KD2080 Nuclear Chemistry 7.5 credits

Kärnkemi

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for KD2080 valid from Autumn 2007

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Chemistry and Chemical Engineering

Specific prerequisites

Three years of study at the School of Chemistry, Chemical Engineering and Biotechnology, KTH, or equivalent.

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

To give the students

- basic knowledge of nuclear structure, stable and unstable atomic nuclei, nuclear reactions and different modes of radioactive decay and also methods for measurements of radioactivity.
- the fundamentals of radiochemistry, isotopic chemistry, radiation chemistry and the applications of these in measuring technology, kinetics, radical chemistry, biotechnology and materials and process technology.
- skills in handling and measurement of radioactive material.

Course contents

- nuclear structure, stability, decay, nuclear reactions.
- the interaction between radiation and matter: retardation, absorption and scattering.
- chemical and biological effects of radiation: radiation chemistry.
- questions concerning protection against radiation.
- isotopic chemistry: chemical methods for enrichment of stable isotopes.
- radioactive nuclides: radioactive measuring methodology, methods for production, purification and marking of chemical substances.
- fields of application of radioactive nuclides: detection methods, radioanalytical chemistry, dating methods, etc.
- methods for solving various problems in engineering and basic research.

Course literature

1.G. Choppin, J. Rydberg, J.O. Liljenzin: Radiochemistry and Nuclear Chemistry, 1995.

2.Handouts.

Examination

- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- LAB1 - Laboratory Work, 3.0 credits, grading scale: P, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

If the course is discontinued, students may request to be examined during the following two academic years.

Other requirements for final grade

Written examination, 4,5 credits.
Completed laboratory course including calculation assignment, 3 credits.

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.