

# Syllabus

for course at advanced level

**Large Scale Challenges to the Climate and the Environment**  
Storskaliga utmaningar för klimat och miljö

**15.0 Higher Education  
Credits**  
**15.0 ECTS credits**

<b>Course code:</b>	MI7014
<b>Valid from:</b>	Autumn 2023
<b>Date of approval:</b>	2018-08-20
<b>Changed:</b>	2023-03-29
<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 syllabus has been approved by the Area Board of Natural Sciences at Stockholm University on March 29, 2023.

## Prerequisites and special admittance requirements

For admission to the course, knowledge is required equivalent to a bachelor's degree in a natural science subject, mathematics, or a bachelor's degree in engineering, as well as English 6.

## Course structure

Examination code	Name	Higher Education Credits
GLOB	Global Challenges	3.5
STAT	Tools	3.5
SYST	The Environmental System	8

## Course content

The course explores the composition and function of the environment, and how natural environmental systems are perturbed by anthropogenic disturbances. The course consists of three course modules:

1. Globala utmaningar (Global Challenges), 3,5 Hp. This module will give you an overview of global environmental challenges and the impact on the natural environmental system from society. You will become familiar with several basic concepts like biogeochemical cycles, the hydrological cycle, and large-scale energy balances. In addition, this module introduces ethical and philosophical issues in human-environmental interactions.

2. Verktyg (Tools), 3,5 Hp. This module will give you tools for statistics, research and communication. You will learn how to analyse environmental data, as well as how to find and report scientific information.

3. Miljösystemet (Environmental System), 8 Hp. This unit will give you an overview/review of the large-scale perturbations of the environmental system

- water system (incl. eutrophication and ecosystem changes)

- air pollution

- climate change

- contamination from synthetic chemicals; effects on ecosystems, organisms and human health

These perturbations will be evaluated from four perspectives:

- observed effects (problem description)

- sources

- distribution and processes of the disturbing factor in the environment

- measures to be taken

### **Learning outcomes**

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

- Explain the environmental system and the most important perturbations (module 1 and 3)
- Identify and analyse the system and its perturbations, including mechanisms and effects (module 3)
- Reflect on society's opportunities to remedy the perturbations on the environmental system (module 3)
- Apply statistical methods to evaluate environmental data (module 3)
- Apply different methods to report and communicate environmental data (module 2 and 3)

### **Education**

Teaching consists of lectures, laboratory sessions, exercises, and project work.

The course is offered in English.

### **Forms of examination**

a. The course is examined in the following manner:

Assessment of module 1 takes place through written exam.

Assessment of module 2 takes place through written reports from exercises.

Assessment of module 3 takes place through written exam, project presentation and opposition.

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 mandatory lectures (module 1). 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 = Failed, some additional work is required

F = Failed, much additional work is required

Grades of module 1 will be set according to a two-point grading scale: fail (U) or pass (G).

Grades of module 2 will be set according to a two-point grading scale: fail (U) or pass (G).

Grades of module 3 will be set according to a seven-point criterion-referenced scale.

A passing final grade requires passing grades on all included parts. The course's final grade is set based on the grading of module 3.

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

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 (if necessary: for each course module) 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 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 programmes in Environmental Science but can also be read as a separate course.

**Required reading**

The required reading is decided by the department board and published on the website of the course in the digital education catalogue at least 2 months before the start of the course.