



# Utbildningsplan

En tillgänglighetsanpassad version av utbildningsplanen finns i Kurs- och programkatalogen.

## Masterprogram, vattensystemteknik 120 hp

Master's Programme, Water System Technology

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

### Utbildningens mål

The programme is unique in providing students with a cutting edge in water technology combined with solid understanding of natural system dynamics. The key focus of the program is technology in a (classical) narrow sense and technology in a broad (meta-technology) sense, where water is approached on local, regional to global scales, from natural to anthropogenic system perspectives. A wide spectrum of water-related problems in the society will be addressed in the courses of the program, from classical water supply and sanitation, to hydraulic structures and flooding, to groundwater and coastal zone protection. In spite of the wide spectrum of problems, emphasis will be given on common aspects of engineering solutions. A socio-economic perspective on water use and protection from a stakeholder perspective and water conflict resolution will also be given within several courses.

In the programme we use modern pedagogical methods combining e-learning with classical teaching. As a student, you will have the opportunity to use simple as well as advanced models according to interest and skills, you will be challenged by field and as well as laboratory work and be exposed to case studies from technology implementation to evaluation of catchment-based water management strategies. Model use will always be accompanied with stimulation of critical thinking, with emphasis on understanding limitations of models and input uncertainties. Assignments with

comprehensive multi-task problems that stretch through several courses will provide opportunities to address complexities of real world problems. Last but not least, projects-assignments will be whenever possible linked to ongoing national and international projects of leading Stockholm-based companies.

The aim of the programme which is outlined below is to explore all major aspects of use and protection of available water resources. The programme deals with all the complexities, challenges and opportunities in water resources management through water systems approaches and will allow participants to focus particular attention on preferred problem areas.

The programme targets participants who have already attained an acceptable level of general competence. Candidates are thus expected to have the personal qualities and the educational background that will allow them

## Kunskap och förståelse

After completing the programme requirements students shall:

- have developed their skills in applied mathematics and broaden their understanding of the theory and technology relating to Water Systems Technology
- have a deeper understanding of available tools and methods, that are commonly used in the field of Water Systems Technology
- have a broad scientific and system based knowledge and understanding that can be applied to analyse and manage water systems at micro as well as macro scales

## Färdigheter och förmågor

After completing the programme requirements students shall:

- have developed their research skills and their professionalism in presenting oral and written reports
- be able to work constructively and efficiently in matters that depend on team work and good personal relations
- be able to routinely monitor practical and theoretical developments in the field of Water Systems Technology
- approaches in the different processes involved in water management
- be able to carry out advanced studies on current problems, opportunities and future needs in the field of water management at the local, national and international level

## Värderingsförmåga och förhållningssätt

After completing the programme requirements students shall be able to:

- develop their competence to identify and define water related problems and present alternative approaches in solving them
- approach professional challenges objectively and creatively and play a leading role in the search for solutions to complex water related problems

## Utbildningens omfattning och innehåll

The duration of the programme is two years, which correspond to 120 credits, higher education level. It consists of three semesters of course work (90 credits) and one semester (30 credits) of Degree project. The education is at the advanced level. The literature and all other course material are in English, which also is the teaching language.

## Behörighet och urval

### *General admission requirements*

The general admission requirements are the same for all programmes General admission requirements (<http://www.kth.se/studies/master/application?!=en>)

### *Specific admission requirements*

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

The specific admission requirement for the programme is a Bachelor degree in the field of civil engineering or natural science relevant to the scope of the programme.

**Selection process** The selection process for Water System Technology is based on a total evaluation of the following selection criteria: university, GPA, course work related to the programme, thesis proposal, motivation letter, working experiences and references.

# Utbildningens genomförande

## Utbildningens upplägg

The purpose of the Master's Programme is to fill the growing demand for a professional profile that will shape, manage and improve water resources management through applying advanced methods, techniques and modeling to identify, describe, and solve water resources problems.

The academic year covers 40 weeks, starting in September divided into two terms, which each consists of two study periods. Each study period concludes with a regular examination period of at least one week.

## Kurser

Utbildningen sker i kursform. Kurslistor finns i bilaga 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.

## Villkor för deltagande i utbildningen

To be enrolled in the programme, you must be duly accepted into the programme with a valid admission letter issued by KTH Central Admissions Office. You must also pay your Student Union dues at the start of each semester in order to enrol in the programme.

