



LUND
UNIVERSITY

Faculty of Science

KEMB16, Chemistry: Analytical Chemistry, 15 credits

Kemi: Analytisk kemi, 15 högskolepoäng

First Cycle / Grundnivå

Details of approval

The syllabus was approved by Study programmes board, Faculty of Science on 2019-12-03 to be valid from 2019-12-03, autumn semester 2020.

General Information

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

G1F, First cycle, has less than 60 credits in first-cycle course/s as entry requirements

Learning outcomes

The aim of the course is to give basic theoretical understanding in classical and instrumental analytical chemistry and proficiencies in the use of analytical instruments and to prepare students for a laboratory and analytical chemical professional role.

Knowledge and understanding

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

- explain basic theory of chemical analyses
- describe structure and explain function of important analytical instruments
- describe and compare different sampling, sample pretreatment and analytical methods for gases, liquids and solid samples.

Competence and skills

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

- carry out qualitative and quantitative analyses according to given instructions in a

- safe and reliable way
- carry out simple laboratory method optimizations
- apply statistical theories for determination of measurement uncertainty in analysis result
- compile experimental data and summarise these in a written report,
- suggest the fundamental features of an analysis procedure for a given issue.

Judgement and approach

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

- critically discuss analysis results with regard to analytical quality parameters
- argue for choice of analytical method based on issue and sample characteristics and from a sustainable perspective.

Course content

Lectures and exercises (10 credits) : An overview of the role of analytical chemistry in society. Basic analytical chemical principles and instrumental structure and analytical technique in sample pretreatment function, chromatography, spectrophotometry, mass spectrometry and methods including electrochemical and complexometric analysis. Basic statistical methods for assessing analysis quality.

Laboratory sessions (2.5 credits) : Studies of instrumental parameters and exercise to use analytical instruments in the following fields: gas chromatography, liquid chromatography, potentiometry, sample pretreatment, and UV/VIS-spectrophotometry and atom spectroscopy.

Literature project (2.5 credits) about sampling and sample pretreatment of gases, liquids and solid samples, including literature search and reference management. Principles and technical solutions for sample pretreatment, evaluation and control of analysis result are treated, and approach to sustainability aspects is discussed.

Course design

The teaching consists of lectures, exercises, literature project and laboratory sessions. Compulsory participation is required in literature project, laboratory sessions and associated elements.

Assessment

The assessment is based on a literature project (2.5 credits) during the course, a written exam (10 credits) at the end of the course and on compulsory components (2.5 credits).

Students who fail the ordinary written exam will be offered another opportunity for assessment soon thereafter.

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.

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 the grade of Pass on the whole course, the student must have passed the final exam, the literature project, the laboratory reports and the compulsory components.

The grades awarded for the exam are Fail, Pass and Pass with Distinction. For literature projects and laboratory sessions, the grades are Failed and Passed.

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

Entry requirements

To be admitted to the course, students must have basic eligibility and passed courses equivalent to:

- KEMA20 General Chemistry 15 credits; or KEMA10 General Chemistry 7.5 credits and KEMA12 Inorganic Chemistry - Basic Course 7.5 credits
- KEMA01 Organic Chemistry - Basic Course 7.5 credits and
- KEMA03 Biochemistry - Basic Course 7.5 credits

Students who have obtained the equivalent knowledge by other means may also be admitted to the course.

Further information

The course can not be included in a degree together with KEMB06 Analytical Chemistry 15 credits.

The course is partly coordinated with KAKF05 Analytical Chemistry 7.5 credits at LTH.

Subcourses in KEMB16, Chemistry: Analytical Chemistry

Applies from H20

- 2001 Analytical Chemistry, 10,0 hp
Grading scale: Fail, Pass, Pass with distinction
- 2002 Analytical Chemistry, Literature project, 2,5 hp
Grading scale: Fail, Pass
- 2003 Analytical Chemistry, Laboratory Work, 2,5 hp
Grading scale: Fail, Pass