to the teacher responsible for the course in the beginning of the course. Students announce possible interruptions in their studies to the teacher responsible for the course. A student is allowed to start the second year of studies, including the master's thesis project, after promotion to the second year. The condition for promotion to the second year is completion of 30 hp in the first year.

## **Tillgodoräknanden**

Hänvisning till policyn som finns i KTH-handboken.

## **Utlandsstudier**

The courses should be followed at KTH, and the master's thesis may be performed at universities or companies abroad.

## **Examensarbete**

In the master thesis project the student shall demonstrate that he/ she is able to solve a given design or research problem largely on his/ her own with limited guidance from the supervising teacher. In particular the student shall plan how to address the task, assess the difficulties of the individual steps, be able to make a realistic schedule for the project, identify obstacles and problems and suggest changes of the original task or plan if deemed necessary. The student shall demonstrate that he/ she is able to find relevant, related work in the literature and to put his/ her own work in perspective of other work. If the project includes the design of hardware or software, the student has to be able to demonstrate the correctness of the design. Relevant experiments have to be designed and conducted that allow the drawing of unambiguous and useful conclusions. Finally, the project has to be described in a well structured way in a report and a presentation. The prerequisite to start the degree project is the successful completion of 60 hp of courses that are compulsory or elective in the chosen track.

## **Examen**

The Master's degree is obtained after completion of the courses and the thesis with a total of at least 120hp. The degree awarded is "Teknologie masterexamen", translated into English as "Degree of Master of Science (two years)". The degree is awarded after application from the student.

[Bilaga 1 - Kurslista](#)

[Bilaga 2 - Inriktningsbeskrivningar](#)



# Bilaga 1: Kurslista

Masterprogram, programvaruteknik för distribuerade system (TSEDM), Utbildningsplan för kull HT2008

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## Gemensamma kurser

### Årskurs 1

Obligatoriska kurser (52,5 Högskolepoäng)

Kurskod	Kursnamn	Omfattning	Utb. nivå
<a href="#">ID2201</a>	<a href="#">Distribuerade system, grundkurs</a>	7,5 hp	Avancerad nivå
<a href="#">ID2203</a>	<a href="#">Distribuerade system, fortsättningskurs</a>	7,5 hp	Avancerad nivå
<a href="#">ID2207</a>	<a href="#">Moderna metoder inom Software Engineering</a>	7,5 hp	Avancerad nivå
<a href="#">ID2208</a>	<a href="#">Programmering av Web-tjänster</a>	7,5 hp	Avancerad nivå
<a href="#">ID2209</a>	<a href="#">Distribuerad AI och Intelligent Agenter</a>	7,5 hp	Avancerad nivå
<a href="#">ID2210</a>	<a href="#">Distribuerad programmering, peer-to-peer och GRIDS</a>	7,5 hp	Avancerad nivå
<a href="#">ID2212</a>	<a href="#">Nätverksprogrammering med Java</a>	7,5 hp	Avancerad nivå

Villkorligt valfria kurser

Kurskod	Kursnamn	Omfattning	Utb. nivå
<a href="#">ID2204</a>	<a href="#">Villkorsprogrammering</a>	7,5 hp	Avancerad nivå
<a href="#">II2209</a>	<a href="#">ICT System Design</a>	30,0 hp	Avancerad nivå
<a href="#">IV2031</a>	<a href="#">Strategisk IT management</a>	7,5 hp	Avancerad nivå

### Årskurs 2

Obligatoriska kurser (7,5 Högskolepoäng)

Kurskod	Kursnamn	Omfattning	Utb. nivå
<a href="#">AK2036</a>	<a href="#">Vetenskapsteori och vetenskaplig metodik med tillämpningar (naturvetenskap)</a>	7,5 hp	Avancerad nivå

Villkorligt valfria kurser

<b>Kurskod</b>	<b>Kursnamn</b>	<b>Omfattning</b>	<b>Utb. nivå</b>
<a href="#">ID2213</a>	<a href="#">Logikprogrammering</a>	7,5 hp	Avancerad nivå
<a href="#">IK2206</a>	<a href="#">Säkerhet och datasekretess på internet</a>	7,5 hp	Avancerad nivå
<a href="#">IV1200</a>	<a href="#">Systemmodellering och simulering</a>	7,5 hp	Grundnivå
<a href="#">IV2029</a>	<a href="#">Global IT-management</a>	7,5 hp	Avancerad nivå



## Bilaga 2: Inriktningar

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Programmet har inga inriktningar.