

Syllabus

for course at advanced level

Introduction to Materials Chemistry
Introduktion till materialkemi

**15.0 Higher Education
Credits**
15.0 ECTS credits

Course code:	KZ8012
Valid from:	Autumn 2014
Date of approval:	2013-11-18
Department	Department of Materials and Environmental Chemistry
Main field:	Chemistry
Specialisation:	A1F - Second cycle, has second-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	7
MOM2	Laboratory Exercises	2
MOM3	Materials Chemistry and Society	3
MOM4	Project Work	3

Course content

- a. The course provides an introduction to the solid state and the basic concepts and methods of materials chemistry, focusing on ceramic, porous and nanostructured materials. The course comprises a survey of important methods of inorganic synthesis, such as solid state reactions, chemical deposition, precipitation, biomaterialization, sol-gel- and powder-based processes. Techniques of measurement in materials chemistry are presented, e.g. thermal analysis, X-ray diffraction and SEM are presented both in theory and practice. An important part of the course is a research-related project to be carried out as group work and presented in a final seminar. The course is useful for future work in chemical and materials industry.
- b. The course includes the following elements:
1. Theory 7.5 higher education credits
 2. Laboratory exercises 3 credits
 3. Project work 4.5 credits

Learning outcomes

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

- Demonstrate basic insights into the synthesis and characterization of various types of inorganic materials, focusing on ceramic, porous and nanostructured materials.
- Give an account of the most important methods of synthesis of inorganic materials, focusing on the molecular processes.
- Demonstrate basic knowledge and practical use of the most common methods (thermal analysis, X-ray diffraction and SEM) for characterization of solid materials.
- Select, plan and carry out suitable synthesis methods for producing a specified inorganic material, and also plan, implement and verify that the desired substance has been produced.

Education

The education consists of lectures, group work, laboratory exercises, and project work. 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

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 and project 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 the course KE3670 (Experimental Materials Chemistry, level 2, 10 credits).

Required reading

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