

# Syllabus

for course at first level

**Inorganic Chemistry**  
**Oorganisk kemi**

**9.5 Higher Education**  
**Credits**  
**9.5 ECTS credits**

<b>Course code:</b>	KZ4011
<b>Valid from:</b>	Autumn 2014
<b>Date of approval:</b>	2014-03-10
<b>Department</b>	Department of Materials and Environmental Chemistry
<b>Main field:</b>	Chemistry
<b>Specialisation:</b>	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

### Course structure

Examination code	Name	Higher Education Credits
MOM1	Theory	5
MOM2	Laboratory Excercises	4.5

### Course content

a. The course provides a survey of the basic concepts of inorganic chemistry. The theory of atomic structure leads naturally to a description of the bonding conditions in molecules and ionic crystals, which in turn affect the properties of chemical compounds. The course covers Lewis acid–base concepts and models such as hard–soft and how simple chemical reactions can be described in terms of these concepts. The course also covers basic redox chemistry, conceptually as well as quantitatively, using calculations and Pourbaix diagrams. Aspects of transition metal complexes, structure and equilibrium are also covered. Electrochemical data can also be used to predict and explain results of redox reactions. The course also describes how the properties of an element and its simple compounds vary with its electronic structure, i.e. position in the periodic table.

b. The course includes the following elements:

1. Theory 4 higher education credits,
2. Laboratory exercises 3.5 higher education credits.

### Learning outcomes

It is expected that the student after taking the course will be able to:

- Give an account of bonding in, and properties of, simple molecules and ionic compounds.
- Discuss the properties and possible simple compounds of an element on the basis of its position in the periodic table.
- Use the Lewis acid–base and hard–soft concepts to predict and describe simple inorganic reactions.
- Use electrochemical data to describe and predict simple inorganic redox reactions.
- Use Pourbaix diagrams to discuss the reactions of simple inorganic compounds and ions in aquatic environments.

## Education

The education consists of lectures, group work, computational training and laboratory exercises. Participation in the practical laboratory work and group 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 element X takes place through:
  - Written and/or oral 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:
  - Completion of all practical laboratory work, followed by its presentation and award of a "Sufficient" grade
- 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 Inorganic chemistry foundation course KE1190, 5 higher education credits, to which it is equivalent. Parts of the course correspond to elements of the courses KE1010 (Foundation Course Chemistry, 40 higher education credits), KE1130 (Inorganic Chemistry in Nature, 5 higher education credits), KE1150 (Inorganic Chemistry, 10 higher education credits) or equivalents, and may not be included in a degree together with any one of these. Relevant parts of the above courses may be counted in.

## Required reading

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