LUNDS UNIVERSITET
Lunds Tekniska Högskola

*Course syllabus*

# Allmän kemi
# General Chemistry

## KOOA06, 7,5 credits, G1 (First Cycle)

**Valid for:** 2023/24
**Faculty:** Faculty of Engineering, LTH
**Decided by:** PLED B/K
**Date of Decision:** 2023-04-18

## General Information

**Main field:** Technology.
**Compulsory for:** R1
**Language of instruction:** The course will be given in Swedish

## Aim

The course shall give a basic understanding of and knowledge about chemical processes. It should also provide necessary knowledge in chemical terminology in English as well as Swedish.

## Learning outcomes

*Knowledge and understanding*
For a passing grade the student must

- be able to formulate rules of nomenclature in order to name and give formulas for inorganic and organic substances as well as to use basic chemical concepts and terminology.
- be familiar with functional groups in organic compounds
- be able to explain and use thermodynamical data and expressions and to use the relationship between them.
- be able to identify and evaluate the chemical hazards for some compounds

*Competences and skills*
For a passing grade the student must

- be able to name chemical substances and use them in reaction formulas
- be able to describe and explain inter- and intramolecular forces for chemical substances

- be able to analyse and solve problems in chemical equilibrium
- be able to describe electrochemical cells and analyse electrochemical processes, as for example corrosion
- be able to use rate laws and to calculate data related to these.
- be able to read and understand chemical literature in Swedish and English

*Judgement and approach*
For a passing grade the student must

- be able to present chemical calculations using correct units and appropriate accuracy in a logical and relevant way.

## Contents

Fundamental chemical phenomena are discussed and explained using connections to everyday applications. The following topics will be covered:

- Fundamental chemical concepts and nomenclature.
- The build up of atoms and the periodic table
- Chemical formulas, reaktions and stoichiometry
- Gaseous, liquid and solid phases
- Phase transformations
- Molecular geometry
- Intermolecular forces (dispersion forces, hydrogen bonds, dipole-dipole).
- Basic organic chemistry
- General introduction to enthalpy, entropy, internal energy and free energy.
- The laws of thermodynamics.
- Standard enthalpy of formation and reaction.
- Calorimetry.
- Chemical equilibrium including basic calculations
- Electrochemistry including redox-processes and electrochemical cells
- Corrosion.
- Chemical kinetics, the rate constant and its temperature dependence, instantaneous rate method, activation energy, chain reactions
- Riskanalysis for experiments

Active work with solving problems plays an important role in the course.

The literature is in English and should be regarded as an introduction to the English language in the field of natural sciences.

## Examination details

**Grading scale:** TH - (U,3,4,5) - (Fail, Three, Four, Five)
**Assessment:** Written final exam. The result on the written exam will give the grade.

The examiner, in consultation with Disability Support Services, may deviate from the regular form of examination in order to provide a permanently disabled student with a form of examination equivalent to that of a student without a disability.

## Admission

**The number of participants is limited to:** No
**The course overlaps following course/s:** KOO101, KOOA01, KASA01, KOOA20, KOOA15, KOOA05

## Reading list

- Atkins, Jones, Laverman, Patterson, Young: Chemical Principles: The Quest for Insight, 8th edition. Macmillan Learning, 2023, ISBN: 9781319498498.
- Exercises and Formulary.

## Contact and other information

**Course coordinator:** Dr. Johan Reimer, Johan.Reimer@kemi.lu.se
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