



KD1140 The Concepts of Chemistry 6.0 credits

Kemiska koncept

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

Establishment

Course syllabus for KD1140 valid from Spring 2013

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed upper secondary education including documented proficiency in English corresponding to English A. For students who received/will receive their final school grades after 31 December 2009, there is an additional entry requirement for mathematics as follows: documented proficiency in mathematics corresponding to Mathematics A.

And the specific requirements of mathematics, physics and chemistry corresponding to Mathematics E, Physics B and Chemistry A.

Language of instruction

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

Intended learning outcomes

After the completed course the student must be able to:

- identify, select and explain which concepts are involved in which way in chemical phenomena.
- explain, on a quantum mechanical basis, the basic properties of atoms and molecules.
- identify and explain the basic forms of intermolecular interactions and how those determine the phase behavior of material.
- explain and calculate the thermodynamic, kinetic, and electrochemical characteristics of simple chemical reactions.
- recognize simple chemical compounds both by name and by chemical formula, recall their basic properties and how those lead to applications.
- classify and evaluate the feasibility of simple organic reactions and describe their structural results.

Course contents

The course present the fundamental concepts of chemistry:

- The building blocks of matter: atoms, molecules, ions.
- Chemical bond = electrodynamics + quantum mechanics.
- Molecular shapes
- Molecules in motion and in interactions: intermolecular forces and kinetics.
- Reorganisation of atoms, molecules, and crystals: chemical reactions.
- How molecules affect you and all others: energy and entropy.

Disposition

The course consists of lectures and in three exercises.

Course literature

P. Atkins and L. Jones, "**Chemical Principles: The Quest for Insight**", 6th ed., Freeman.

Examination

- TEN1 - Examination, 6.0 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.

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

Other requirements for final grade

Examination, TEN1; 6 credits.

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.