



KH1221 Applied Physical Chemistry 5.0 credits

Tillämpad fysikalisk kemi

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

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

Establishment

Course syllabus for KH1221 valid from Spring 2023

Grading scale

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

Education cycle

First cycle

Main field of study

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 successfully completed course the student shall be able to:

- Using MEDUSA/HYDRA create and interpret chemical equilibria for solving problems of chemical equilibrium.
- Interpret relatively complex reactions systems that include coupled equilibria.
- Use ideal gas law and van der Waals law in calculations and be informed about the conditions at which the laws are applicable. Real gases.
- Define colligative properties and give some examples as well as perform calculations, e.g., vapour pressure (Raoult's law) and boiling/freezing point changes in solutions as well as Henry's law.
- Describe electrochemical cells using cell diagrams and anode/cathode reactions, calculate cell potential and describe as well as give examples of different electrochemical cell. The student shall be able to use the standard electrochemical potentials (electrochemical series) to determine which redox reactions occur spontaneously, and perform calculations of the amount of charge and redox reactions.
- Interpret phase diagrams (P-T diagram for one component) in terms of aggregation state, phase transitions, normal point of fusion and boiling, as well as critical point, triple point and vapour pressure.

Course contents

Coupled chemical equilibria.

Solutions, colligative properties, gas – liquid equilibria and phase diagram.

Electrochemistry.

Examination

- LAB1 - Computer Laboratory Work, 1.0 credits, grading scale: P, F
- LAB2 - Laboratory Work, 1.0 credits, grading scale: P, F
- TEN1 - Written examination, 3.0 credits, grading scale: A, B, C, D, E, FX, 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.

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.