# Analytical Chemistry

Programme course

6 credits

Analytisk kemi

TFKE30

Valid from: 2017 Spring semester

**Determined by**
Board of Studies for Chemistry, Biology and Biotechnology

**Date determined**
2017-01-25

## Main field of study
Chemistry

## Course level
First cycle

## Advancement level
G1X

## Course offered for
- Protein Science, Master's Programme
- Chemical Biology
- Chemical Biology, M Sc in Engineering
- Engineering Biology, M Sc in Engineering
- Energy-Environment-Management

## Specific information
This course cannot be included in the same degree as the course NKEB10.

## 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 and Organic Chemistry.

# Intended learning outcomes

The aim of the course is to give fundamental theoretical, practical and instrumental knowledge in the field of atomic and molecular spectrometry, and analytical separation techniques. After completing this course the student should be able to:

- Give an account of basic concepts within the area of atomic and molecular spectrometry, and analytical separation techniques (chromatography and capillary electrophoresis).
- Describe the principles and construction of instruments used for spectrometric analyses and analytical separations.
- Explain the chemical principles of spectrometric analyses and analytical separations.
- Interpret and qualitatively and quantitatively evaluate data obtained from spectrometric analyses and analytical separations.

# Course content

Theory of chromatographic separation. Gas chromatography (GC) including sample injection, separation and detection. High performance liquid chromatographic (HPLC) methods such as normal phase and reverse phase HPLC, size-exclusion chromatography and ion chromatography. Capillary electrophoresis. Mass spectrometry (MS), manual and computer-based interpretation of mass spectra, GC-MS and HPLC-MS. Molecular ultraviolet/visible absorption spectroscopy and molecular fluorescence.

# Teaching and working methods

The course consists of lectures and laborations. The laborations are compulsory.

# Examination

| | | | |
|---|---|---|---|
| LAB1 | Laboratory Work | 3 credits | U, G |
| TEN1 | Examination | 3 credits | U, 3, 4, 5 |

# Grades

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

# Department

Institutionen för fysik, kemi och biologi

# Director of Studies or equivalent

Magdalena Svensson

# Examiner

Elke Schweda

# Education components

Preliminary scheduled hours: 58 h
Recommended self-study hours: 102 h

# Course literature

Harris D.C., Quantitative Chemical Analysis, 9th ed., Freeman, 2016.

# 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://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.