

General Chemistry 2

Programme course

6 credits

Allmän kemi 2

NKEA04

Valid from: 2017 Spring semester

Determined by

Board of Studies for Chemistry, Biology
and Biotechnology

Date determined

2017-01-25

Main field of study

Chemical Engineering, Chemistry

Course level

First cycle

Advancement level

G1X

Course offered for

- Chemical Biology, M Sc in Engineering
- Engineering Biology, M Sc in Engineering
- Chemical Analysis Engineering, B Sc in Engineering
- Chemistry - Molecular Design, Bachelor's Programme

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

General Chemistry 1

Intended learning outcomes

The aim of the course is to provide the necessary basis of the chemical science for further studies in chemistry. After passing the course the student is able to:

- explain driving forces and kinetics of chemical reactions.
- solve problems concerning chemical equilibrium, e.g., equilibria of acids and bases and solubility.
- explain different types of chemical bonding and the relationship between bonding and state of aggregation and other properties of solids, solutions, and gases.
- understand the basic laws of thermodynamics, in particular their application on chemical systems.
- explain basic electrochemical principles.
- discuss basic chemistry of some commonly found elements
- use some basic laboratory techniques, analyse chemical experimental data and write laboratory reports.

Course content

Chemical equilibrium, e.g. equilibria of acids and bases and solubility. Intermolecular forces (chemical bonding) in gases, liquids, and solids. Colligative properties. Reaction kinetics: zero, first and second order kinetics. Activation energy and Arrhenius equation. The three laws of thermodynamics and the concepts enthalpy, entropy, and free energy. Electrochemistry. Some important elements and their properties. Three laboratory exercises illustrate important principles discussed in the course.

Teaching and working methods

The course consists of lectures, lessons and laboratory exercises.

Examination

LAB1	Laboratory work	1.5 credits	U, G
TEN1	Written examination	4.5 credits	U, 3, 4, 5

Grades

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

Other information

Supplementary courses: Inorganic Chemistry, Physical Chemistry.

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Magdalena Svensson

Examiner

Henrik Pedersen

Education components

Preliminary scheduled hours: 48 h

Recommended self-study hours: 112 h

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://stydokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.