



## Course Syllabus:

# Environmental Science BA (A) Environment and Natural Resources, 15 credits

## General data

<b>Code</b>	MX005G
<b>Subject/Main field</b>	Environmental Science
<b>Cycle</b>	First cycle
<b>Progression</b>	A
<b>Credits</b>	15.00
<b>Progressive specialisation</b>	First cycle, has only upper-secondary level entry requirements
<b>Answerable department</b>	Ecotechnology and Sustainable Building Engineering
<b>Established</b>	2007-03-15
<b>Date of change</b>	2016-08-15
<b>Version valid from</b>	2016-08-26

## Aim

The course aim is for students to acquire basic knowledge and skills in environmental science concepts and perspectives. The teaching is problem-oriented and aimed at that the student should, through acquired knowledge and skills, to master the basic prerequisites for a sustainable use of natural resources and an introduction to sustainability conflicts. It also aims to enable students to gain an understanding of basic scientific methods and an introduction to systems thinking and model understanding.

## Course objectives

After completing the course, students should:

be able to explain the basic environmental science concepts.

be able to describe the major environmental problems and give an overview of the relationship between these and the human use of natural resources.

understand and apply basic environmental chemical and thermodynamic principles

be able to handle basic scientific methodology in the planning and execution of a project, using computer-based tools for analysis and modeling of environmental data, and writing a structured report

be able to use the search functions in a university library and apply basic search technology in some subject-specific databases

## Content

The course includes an introduction to the environmental science field through thematic studies where environmental problems and their causal relationships are studied. It also looks at scientific principles, biogeochemical cycles, typical production and carrying capacity of different ecosystem, and the flow of energy and matter through the biosphere. It also looks at natural science fundamentals, basic systems analysis and model understanding.

The course consists of the following elements:

1. Theory (12 credits)
2. Exercises (3 credits)

## Entry requirements

The following course levels from Swedish Upper Secondary School (Gymnasium) or equivalent: Chemistry course A, Mathematics course C, and English course B. Special proficiency in English can also be proven by for example the following international tests:

- TOEFL with a minimum score of 550 on paper based test and not below 4.0 on the TWE
- IELTS Academic Training with a minimum overall score of 6.0 and a minimum score on the specific parts of at least 5.0

## Selection rules and procedures

The selection process is in accordance with the Higher Education Ordinance and the local order of admission.

## **Teaching form**

The course consists of lectures, tutorials, seminars, oral presentations and field trips. Tuition is partially web-based and computer applications are included in the course work. Students are required to work thematically and problem-based in project groups with tasks of increasing difficulty. Participation in exercises, oral presentations and field trips is mandatory.

## **Examination form**

In general written exam. Assignments and / or oral examination can occur.

Grading criteria for the subject is available at

<http://www.miun.se/en/Student/Services/Grading-Criteria> .

## **Grading system**

The grades A, B, C, D, E, Fx and F are given on the course. On this scale the grades A through E represent pass levels, whereas Fx and F represent fail levels.

## Course reading

### Required literature

**Author:** Bernes C  
**Title:** En ännu varmare värld: Växthuseffekten och klimatets förändringar. Monitor 20.  
**Edition:** 2007  
**Publisher:** Naturvårdsverket  
**Comment:** 978-91-620-1261-8. 176pp.

**Author:** Kaufmann R, Cleveland CJ  
**Title:** Environmental Science  
**Edition:** 2007 eller 2008  
**Publisher:** McGraw Hill  
**Comment:** ISBN 9780071101967 eller 9780072984293. 552 pp.

**Author:** Manahan SE  
**Title:** Environmental Chemistry  
**Edition:** 2010  
**Publisher:** CRC Press  
**Comment:** ISBN: 978-1-4200-5920-5. 753 pp.

### Reference literature

**Author:** Bydén S, Larsson A-M, Olsson M.  
**Title:** Mäta vatten  
**Edition:** 2003  
**Publisher:** Göteborgs universitet  
**Comment:** 136 pp. (Will be made available by course director when needed)

**Author:** Clesceri LS, ed.  
**Title:** Standard methods for the examination of water and wastewater.  
**Edition:** 1998  
**Publisher:** American Public Health Association  
**Comment:** (Will be made available by course director when needed)

**Author:** Lister T, Renshaw J.  
**Title:** New Understanding Chemistry for Advanced Level  
**Edition:** 2000  
**Publisher:** Thornes Ltd  
**Comment:** ISBN: 0-7487-3958-0. 680 pp. (For you who need to refresh your chemistry)

Artiklar och kompendier kan tillkomma.

**Other information**

Examination by this syllabus is possible within one year of registration for the course. Students who have not passed within this period should contact the examiner.

The student are assumed themselves to be responsible for the costs of travel, food and accommodation during the field trips.