



Faculty of Science

KEMA10, Chemistry: General Chemistry, 7.5 credits

Kemi: Allmän kemi, 7,5 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2013-04-25 and was last revised on 2013-04-25. The revised syllabus applies from 2013-07-01, autumn semester 2013.

General Information

The course is included in the main field of Chemistry at the Faculty of Science. The course is a compulsory first-cycle course for a degree of Bachelor of Science, main field of study Chemistry.

Language of instruction: Swedish

Main field of studies

Chemistry

Depth of study relative to the degree requirements

G1N, First cycle, has only upper-secondary level entry requirements

Learning outcomes

The aim of the course is to provide students with the knowledge of basic chemical concepts required for continued studies in chemistry or adjoining fields.

The laboratory exercises aim to provide skills in laboratory methodology by enabling students to practise planning and executing chemical experiments in small groups.

The objective is that the students, on completion of the course, shall have acquired the following knowledge and skills.

Knowledge and understanding

On completion of the course, the students shall be able to

- demonstrate understanding of, and be able to describe, simple models of atomic structure

- demonstrate understanding of, and be able to describe, various inter- and intramolecular forces of chemical substances
- describe the structure of the periodic system and the electron structure of the elements, and explain periodic trends
- apply gas laws to describe the properties and behaviour of different gases
- demonstrate understanding of how the concepts of accuracy and precision affect the quality of an analysis result

Competence and skills

On completion of the course, the students shall be able to

- perform simple thermodynamic calculations and, using the laws of thermodynamics, explain the reaction tendency of a chemical process
- master stoichiometry and apply it in chemical calculations
- perform elementary laboratory activities, in accordance with the description provided, and present theory and laboratory results in a final report
- demonstrate the ability to present chemical calculations with correct units and numerical accuracy in a logical and relevant manner

Judgement and approach

On completion of the course, the students shall be able to

- assess the risks associated with chemicals, and manage them correctly

Course content

The course consists of a theoretical part comprising 5.5 credits and a laboratory part, including compulsory components, comprising 2 credits.

Lectures and exercises

- atomic orbitals, the structure of the periodic system and models for chemical bonds
- intermolecular interaction
- stoichiometry
- gas laws
- elementary thermodynamics, basic chemical concepts such as enthalpy, entropy and free energy
- physical and chemical equilibrium

Laboratory exercises

The laboratory exercises include the following components: basic techniques in chemical analysis, solution preparation, principles of volumetric titrations, titre data calculations, significant numbers, accuracy and precision, basic statistics for chemical analysis, and laboratory safety.

Course design

The teaching consists of lectures, laboratory exercises and group work. Participation in laboratory exercises and associated teaching is compulsory.

Assessment

The assessment is based on a written exam at the end of the course. A re-sit examination is offered soon after the examination to students who do not pass.

Subcourses that are part of this course can be found in an appendix at the end of this document.

Grades

Marking scale: Fail, Pass, Pass with distinction.

For a grade of Pass on the whole course, the student must have passed the exam and the laboratory exercises, and have participated in all compulsory components.

The grades awarded for the exam are Fail, Pass, and Pass with Distinction. The grades awarded for the laboratory exercises and other compulsory components are Fail and Pass.

The final grade is determined by the grade of the exam.

Entry requirements

General and courses corresponding to the following Swedish Upper Secondary School Programs: Chemistry 2, Mathematics 4, Physics 1a/1b1+1b2.

Further information

The course may not be included in a degree together with KEMA00 General and Analytical Chemistry, 7.5 credits

Subcourses in KEMA10, Chemistry: General Chemistry

Applies from H13

- 1301 General Chemistry, 5,5 hp
Grading scale: Fail, Pass, Pass with distinction
- 1302 General Chemistry, Laboratory Work, 2,0 hp
Grading scale: Fail, Pass