



KD2130 Inorganic Chemistry 6.0 credits

Oorganisk kemi

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for KD2130 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Chemistry and Chemical Engineering

Specific prerequisites

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

The course aims at giving the students knowledge in the broad field of inorganic chemistry, including its tools, properties and applications of inorganic compounds.

After completed course the students should be able to:

- Use the Periodic System of Elements as a tool for understanding and managing the properties of the elements and their compounds
- Master basic properties of inorganic substances
- Have knowledge of preparation and uses of important inorganic compounds
- Explain basic properties of the compounds of d-block elements using Crystal Field Theory
- Master inorganic reaction mechanisms
- Understand a catalyst's function on molecular level
- Understand function and molecular properties for the most important bio-inorganic systems
- Understand the energy production in the society and its border lines to chemistry, especially inorganic chemistry
- Understand various solar cells' function and chemistry

Course contents

- Basics of Inorganic Chemistry
- Chemical bonding, structure and molecular symmetry determine the materials properties
- Coordination chemistry
- Groups of the Periodic Table
- Transition metals: ligand field theory
- Reactivity and inorganic reaction mechanisms
- Border areas: applications in bio-inorganic chemistry, metal-organic chemistry, material chemistry

Laboratory exercises (LAB2, 2 credit):

1. Solar cell. To build a dye-sensitized nanocrystalline solar cell and to experimentally determine its efficiency at various circumstances.
2. Wilkinson's hydrogenation catalyst. Synthesis, product identification using instrumental techniques (multinuclear NMR, vibration spectroscopy).

Course literature

"Inorganic Chemistry" (4rd Edition, 2006), Shriver & Atkins; Oxford University Press, and handouts.

Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- PRO1 - Project, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 3.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

1. Written examination (TEN2,4 credits)
2. Laboratory practice (LAB2, 2 credit)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.