CK1300 Electrochemistry 4.0 credits

Elektrokemi

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

Establishment

Course syllabus for CK1300 valid from Autumn 2023

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed upper-secondary school before 1 July 2011 and adult education at upper-secondary level before 1 July 2012

Specific entry requirements: mathematics E, physics B and chemistry A. In each of the subjects the grade Passed or 3 is required.

Completed upper-secondary school from 1 July 2011 and adult education at upper-secondary level from 1 July 2012 (Gy2011)

Specific entry requirements: Physics 2, Chemistry 1 and Mathematics 4. In each of the subjects a pass grade or better is required.

Language of instruction

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

Intended learning outcomes

After completion of the course you should be able to

- based on fundamental relationships from thermodynamics, kinetics and mass transport analyze the voltage components that contribute to an electrode potential and a cell voltage as well as how these influence the design and function of electrochemical cells.
- describe different electrochemical applications and how they can contribute to a sustainable society.
- perform calculations on different electrochemical applications.

Course contents

The electrochemical cell and its components – basic terminology and function. The cell on open circuit, thermodynamics. The cell on closed circuit, electrode kinetics and mass transport. Cell design – electrodes, separators, electrolytes and reactors. Applications in energy conversion (batteries, fuel cells, solar cells and electrolysis), sensors and corrosion.

Examination

- TEN1 - Written exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 1.0 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.

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.