KD1080 Chemical Dynamics 6.0 credits

Kemisk dynamik

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

Establishment

Course syllabus for KD1080 valid from Autumn 2007

Grading scale

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

Education cycle

First cycle

Main field of study

Chemistry and Chemical Engineering, Technology

Specific prerequisites

Language of instruction

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

Intended learning outcomes

After passing the exam, the student should be able to

• Analytically formulate, and analytically or numerically solve rate expressions in non-complex reaction kinetics

• Analyze experimental kinetic data with regard to reaction order and temperature dependence parameters.

• Explain the relations and links between chemical reaction rates and thermodynamic equilibrium constants

• Explain reaction rate dependencies on parameters like temperature, pressure, ionic strength in solution, etc.

• Account for the molecularly related steps and events that govern thermal or photochemical reaction kinetics or transport rates.

Also, the student should at that stage be able to suggest procedures and strategies for

• Solving and analyzing more complex reaction kinetic and transport problems through numerical computer algorithms, through commercial or freeware computer programs.

and

• Available experimental methodology for investigating fast reaction kinetics.

These latter aspects are illustrated also in the lab part of this course.

Course contents

• Molecular dynamics in general
• Kinetic theory of gases
• Diffusion and other transport phenomena
• Chemical reaction kinetics, molecular reaction mechanisms
• Photophysical processes
• Dynamical processes in biological systems

Examination

• TEN1 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
• LAB1 - Laboratory Work, 1.5 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

1. Written examination 4,5 credits
2. Laboratory work 1,5 credit

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.