

# Syllabus

for course at advanced level

**Toxicology for Environmental Scientists**

**Toxikologi för miljövetare**

**7.5 Higher Education**

**Credits**

**7.5 ECTS credits**

<b>Course code:</b>	MI7015
<b>Valid from:</b>	Spring 2021
<b>Date of approval:</b>	2018-10-01
<b>Changed:</b>	2020-08-17
<b>Department</b>	Department of Environmental Science
<b>Main field:</b>	Environmental Science
<b>Specialisation:</b>	A1N - Second cycle, has only first-cycle course/s as entry requirements

## Decision

This course syllabus has been approved by the Area Board for Natural Sciences at Stockholm University on August 17, 2020.

## Prerequisites and special admittance requirements

For admission to the course, knowledge is required equivalent to a Bachelor of Science, or its equivalent, including at least 30 ECTS in chemistry. Also required is knowledge equivalent to Swedish upper secondary school course English B/English 6.

## Course structure

Examination code	Name	Higher Education Credits
HELA	TOX	7.5

## Course content

a. This course addresses toxicological fundamental principles with the aim of understanding the hazards that chemical pollutants pose to living organisms. The course provides knowledge about standard methods for toxicity testing, technical terminology, dose-response relationships, and the estimation of chemical and biological factors affecting the toxicity of pollutants under different exposure scenarios.

The course covers:

- Experimental methods and basic statistics used in toxicological testing.
- Key toxicological concepts, such as dose-response relationships, target receptors, and mechanisms of action.
- Toxicological effects at the molecular, individual, and population levels.
- Absorption, distribution, metabolism, and excretion (ADME), taking into account the unique anatomy and biochemistry of exposed organisms, as well as the physicochemical properties of different chemical pollutants.

## Learning outcomes

After completing the course, the student is expected to be able to:

- Explain how environmental pollutants can be absorbed in living organisms, distributed to different tissues, metabolized, and excreted.
- Explain, at the molecular level, how various properties of environmental pollutants can cause different toxic effects.

- Discuss the possibilities and limitations of various testing methods used to study the toxic effects of environmental pollutants.
- Apply relevant statistical methods to analyze toxicological datasets.
- Communicate in writing and orally about ADME (absorption, distribution, metabolism, and excretion) and the toxicity of an environmental pollutant.

### **Education**

Teaching consists of lectures, seminars, exercises, laboratory experiments, and a project work. The course is offered in English.

### **Forms of examination**

a. The course is assessed through a written exam, a written laboratory report, and an oral presentation of a project assignment.

The examiner has the option to decide on adapted or alternative assessments for students with disabilities. The examination is conducted in English.

b. A passing final grade requires participation in laboratory sessions and seminars. 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. The course's final grade also takes into account the student's performance in project presentations and laboratory reports.

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 is required

F = Fail, much more work is required

d. The criteria for grading the course are provided at the beginning of the course.

e. Students who fail the regular exam have the right to take additional exams as long as the course is offered. The number of exam opportunities is not limited. Other mandatory course components are also considered as exams. Students who pass an exam may not retake it for a higher grade. A student who, without passing, has taken two exams for a course or a part of a course has the right to request the appointment of a different examiner, unless specific reasons argue against it. This request should be made to the department board. The course has at least three examination opportunities per academic year in years when teaching is provided. For academic years when the course is not offered, at least one examination opportunity is provided.

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 the course was discontinued. Requests must be made to the departmental board. The provision also applies in the case of revisions of the course syllabus and revisions of the required reading.

### **Misc**

The course is part of the Master's program in Environmental Science with a focus on Environmental Toxicology and Chemistry, but it can also be taken as a separate course.

### **Required reading**

The required reading is decided by the department board and published on the Department of Environmental Science's website at least 2 months before the start of the course.