Linnæus University

Jnr: 2018/3106-3.1.2.2

Course syllabus

Faculty of Health and Life Sciences
Department of Biology and Environmental Science

4MX505 Miljöriskanalys, 15 högskolepoäng
Environmental Risk Analysis, 15 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 2019-01-21
The course syllabus is valid from autumn semester 2019

Prerequisites
Basic eligibility for second level studies as well as special eligibility:
- Bachelor degree in science or engineering or the equivalent
- Swedish B
- English B or the equivalent
- Chemistry 15 hp

Objectives
After completion of the course, the student should be able to:
- search for, and critically evaluate, information about the environmental and health risks of chemical substances.
- independently construct models for calculation of contaminant exposure under different scenarios.
- characterize and critically analyze the importance of uncertainty and variability in environmental and health risk assessments.

Content
- Methods for hazard identification.
- Risk characterization, including basic toxicology, epidemilogy and dose-response relationships.
- Exposure assessments and exposure models, exemplified for example with the Swedish EPAs generic risk model for contaminated sites.
- Risk characterization, including probabilistic methods such as Monte Carlo methods.
- Variability and Uncertainty in risk assessment models.
- Sensitivity analysis.
- Statistic parameters used in risk analysis.
- Data treatment and probability distributions.

Type of Instruction
The teaching consists of prerecorded lectures, reading instructions for course literature, study visits, individual assignments, and group discussions.

Examination
The course is assessed with the grades A, B, C, D, E, Fx or F.
The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F means that the student´s performance is assessed as fail.

The course is divided into three blocks: 1) Environmental and health risk characterization; 2) Exposure assessment; 3) Uncertainty and variability in Risk Assessments. These are examined individually and each gives 5 credits. The blocks are examined through a number of assignments, which are solved individually and submitted on the course's web page for evaluation. Block 2 is also examined at a gathering in Kalmar, where a poster and a calculation assignment are presented and discussed the form of a seminar. Each block is graded according to the A-F scale.

To pass the course as a whole, all three blocks must be passed (whith grade E as a minimum). When this criterion is met, the grade for each block is translated into a numerical value, and the final grade for the course as a whole is determined by the average value of the course´s three blocks. Translation of grade levels to numerical values is done according to: A=5, B=4, C=3, D=2 and E=1. Rounding to the nearest integer gives the final grade.

Course Evaluation
During the implementation of the course or in close connection to the course a course evaluation is to be carried out. Result and analysis of the course evaluation is to be presented as feedback both to the students who have completed the course and to the students who are to participate on the course the next time it is offered. The course evaluation is to be carried out anonymously.

Other
The course material is presented on a web study site that the students reach through the Internet. Access to the Internet and computers can be found in the school's computer room and at the university library. For distance studies, a computer with internet connection is required.

The course is generally taught in English but the course may be taught in Swedish if only students fluent in Swedish participate in the course. Grade criteria for the A-F-Scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

Required Reading and Additional Study Material
Obligatory literature
Burgman, M. 2005. *Risks and decisions for conservation and environmental management*. Cambridge University Press (488 p.). ISBN 0-521-54301-0.

Reference literature
Paustenbach, D. J. (red). 2002. *Human and ecological risk assessment. Theory and practice*. Wiley (1556 p.). ISBN 0-471-14747-8.