AE2801 Environmental Chemistry and Risk Assessment 7.5 credits

Miljökemi och riskbedömning

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

Establishment

Course syllabus for AE2801 valid from Autumn 2012

Grading scale

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

Education cycle

Second cycle

Main field of study

Environmental Engineering, The Built Environment

Specific prerequisites

Proficiency in English (English B or equivalent). Bachelor's degree in the field of civil engineering, environmental engineering, or another subject with clear relevance to the course, of at least 180 higher education credits, which includes the following: Basic knowledge in mathematics for at least 20 higher education credits, Basic knowledge in numerical analysis, programming, or equivalent, for at least 6 higher education credits, General Chemistry and/or Environmental Soil Chemistry, 7.5 higher education credits.

Language of instruction

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

Intended learning outcomes

After completion of the course, the students should be able to:

- estimate the geochemical fate of pollutants from basic information and by applying geochemical models

- interpret analytical measurements of metals and organic pollutants in different media

- interpret ecotoxicological information for contaminants

- understand the principles of environmental risk assessment

- apply today's risk assessment systems for contaminated soils and waters, although with a critical mind

- understand the principles of some common and successful soil remediation methods

- be familiar with some of the most important research issues in the field of environmental geochemistry.

Course contents

Geochemistry of contaminants in soils, sediments, groundwaters and surface waters. Adsorption and organic complexation models for metals. Field work with soil sampling including study visit to contaminated site. Methods for chemical analysis of contaminants in soils and waters. Basic ecotoxicology. Principles of environmental risk assessment, and application of the Swedish system for risk assessment of contaminated soils. Remediation technologies. Current research issues. Part of the course is project-based, in which course participants characterize soil and perform risk assessment for a contaminated site.

Course literature

Gustafsson, J.P., Jacks, G., Simonsson, M., Nilsson, I. 2008. Soil and water chemistry, selected parts.

Reports from the Swedish Environmental Protection Agency.

Complementary literature to be announced on the web page before the start of the course.

Examination

- PRO1 - Project Work, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 4.5 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.

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

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.