



Course syllabus

Faculty of Health and Life Sciences

Department of Biology and Environmental Science

4MX318 Riskhantering av förorenade områden, 7,5 högskolepoäng

Risk Management of contaminated sites, 7.5 credits

Main field of study

Environmental Science

Subject Group

Environmental Science

Level of classification

Second Level

Progression

A1N

Date of Ratification

Approved by Faculty of Health and Life Sciences 2021-06-28

The course syllabus is valid from spring semester 2022

Prerequisites

Basic eligibility for second-level studies as well as special eligibility:

- Bachelor degree in science or engineering or the equivalent
 - English 6
 - Chemistry 15 hp
- or the equivalent

Objectives

After the course the students should be able to:

- demonstrate in-depth knowledge on background values and what they mean in contexts where anthropogenic pollution is to be assessed,
- demonstrate in-depth knowledge on contaminant mobilization and transport in the environment,
- describe the outline of the contaminant transport module of the Swedish EPA's generic risk assessment model and its limitations, and account for a number of more advanced models,
- critically analyze the advantages and disadvantages of different methods for the treatment of contaminated soil under different scenarios,
- independently carry out risk evaluations at contaminated sites,

Content

- Sources for contamination in the Swedish environment.
- Basic soil science.
- Natural variability of metals in the environment and its importance when assessing anthropogenic impact.
- Generic and site-specific guideline values for contaminants in soil and water.
- Principles of contaminant mobilization and transport.
- Introduction to contaminant transport modelling (according to, for example, the generic model for assessing risks at contaminated sites used by the Swedish EPA).
- Assessment of the geochemical reactivity and bioavailability of contaminants.
- Techniques for soil contaminant remediation.
- Methods for risk evaluation (for example cost-benefit analysis).

Type of Instruction

The teaching consists of lectures, reading instructions for course literature and one field trip/excursion to a contaminated site and follow-up laboratory work. Participation in field exercise and laboratory work is mandatory.

Examination

The course is assessed with the grades Fail (U), Pass (G) or Pass with Distinction (VG).

The course examination consists of three parts. The first part is a web based test and gives 1.5 credits (U-G). The second part is related to an individual written project work, which gives 5 credits (U-VG). The third part of the examination includes a written opposition/evaluation of a fellow student's project report, which gives 1 credit (U-G). The final grade on the course is determined by the grade on the written report.

Repeat examination is offered in accordance with Local regulations for courses and examination at the first and second-cycle level at Linnaeus University.

If the university has decided that a student is entitled to special pedagogical support due to a disability, the examiner has the right to give a customised exam or to have the student conduct the exam in an alternative way.

Course Evaluation

During the implementation of the course or in close conjunction with the course, a course evaluation is to be carried out. Results and analysis of the course evaluation are to be promptly presented as feedback to the students who have completed the course. Students who participate during the next course instance receive feedback at the start of the course. The course evaluation is to be carried out anonymously.

Credit Overlap

The course cannot be included in a degree along with the following courses of which the content fully, or partly, corresponds to the content of this course: 4MX011 Risk Management of contaminated sites, 7,5 credits

Other

The course material is presented on a online learning platform. Access to computers can be found at the university library.

Required Reading and Additional Study Material

Obligatory literature

Mirsal, I. (all editions). *Soil pollution - origin, monitoring & remediation*. Springer-verlag Berlin And Hei. ISBN: 978-3-642-08968-8 (Is also available as an e-book.) 312 p.

In addition, the literature includes excerpts from other books, scientific articles and reports (approx. 300 p.). Web links to that literature are provided on the course page.