Fundamentals of Chemistry

Grundläggande kemi
6 credits

Programme course

TFKE59

Valid from: 2025 Spring semester

Determined by	**Main field of study**	
Board of Studies for Electrical Engineering, Physics and Mathematics	Chemistry	
Date determined	**Course level**	**Progressive specialisation**
2024-08-28	First cycle	G1N
Revised by	**Disciplinary domain**	
	Natural sciences	
Revision date	**Subject group**	
	Chemistry	
Offered first time	**Offered for the last time**	
Spring semester 2018		
Department	**Replaced by**	
Institutionen för fysik, kemi och biologi		

Course offered for

- Master of Science in Applied Physics and Electrical Engineering
- Master of Science in Applied Physics and Electrical Engineering - International
- Master of Science in Biomedical Engineering

Intended learning outcomes

The course is an introduction to chemistry studies and aims to provide basic knowledge in general and organic chemistry. After completing the course, the student should be able to:

• perform stoichiometric calculations.

• describe how atoms and molecules are structured and name elements and common inorganic/organic compounds.

• explain the concepts of chemical equilibrium, chemical thermodynamics and reaction rate and their applications.

• be able to analyze laboratory data and write laboratory reports.

Course content

The electronic structures of atoms and molecules. Stoichiometry. Chemical kinetics and equilibria with emphasis on acid-base equilibria. Chemical bonding. The three laws of thermodynamics and the concepts enthalpy, entropy, and free energy. The functional groups of organic chemistry, nomenclature, properties, conformation and stereochemistry. Substitution, elimination and addition reactions in organic chemistry.

Examination

LAB1	Laboratory work	1 credits	U, G
TEN1	Written examination	5 credits	U, 3, 4, 5

To pass the experimental part, the presence at laborations are mandatory and the written reports must be approved.

Grades for examination modules are decided in accordance with the assessment criteria presented at the start of the course.

Grades

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

Other information

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 could be given in Swedish, or partly in English. Examination language is Swedish, but parts of the examination can be in English.
- If teaching language is “English”, the course as a whole is taught in English. Examination language is English.
- 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.

Other

The course is conducted in such a way that there are equal opportunities with regard to sex, transgender identity or expression, ethnicity, religion or other belief, disability, sexual orientation and age.

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.

The course is campus-based at the location specified for the course, unless otherwise stated under “Teaching and working methods”. Please note, in a campus-based course occasional remote sessions could be included.