



AE2102 Quantitative Hydrogeology 7,5 hp

Quantitative Hydrogeology

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

Fastställande

Kursplan för AE2102 gäller från och med HT09

Betygsskala

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

Utbildningsnivå

Avancerad nivå

Huvudområden

Samhällsbyggnad

Särskild behörighet

For program students:

EESI (EE-specialisation) AE2101.Environmental dynamics: chemical processes and AE2201. Environmental dynamics: physical processes or equivalent.

WST: AE2202 Dynamics of Environmental Systems and AE2103 Environmental Aquatic Chemistry or equivalent.

Others

Four years of university studies including at least 60 credits in mathematics, physics, chemistry and hydrology

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

After passing the course should the student be able to:

- Identify and quantify crucial parameters for contaminant transport in the subsurface
- Establish a conceptual model for a catchment
- Carry out flow and transport modelling of subsurface water for scenario analyses
- Prepare and plan a sampling program for field measurements and sampling
- Carry out and interpret field measurements and experimental data
- Propose solutions for remediation of a contaminated aquifers
- Prepare and present a written report based on field, laboratory and modeling data

Kursinnehåll

Lectures in hydrogeology; principles of subsurface flow, groundwater recharge and discharge, theories of solute transport in porous and fractured media, transport processes such as advection, diffusion, dispersion and sorption, hydraulic properties of aquifers and their significance for water and contaminant transport

Lectures in geochemistry; mineral water equilibria in various aquifers, water quality aspects and contamination, major elements in natural waters.

Lecture in contamination and remediation of aquifers, visit to a remediation project

Field exercise at a well-documented site for sampling and measurements, water and soil sampling, conduct test pumping. The field exercise include a written report with evaluation and interpretation of field, laboratory and modelling data presented at a seminar

Computer modelling with GMS on risk assessment of leaching from a landfill site and in the project work

Kurslitteratur

Hiscock H.M. 2005. Hydrogeology; principles and practice. Available as E-book at KTH library

Examination

- LAB1 - Laboratory Work, 1,5 hp, betygsskala: A, B, C, D, E, FX, F
- TEN1 - Examination, 3,0 hp, betygsskala: A, B, C, D, E, FX, F
- ÖVN1 - Exercises and Field Exercises, 3,0 hp, betygsskala: A, B, C, D, E, FX, F

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

Övriga krav för slutbetyg

ÖVN1. Field exercise and project work, 3.0 c. Grade A-F

TEN1. Written examination, 3 c. Grade A-F

LAB1. Computer lab, 1.5 c. Grade A-F

Etiskt förhållningssätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.