KD1260 Chemistry of Materials 7.5 credits

Materialens kemi

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

Establishment

Course syllabus for KD1260 valid from Spring 2014

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

General admission requirements for Master of Science in Engineering programmes and Matematik E, Fysik B and Kemi A

Language of instruction

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

Intended learning outcomes

After the course the student should be able to

Describe the atomic structure and the organization of the periodic table.

Describe structure, shape and chemical bonding of simple molecules.

Carry out stochiometric and thermodynamic calculations with balanced chemical equations.

Compare materials from a chemical perspective and show understanding in the structure of materials.

Perform elementary chemical laboratory work with regard to the working environment, safety instructions, and safe handling of chemicals as well as summarize and communicate the results in a clear manner.

Assimilate and reflect on information from a scientific context and summarize it for a specific target group.

Course contents

The aim of this course is to provide a broad introduction to the field of chemistry in order to obtain a deeper understanding of the structure of materials and their applications. The course is a solid basis for further studies within related fields especially thermodynamics, polymer technology, and metallic materials.

The course contains
• Stochiometry: chemical equations, oxidation and reduction, chemical reactions
• Chemical stucture: atomic and molecular orbitals, chemical bonding, Lewis structures, shape of molecules
• Thermodynamics: energy and enthalpy, heat capacity, entropy, Gibbs energy

Course literature

Chemistry 3: Introducing inorganic, organic and physical chemistry. Andrew Burrows, John Holman, Andrew Parsons, Gwen Pilling, and Gareth Price. 2nd edition. ISBN: 9780199691852

Examination

- INL1 - Assignment, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Written exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 2.5 credits, grading scale: P, 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.

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.