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Master´s Programme at Stockholm University: Hydrology, Hydrogeology and Water Resources

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Many environmental risks and societal concerns are directly related to the way we manage our land and water environments. The two-year master's programme "Hydrology, Hydrogeology and Water Resources" at Stockholm University, Sweden, is based on a system perspective and provides extended knowledge about water and soil-rock-sediment systems and how these interact with each other and with land use, socio-economic and water resource policy and management systems. This water system perspective includes the spreading of dissolved substances and pollutants in various water systems and associated risks for society. Questions related to water resources are also covered: the management of water resources and conflicts as well as collaborations caused by shared water resources on local, regional and global scales. A common learning objective for the courses in the programme is to be able to identify, extract and combine relevant information from databases and scientific publications, and use the resulting dataset in hydrological, hydrogeological and water resources analyses, on local, regional or global levels. Traditional classroom teaching is to large extent complemented by case study analyses, performed as project assignments. The importance of water resources for both the society and the environment is emphasized through applications to practical water resources management challenges in society.

The courses in this program include the following topics:
· Hydrological and hydrogeological processes, main components of the water cycle (e.g., precipitation, evapotranspiration, discharge) and the spreading of dissolved substances and pollutants in various water systems.
· Water resources and water quality, pollution spreading through surface, ground and coastal water systems, as well as vulnerability and resilience of water resources.
· Regional analyses related to global water resource vulnerability and resilience.
· Models and information systems as important tools for dealing with hydrologic and hydrogeologic problems, and as a basis for sustainable governance and management of water resources.
· Mathematical equations that are used in models for describing water flow and contaminant transport and their physico-chemical basis.
· Handling of hydrologic data including methods for time series analyses and management of spatial data using geographic information systems (GIS) and geostatistics.
· Integrated natural and social science studies of natural and anthropogenic flows of water, nutrients, pollutants and other biogeochemical substances that are important for environmental risk assessment, ecosystem development, and management of environmental resources.