Department of Environmental Science and Analytical Chemistry

Stockholm University

Syllabus

for course at first level

Introduction to Environmental Chemistry, FC
Introduktion till miljökemi, GN

15.0 Higher Education Credits
15.0 ECTS credits

Course code:	KZ4007
Valid from:	Autumn 2011
Date of approval:	2010-09-20
Department	Department of Environmental Science and Analytical Chemistry
Main field:	Chemistry
Specialisation:	G1F - First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Decision

This syllabus has been approved by the Board of the Faculty of Science at Stockholm University.

Prerequisites and special admittance requirements

Knowledge in chemistry equivalent to at least 30 higher education credits is required in order to be eligible for admission to the course. The requirement may be fulfilled by knowledge otherwise acquired.

Course structure

Examination code	Name	Higher Education Credits
MOM1	Theory	10
MOM2	Laboratory excercises	5

Course content

a. The course is designed to provide a fundamental survey of concepts and definitions in Environmental Chemistry.
The course will give a fundamental survey of different types of organic contaminants: production/sources, use, properties, distribution, abiotic transformation, metabolism and chemical analysis. Some methods for analysis of environmental contaminants will be presented.
Furthermore, the course will give a basic survey of chemical reactions of inorganic compounds in natural waters; thermodynamics, kinetics and chemical equilibrium in nature; inorganic environmental chemistry, especially the sources of heavy metals, their distribution and potential health risks and environmental hazards.
The course will also give a basic survey of atmospheric composition and processes: ozone chemistry of the stratosphere, photochemistry of the troposphere, atmospheric particles, cloud chemistry. Sources, transport, chemistry, deposition and effects of atmospheric contaminants; greenhouse gases and climate change.
b. The course includes the following moments:
1. Theory 10 higher education credits.
2. Laboratory exercises 5 higher education credits.

Learning outcomes

It is expected that the student after taking the course will be able to:
•Classify and name common organic environmental contaminants and give an account of their use and basic physical and chemical properties.

•Give an account of central concepts and definitions in environmental chemistry and toxicology, and present an elementary discussion of dispersion, conversion/metabolism, and analysis of common organic environmental contaminants and choice of analytical methods.
•Give an account of how dissolved substances can be measured and calculated, and carry out chemical equilibrium calculations for aqueous solutions in equilibrium with solid phase and gas phase.
•Predict the condition of a water system from the variables pH and redox potential.
•Give an account of heavy metals in terms of environmental chemistry.
•Name common atmospheric contaminants and give an account of their sources, transport, conversion, deposition and principal effects; and carry out simple photochemical and cloud chemical calculations.

Education

The education consists of lectures, group work, exercises and practical laboratory work.
Participation in the practical laboratory work, group work and education associated with this 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. Measurement of knowledge for moment 1 takes place through:
•Written examination
b. Grading is carried out according to a 7-point scale related to learning objectives:
A = Excellent, B = Very Good, C = Good, D = Satisfactory,
E = Sufficient Fx = Fail F = Fail.
c. Grading criteria for the course will be distributed at the start of the course.
d. A minimum grade of E is required to pass the course, together with:
•Participation in all compulsory education,
•A ”Sufficient” grade for course moment 2
e. Students who fail to achieve a pass grade in an ordinary examination have the right to take at least further four examinations, as long as the course is given. The term “examination” here is used to denote also other compulsory elements of the course. Students who have achieved a pass grade on an examination may not retake this examination in order to attempt to achieve a higher grade. Students who have failed to reach a pass grade on two occasions have the right to request that a different teacher be appointed to set the grade of the course. A request for such appointment must be sent to the departmental board.

Interim

Students may request that the examination is carried out in accordance with this syllabus even after it has ceased to apply. This right is limited, however, to a maximum of three occasions during a two-year-period after the end of giving the course. A request for such examination must be sent to the departmental board.

Limitations

The course may not be included in a degree together with KZ4000 (General Environmental Chemistry).

Misc

The course could be given in English.

Required reading

Course literature is decided by the departmental board and is described in an appendix to the syllabus.