Chemistry 1 for Foundation Year

Academic preparatory

8 fup

Kemi 1 för basår

BKL101

Valid from: 2020 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2019-09-23

Main field of study
No main field of study

Course level
Academic preparatory

Course offered for
- Foundation Year in Science and Technology

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
See admission requirements för the Foundation Year at Linköpings universitet.

Intended learning outcomes
The aim of the course is to give a foundation in chemistry and a preparation for further university studies in technology and natural science. Completed course gives authority comparable with Chemistry 1. After completing the course, the student should:

- be able to plan and according to safety regulations perform some elementary chemical laboratory techniques, show some skill in theoretical analysis of experimental data and summon up the results in a laboratory report.
- be able to describe the electronic structure of atoms and molecules, different types of chemical bonding and the relationship between bonding and chemical properties.
- have knowledge of some common elements, chemical compounds and modern materials, their properties, occurrence and importance.
- be able to interpret, write and use formulas for compounds and reactions, perform basic stoichiometric calculations.
- be able to estimate enthalpy change in chemical reactions, use the concepts enthalpy and entropy to discuss the drive of chemical reactions.
- be able to use the concepts oxidation and reduction.
- have knowledge of the pH concept, neutralization, strong and weak acids and bases, buffers and pH control.
- have knowledge about methods for qualitative-and quantitative analysis.

Course content

The essence of chemistry and it´s tools and working methods.
Atomic structure and the periodic table. Ionic bonding and covalent bonding. Aggregations states and intermolecular bonding. Reaction formulas. Chemical calculations (stoichiometry). Acid and bases. Oxidation and reduction. Properties of gases and the ideal gas law . Thermochemistry. Electrochemistry. Salts. Metals and non-metals: inorganic chemistry with trends from the periodic table. Acid and bases: protolytic reactions, pH-calculations, buffers. Methods for qualitative-and quantitative chemical analysis. Organic chemistry: structural formulas, functional groups, nomenclature. Properties of important functional groups, common reactions. Modern material. Basic laboratory techniques

Teaching and working methods

The course consists of lectures, lessons and and laboratory work. The students homework, initiative and activity is of great importance. Laborations take place in special laboratories.

Examination

LAB1	Laboratory work	1.5 fup	U, G
TEN1	Written examination	6.5 fup	U, 3, 4, 5

Attempts to deceive by the use of prohibited aids or other methods during examinations or other forms of assessments of study performance may lead to a failed result on the examination/assessment in question.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Other information

Supplementary courses: Chemistry 2 for Foundation Year

About teaching and examination language

The teaching language is presented in the Overview tab for each course. The examination language relates to the teaching language as follows:

- If teaching language is Swedish, the course as a whole or in large parts, is taught in Swedish. Please note that although teaching language is Swedish, parts of the course could be given in English. Examination language is Swedish.
- If teaching language is Swedish/English, the course as a whole will be taught in English if students without prior knowledge of the Swedish language participate. Examination language is Swedish or English (depending on teaching language).
- If teaching language is English, the course as a whole is taught in English. Examination language is English.

Other

The course is conducted in a manner where both men's and women's experience and knowledge are made visible and developed.

The planning and implementation of a course should correspond to the course syllabus. The course evaluation should therefore be conducted with the course syllabus as a starting point.

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magdalena Svensson

Examiner

Maria Lundqvist

Education components

Preliminary scheduled hours: 60 h
Recommended self-study hours: 153 h

Course literature

Books

Borén mfl, *Kemiboken 1*

Compendia

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.