

Faculty of Science

KEMB12, Chemistry: Inorganic Chemistry, 7.5 credits Kemi: Oorganisk kemi, 7,5 högskolepoäng First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2008-03-12 and was last revised on 2008-03-12. The revised syllabus applies from 2008-07-01, autumn semester 2008.

General Information

The course is a compulsory first-cycle course for a degree of Bachelor of Science, main field of study Chemistry.

Language of instruction: Swedish

Main field of studies	Depth of study relative to the degree requirements
Chemistry	G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to enable students to extend and consolidate their skills and knowledge within inorganic chemistry, particularly the chemistry of transition metals.

The objective is that the students, on completion of the course, shall have acquired the following knowledge and skills:

- ability to rationalise structures of simple coordination complexes using molecular orbital and ligand field theory, and VSEPR theory (Nyholm-Gillespie rules)
- overview knowledge of solid state chemistry and knowledge of simple type structures
- ability to provide a general description of common reaction mechanisms for coordination complexes in solutions, and to derive kinetic velocity expressions for these mechanisms
- ability to indicate binding modes and reactivity for common ligands in organometallic complexes, and to describe organometallic type reactions
- ability to determine the formal number of valence electrons for coordination complexes

- ability to use chemical nomenclature for coordination complexes
- ability to describe the descriptive chemistry of transitional elements

Course content

Lectures: the lectures deal with the properties of coordination compounds with a focus on structure, dynamics and bonds, and include: modern coordination chemistry and, in particular, its interface with other subjects such as catalytic and solid state chemistry; chemical bonds focusing on the application of molecular orbital theory; inorganic reaction mechanisms and kinetics; basic organometallic chemistry and catalysis; information retrieval from chemical databases.

Laboratory exercises: the students will complete three laboratory exercises selected in order to illustrate the theoretical components of the course and provide training in experimental work.

Course design

The teaching consists of lectures, supervised independent study in groups, exercises and laboratory experiments. All laboratory parts are compulsory.

Assessment

The assessment is based on a written exam at the end of the course. A re-sit examination is offered soon after the examination to students who do not pass.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

For a grade of Pass on the whole course, the student must have passed the exam and the laboratory experiments and participated in all compulsory components.

The grades awarded for the exam are Fail, Pass, and Pass with Distinction. The grades awarded for the laboratory experiments and associated components are Fail and Pass.

The final grade is determined by the grade of the exam.

Entry requirements

- KEMA00 General and Analytical Chemistry, 7.5 credits, KEMA01 Organic Chemistry – Basic Course, 7.5 credits, KEMA 02 Inorganic Chemistry – Basic Course, 7.5 credits, and KEMA03 Biochemistry – Basic Course, 7.5, or
- KEM101 General Chemistry 1, 10 credits, and KEM102 General Chemistry 2, 10 credits, or
- KEM111 Chemistry for Environmental and Biological Sciences General Course 1, 10 credits and KEM122 Chemistry for Environmental and Biological Sciences – General Course 2, 10 credits

and

- KEMB09 Physical Chemistry Basic Course, 15 credits, or KEM103 General Chemistry 3, 10 credits
- KEMB29 Spectroscopy and Dynamics, 7.5 credits, and
- one of the courses MATA01 Mathematics for Scientists 1, 15 credits, MATA11 Mathematics 1 Alpha, 15 credits, MAT015 Mathematics for Scientists 1, 10 credits, or MAT131 Mathematics 1 Alpha, 10 credits.

Students who have acquired the equivalent knowledge by other means may also be admitted to the course.

Further information

The course may not be included in a degree together with KEMB02 Inorganic Chemistry, 15 credits, or KEM113 Inorganic Chemistry, 10 credits.

Applies from H13

- 0811 Inorganic Chemistry, 5,5 hp Grading scale: Fail, Pass, Pass with distinction
- 0812 Inorganic Chemistry, Laboratory Work, 2,0 hp Grading scale: Fail, Pass

Applies from H08

- 0801 Inorganic Chemistry, 7,5 hp Grading scale: Fail, Pass, Pass with distinction
- 0802 Inorganic Chemistry, Laboratory Work, 0,0 hp Grading scale: Fail, Pass