



## Course syllabus

Faculty of Health and Life Sciences

Department of Biology and Environmental Science

1MX509 Industriell ekologi, 7,5 högskolepoäng

Industrial Ecology, 7.5 credits

### **Main field of study**

Environmental Science

### **Subject Group**

Environmental Science

### **Level of classification**

First Level

### **Progression**

GIN

### **Date of Ratification**

Approved 2015-05-20

Revised 2017-03-20 by Faculty of Health and Life Sciences. Revision of progression, prerequisites and course evaluation.

Adjustment of objectives, content, type of instruction, examination and literature, 2017-03-29.

The course syllabus is valid from autumn semester 2017

### **Prerequisites**

General entry requirements and Mathematics 3b / 3c, Science studies 2 or Mathematics C, Science studies B (Field-specific entry requirements 3/A3). Science B/2 can be replaced by Physics A/Physics 1 and Chemistry A/Chemistry 1.

## Objectives

Upon completion of the course, the student will be able to:

- generally describe the extended view of urban and industrial ecology;
- describe and explain the basis of technical and industrial development in historical perspective;
- meaning of Triple/Quadruple Helix concept;
- describe the relationship between industry and environment and the link between science and engineering in a practical and a scientific way;
- rationally tackling problems within sustainable development for the creation of good economy, cultural and technological development;
- describe the interaction between the nature's cycles and anthropogenic cycles;
- manage environmental problems related to air, water, waste and land;
- have basic knowledge on hydrology and waste technology;
- optimize the overall material cycle from virgin material to the final product and the management of the end of life product including zero waste and beyond zero waste concept;
- describe and analyze the effects of the basis for the circular economy;
- generally design of industrial processes and products;

- propose and motivate different handlings of waste products and recyclable materials;
- describe and analyze the importance of good choice of material and product quality related to environmental effects.

## Content

The core of the course is urban and industrial ecology, there cooperation in water and waste management for sustainable development is of great significance. The course provides an overview of the local, regional and global environmental impact on air, soil and water. Also gives an orientation in the methods used in industrial ecology; for example, in process / product design and choice of materials options in production. From scientific point of view the focus lies on the Circular Economy and sustainable methods for products, metals and materials recovery. The course takes an interdisciplinary approach to environmental problems based on the Triple Helix concept.

## Type of Instruction

This is English-taught course.

The teaching consists of lectures and group assignments, carried out by group of 3-4 students with written and oral presentations.

Participation in four course sessions at campus is mandatory, including study trip.

The course participants need access to Internet.

## Examination

The course is assessed with the grades A, B, C, D, E, Fx or F.

The grade A constitutes the highest grade on the scale and the remaining grades follow in descending order where the grade E is the lowest grade on the scale that will result in a pass. The grade F (Fail) means that the student's performance is assessed as failed.

Examination is performed through assessment of course assignments and group assignments and a final written exam; you must pass all tasks.

A first re-examination is offered within six term weeks.

Examination criteria to pass the course are defined by the Objectives (see above).

## Course Evaluation

During the implementation of the course or in close connection to the course a course evaluation is to be carried out. Result and analysis of the course evaluation is to be presented as feedback both to the students who have completed the course and to the students who are to participate on the course the next time it is offered. The course evaluation is to be carried out anonymously.

## Other

Grade criteria for the A–F scale are communicated to the student through a special document. The student is to be informed about the grade criteria for the course by the start of the course at the latest.

## Required Reading and Additional Study Material

### **Mandatory literature**

Selected scientific papers, reports and some supplementary literature will be announced at course start.