



Water System Technology

Master of Science Program

The Department of Land and Water Resources Engineering at the School of Architecture and the Built Environment, KTH (Royal Institute of Technology, Stockholm) is proud to announce a new 2-year MSc program : ***Water Systems Technology***.

Clean water that is readily and timely available is finite and increasingly scarce. Global human water use has increased twice as fast as global population over the last century, and excessive pollutant loadings yield increasing water quality problems of regional and global concerns for both human water use and receiving aquatic ecosystems.

The WST program 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 WST 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 WST program 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 your



The program will start in the end of August 2008. The deadline for the general application is 1 February 2008.

Application period extended up to April 15, 2008

More information about KTH, admission and the programme:

www.kth.se/studies/master?l=en

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. Stockholm is the "Venice of the North" with a large lake system in the West and its thousand island archipelago in the East combining with equal significance all natural water systems: streams, lakes, groundwater and coastal zones. With its unique setting, Stockholm is in the forefront of water technology.

If you are keen on further developing your skills in water engineering from an environmental system perspective, on broadening your engineering horizons and opening your future employment options in the water and environmental management sector, as well as study in a unique water-rich urban-natural and cultural setting, then we encourage you to enrol for the WST program 2008. ***Welcome to Stockholm!***

The program is open for students who have a Bachelor's degree, or an equivalent academic qualification within engineering, or natural science. As the program is taught in English, students must have proficiency in written and oral English.

Curriculum of the program

	<p>Theory of Science and Research Methodology</p>	<p><i>Theory of science and research methodology</i> In this course general issues of research methodology and theory of science are presented and discussed. The course prepares students for independent scientific research.</p>	<p><i>Water treatment processes and technology</i> The course looks into process technologies used in water purification and wastewater treatment, including design, operation and management of treatment systems. Trends, new solutions and improvements will be discussed.</p>
<p>Process / Technology</p>	<p>Process Dynamics and Characterization of Natural and Anthropogenic Systems</p> <p><i>Dynamics of Environmental Systems</i></p> <p><i>Environmental Aquatic Chemistry</i></p>	<p><i>Dynamics of Environmental Systems</i> The course extends student's basic knowledge in geosciences, physics and chemistry, to a system perspective on environmental change, from local, regional to global scales. Emphasis is on material flows and transformation under conditions of variability and uncertainty.</p>	<p><i>Environmental measuring and monitoring</i> The course gives knowledge in field data collection and evaluation techniques. The overall aim is to provide students with knowledge of site investigation and evaluation techniques, and the ability to formulate and analyse a site investigation program for hydrological and environmental monitoring.</p>
	<p>Hydro-Engineering and Technology</p> <p><i>Engineering Hydrology and Climate</i></p> <p><i>Hydraulic Engineering Systems</i></p> <p><i>Applied Hydrology</i></p> <p><i>Quantitative Hydrogeology</i></p> <p><i>Water & Waste Handling</i></p> <p><i>Water Treatment Processes and Technology</i></p>	<p><i>Environmental aquatic chemistry</i> The course provides a deeper understanding of processes governing the chemistry of soil water, ground water and surface water, focussing particularly on contaminants. The course also introduces computer models for simulating chemical processes and for risk assessments.</p>	<p><i>Water systems and geographic information</i> The course provides students with knowledge on the application of geographical information systems (GIS) and other decision support systems in the planning and management of water systems.</p>
	<p>Data Management</p> <p><i>Environmental Measuring and Monitoring</i></p> <p><i>Water Systems and Geographic Information</i></p>	<p><i>Hydraulic engineering systems</i> The course introduces basic knowledge used when designing hydraulic structures in rivers, modelling unsteady, open-channel flow and formulating river regulation plans. Specific topics that will be covered are the hydraulic design of spillways, channels, tunnels, stability computations and risk assessment.</p>	<p><i>Water governance</i> The course provides students with knowledge on the evaluation and pricing of water resources, the social and cultural aspects of water management, and the conflicts that may arise. Basic concepts and principles for financing and management of water resources will be analysed.</p>
<p>Data</p>	<p>Water Management</p> <p><i>Integrated Water Resources Management</i></p> <p><i>Water Governance</i></p> <p><i>Modelling of Water Systems</i></p>	<p><i>Applied Hydrology</i> The overall aim of the course is to demonstrate the link between basic theory of hydraulics and hydrology more applied problems in hydrology and water resources development.</p>	<p><i>Integrated water resources management</i> The course focuses on the theoretical and methodological elements of planning and management of water resources. The participants will work with integrated water resources management projects and acquire insight in the EU Water Framework Directive</p>
<p>Integrated Systems</p>	<p>MSc Thesis Project</p>	<p><i>Quantitative Hydrogeology</i> The course is focused on quantitative and qualitative assessment of subsurface flow and solute transport in geological media. The course is designed as hands-on and application oriented, and is based on high-level conceptual and mathematical-physical modeling, using state-of-the-art computer tools, such as the GMS groundwater and the COMSOL multi-physics modeling systems.</p>	<p><i>Modelling of water systems</i> The course provides knowledge on the use of engineering tools to facilitate an optimal design of water resources within a specific area. The course is organised as a project, which will require skills in coping with specific tasks and general competence in understanding and communicating the results.</p>
		<p><i>Water & Waste Handling</i> The overall aim of the course is to give knowledge of requirements and goals, technical solutions, mechanisms, and management of water, wastewater and solid waste handling systems</p>	<p><i>Master's thesis project</i> The program concludes with a Master's thesis in which the student conducts a research project in a field of study that is covered by the program. The thesis can be carried out individually or in a group.</p>