



# AE2802 Hydrogeology 7.5 credits

## Hydrogeologi

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

If the course is discontinued, students may request to be examined during the following two academic years

## Establishment

Course syllabus for AE2802 valid from Autumn 2014

## Grading scale

A, B, C, D, E, FX, F

## Education cycle

Second cycle

## Main field of study

Built Environment, Environmental Engineering

## Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

## Intended learning outcomes

After passing the course you should be able to:

- Develop a conceptual hydrogeological model for a catchment
- Create a numerical hydrogeological model for a catchment
- Perform flow and contaminant transport modeling of subsurface water for scenario analyses
- Identify and quantify crucial parameters for contaminant transport in the subsurface
- Interpret field measurements and experimental data
- Identify water quality problems and suggest treatment techniques for private water supplies/wells.

## Course contents

The course main focus is on drinking water resources and the study site used in most of the exercises is a real-case site that is evaluated as potential water supply for a municipality. The overall goal is that the student after passing the course should be able to manage a water resource problem, more specific to evaluate an eskers potential as water supply.

The lectures cover subjects as hydrogeological environments, natural and artificial groundwater recharge, groundwater flow theory, transport processes, boundary conditions and contamination hydrogeology. Moreover, lectures about geochemistry, water quality issues and treatment techniques for small-scale water supplies are included.

The exercises include conceptual modelling, pumping test analyses, numerical modelling for transport and scenario analysis.

## Specific prerequisites

Bachelor's degree in the field of Civil Engineering, Environmental Engineering, or another subject with clear relevance to the course, of at least 180 ECTS credits, including basic knowledge in Hydrology, corresponding to at least 5 ECTS credits, and basic knowledge in Fluid Mechanics, corresponding to at least 5 ECTS credits. In addition, second cycle courses for at least 30 ECTS credits and proficiency in English B or equivalent are required.

## Course literature

Hiscock, K.,2005. Hydrogeology - Principles and Practice. Blackwell Publishing. Available as E-book at KTH library (<http://www.lib.kth.se/main/>). Selected parts.

Complementary literature such as reports and handouts will be announced on the webpage (Bilda) short before the start of the course.

## Examination

- TEN1 - Examination, 3.5 credits, grading scale: A, B, C, D, E, FX, F

- ÖVNA - Homework Assignment, 1.0 credits, grading scale: A, B, C, D, E, FX, F
- ÖVNB - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

## Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.