In addition to signing in as course participant at the beginning of a course and attending lectures, participation in class exercises and projects is a compulsory part of enrolling in any course.

### **Conditions for being promoted to the next level**

***For studies in study year 2:*** At least 45 higher education credits from study year 1 must be completed by the exam period in August. Students which have not fulfilled this requirement must set up an individual study plan. The main goal with the study plan is that the student should complete the remaining courses during the next study year. In the study plan, the remaining elements and also suitable courses from the next study year are included. Special regard should be taken to the courses prerequisites.

# Tillgodoräknanden

The Royal Institute of Technology has a policy for recognising previous academic studies. The decision on recognising documented results from similar education at other universities is taken by the vice dean of education at the School of Architecture and the Build Environment upon application by the student.

# Utlandsstudier

It is presently not possible for Master's students at the School of Architecture and the Build Environment.

# Examensarbete

The programme is concluded with a Degree project which gives the student the opportunity to investigate a problem in depth, under the supervision of experienced practitioners and researchers.

The Degree Project (30 credits) is compulsory in order to apply for a Master Degree at KTH. The prerequisite for starting the degree project is completed courses corresponding to 60 credits. The Degree project is graded on a scale A-F, where A-E are passing grades with A as the highest grade.

The topic is identified in consultation with the programme management and the students are also recommended to try to find relevant thesis projects linked to important topics in their home countries. The degree project may be carried out either in an academic environment or in a practical /industrial setting and may be carried out individually or in a group of two.

# Examen

Students who have fulfilled all course requirements in the Master's programme (120 ECTS) will be awarded a "Teknologie masterexamen", translated into English as "Degree of Master of Science (two years)". An application for the degree certificate should be submitted to the Master administrator, together with a copy of a student union card, copy of receipts or a certificate from the student union office, and an attested photocopy of the previous university degree (B.Sc. or a B. Eng, or equivalent). The degree certificate will be mailed to the student's permanent address by registered mail.

Please note that this degree do not correspond to the Swedish degree "Civilingenjör".

Bilaga 1 - Kurslista

Bilaga 2 - Inriktningsbeskrivningar



# Bilaga 1: Kurslista

Masterprogram, vattensystemteknik (TWSTM)

Gemensamma kurser

Årskurs 1

Obligatoriska kurser (45,0 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
<a href="#">AE2103</a>	Environmental Aquatic Chemistry	7,5 hp	Avancerad nivå
<a href="#">AE2202</a>	Dynamics of Environmental Systems	7,5 hp	Avancerad nivå
<a href="#">AE2504</a>	Water Governance	7,5 hp	Avancerad nivå
<a href="#">AE2505</a>	Vattensystem och geografisk information	7,5 hp	Avancerad nivå
<a href="#">AE2608</a>	Engineering Hydrology and Climate	7,5 hp	Avancerad nivå
<a href="#">AE2706</a>	Integrerad vattenförvaltning	7,5 hp	Avancerad nivå

Villkorligt valfria kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
<a href="#">AE2104</a>	Miljömätning och monitoring	7,5 hp	Avancerad nivå
<a href="#">AE2301</a>	Water and Waste Handling	7,5 hp	Avancerad nivå
<a href="#">AE2602</a>	Applied Hydrology	7,5 hp	Avancerad nivå
<a href="#">AE2609</a>	Hydraulic Engineering Systems	7,5 hp	Avancerad nivå

## Årskurs 2

### Obligatoriska kurser (22,5 Högskolepoäng)

Kurskod	Namn	Omfattning	Utbildningsnivå
<a href="#">AE2106</a>	Projekt i vattensystemteknik	15,0 hp	Avancerad nivå
<a href="#">AE2406</a>	Forskningsmetod	3,0 hp	Avancerad nivå
<a href="#">AK2030</a>	Vetenskapsteori och vetenskaplig metodik (naturvetenskap)	4,5 hp	Avancerad nivå

### Villkorligt valfria kurser

Kurskod	Namn	Omfattning	Utbildningsnivå
<a href="#">AE2102</a>	Quantitative Hydrogeology	7,5 hp	Avancerad nivå
<a href="#">AE211X</a>	Examensarbete inom grundvattenkemi, avancerad nivå	30,0 hp	Avancerad nivå
<a href="#">AE2302</a>	Vattenreningsprocesser och teknik	7,5 hp	Avancerad nivå



# Bilaga 2: Inriktningar

## Masterprogram, vattensystemteknik (TWSTM)

Programmet har inga inriktningar.