

Syllabus

for course at advanced level

**Pollution Dynamics
Föroreningsdynamik**

**7.5 Higher Education
Credits
7.5 ECTS credits**

Course code:	MI7028
Valid from:	Autumn 2023
Date of approval:	2022-10-19
Department	Department of Environmental Science
Main field:	Environmental Science
Specialisation:	A1N - Second cycle, has only first-cycle course/s as entry requirements

Decision

Prerequisites and special admittance requirements

The equivalent to at least 120 ECTS in the natural sciences including at least 30 ECTS in Chemistry. A good command of the English language.

Course structure

Examination code	Name	Higher Education Credits
HELA	Pollution Dynamics	7.5

Course content

a. The course explores different modeling concepts to investigate how physicochemical properties and environmental factors affect contaminant transport and fate in the environment, bioaccumulation of contaminants in food webs and human exposure to contaminants.

The knowledge is useful in research within environmental chemistry and (eco)toxicology, risk analysis, environmental consultancy, chemical regulation and chemical stewardship in industry.

Topics covered include:

- * Physicochemical properties of organic contaminants
- * Partitioning of organic contaminants between air, water, soil, sediment and biota
- * Transport processes and reactions of organic contaminants in the environment
- * Basic modeling concepts and application of multimedia environmental models to contaminants
- * Modeling bioaccumulation of contaminants
- * Modeling pathways of human exposure to contaminants
- * Application of models in regulatory work

Learning outcomes

Upon completion of the course, students are expected to be able to:

- * account for the distribution of OMFs between air, water, soil, sediment and biota
- * account for transport, dispersion and reactions of OMF in the environment
- * develop and use mechanistic models to predict the dispersion and distribution of environmental pollutants

and how organisms are exposed

- * identify and qualitatively understand the differences in the behaviour of different chemical classes in the environment and to analyse the different models needed because of these differences
- * critically assess the utility of various models in environmental chemistry

Education

Instruction consists of lectures, seminars, exercises. The course is offered in English.

Forms of examination

a. The course is examined as follows: Assessment takes place through assignments and a written exam. The examiner can decide on adapted or alternative examination formats for students with disabilities. The examination will be conducted in English.

b. A passing final grade requires participation in seminars and exercises. If special reasons exist, following consultation with the teacher involved, the examiner may grant the student exemption from the obligation to participate in certain compulsory instruction.

c. Grading: The course's final grade is set according to a seven-point criterion-referenced scale:

A = Excellent

B = Very good

C = Good

D = Satisfactory

E = Adequate

Fx = Fail, some additional work required

F = Fail, much additional work required

d. The course's grading criteria are handed out at the start of the course.

d. In order to pass the course, students must receive a passing grade, and participate in all mandatory instruction.

e. Students who receive a failing grade on a regular examination are allowed to retake the examination as long as the course is still provided. The number of examination opportunities is not limited. Other mandatory course elements are equated with examinations. A student who has received a passing grade on an examination may not retake the examination to attain a higher grade. A student who has failed the same examination twice is entitled to have another examiner appointed, unless there are special reasons to the contrary. Such requests should be made to the department board. The course includes at least three examination opportunities per academic year the course is offered. For the academic years that the course is not offered, at least one examination opportunity is offered.

f. Students awarded the grade Fx are given the opportunity to improve their grade to E. The examiner decides on the supplementary assignments to be performed and the pass mark criteria. The supplementary assignments will take place before the next examination opportunity.

Interim

Students may request that the examination be conducted in accordance with this course plan even after it has ceased to be valid. However, this may not take place more than three times over a two year period after course instruction has ended. Requests must be made to the departmental board. The provision also applies in the case of revisions to the course plan (and the revisions of the course literature).

Limitations

The course may not be included in examinations in combination with courses Modelling of Environmental Pollutants I: Partitioning, Transport, and Exposure (MI8007), Organic Chemistry and Modelling (MI7017), or equivalent.

Misc

The course is part of Mater's programme in Environmental Science focussing on Environmental Chemistry

and Toxicology but can also be read as a separate course.

Required reading

The course literature is decided by the department board and published on the Department of Environmental Science and Analytical Chemistry's website at least two months before the start of the course.