

# 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 2020
<b>Date of approval:</b>	2018-10-01
<b>Department</b>	Department of Environmental Science and Analytical Chemistry
<b>Main field:</b>	Environmental Science
<b>Specialisation:</b>	A1N - Second cycle, has only first-cycle course/s as entry requirements

## Decision

### Prerequisites and special admittance requirements

To be eligible you must have knowledge corresponding to a Bachelor of Science, or its equivalent, including at least 90 ECTS in one of the natural sciences. Also required is knowledge equivalent to Swedish upper secondary school course English B.

### Course structure

Examination code	Name	Higher Education Credits
HELA	TOX	7.5

### Course content

This course provides an introduction to the principles of toxicology with the aim of understanding the hazards posed to humans and wildlife by chemical contaminants. The content will include an overview of methods and basic statistics in toxicological testing, an exploration of dose-response relationships, the concept of toxicological receptors and mode-of-action, and a range of possible adverse-effects will be discussed at the molecular, individual or population level. A particular focus for this course will be on characterization of absorption, distribution, metabolism and excretion (ADME) while considering physicochemical properties of the contaminant and relevant anatomy and biochemistry of exposed organisms.

### Learning outcomes

The primary aim of the course is to develop an overall understanding of fundamentals in toxicology, including standard methods, technical terminology, why 'the dose makes the poison', and appreciation of the many chemical and biological factors influencing a contaminants toxicological profile under various exposure scenarios. After taking the course, the student should be able to:

- Explain how a range of chemical contaminants may be absorbed into living organisms from the environment, be distributed to various tissues, and get metabolized or excreted by using both qualitative and quantitative approaches.
- Apply relevant statistical methods to analyze basic toxicological datasets for quantification of thresholds and standard effect concentrations.
- Discuss examples of common toxic effects that environmental contaminants may cause, and explain details of toxicological or environmental toxicological testing that could be used to produce data for various endpoints.
- Explain at the molecular level why different environmental contaminants can have a range of toxic

potencies and toxic effects.

•Write a report on the ADME of an emerging contaminant and communicate this orally.

### **Education**

The education consists of lectures, exercises, a laboratory experiment (biotransformation) plus a literature assignment and presentation on an emerging contaminant. Participation in laboratory exercises, the literature task and presentation is compulsory. After consultation with the relevant teacher, an examiner may rule that a student is not obliged to participate in certain compulsory education, if there are special grounds for this.

### **Forms of examination**

- a. The course is assessed through written and oral presentation of the project work, and a written exam
- b. Grades for the written examination:

A - Excellent  
B - Very good  
C - Good  
D - Satisfactory  
E - Sufficient  
FX - Fail  
F – Fail

- c. For the project work the grade is only pass or fail.
- c. The grade criteria are provided at the start of the course.
- d. To pass the course requires at least grade E and participation in all compulsory parts of the course
- e. Students who have failed in the regular examination are entitled to take the exam at least four times as long as the course is offered. This includes all compulsory parts. Students who have passed an examination may not be retake exams for higher grades. Students who fail an examination twice have the right to request a different teacher appointed to determine the grade. Such requests should be made to the Board of the Department.

### **Interim**

Students may request that the examination is performed under this syllabus even after it has ceased to be valid up to three times during the two years after the course was terminated. Such requests should be made to the Board of the Department.

### **Misc**

The course could be a part of the Master programme in Environmental and Health protection, but may also be taken as an independent course.

### **Required reading**

Will be decided by the Board of the Department and described in an appendix to the syllabus.