KE2110 Applied Electro-chemistry 7.5 credits

Tillämpad elektrokemi

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 KE2110 valid from Autumn 2019

Grading scale

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

Education cycle

Second cycle

Main field of study

Chemical Science and Engineering,Chemistry and Chemical Engineering

Specific prerequisites

At least 150 credits from grades 1, 2 and 3 of which at least 110 credits from years 1 and 2, and bachelor's work must be completed, within a programme that includes:
75 university credits (hp) in chemistry or chemical engineering, 20 university credits (hp) in mathematics and 6 university credits (hp) in computer science or corresponding.

Language of instruction

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

Intended learning outcomes

After completing the course, the students should be able to:

- Analyse the voltage components that contribute to an electrode potential and a cell voltage, respectively, based on fundamental relationships from thermodynamics, kinetics and mass transport. TEN1, LAB1, ÖVN1.
- Describe different electrochemical applications as power sources, electrolytic processes and corrosion. TEN1
- Perform simple calculations on various electrochemical applications. TEN1, ÖVN1, LAB1
- Analyse current distribution in electrochemical systems using computer simulations. ÖVN1 (Only for KE2110)
- Describe basic experimental methodology used in electrochemistry and perform simpler experiments. From current-voltage curves evaluate data as kinetic parameters and diffusion constants. LAB1, TEN1

Course contents

The electrochemical double layer, electrode kinetics, mass transfer in electrochemical systems, electrocatalysis. Design of electrochemical reactors, current distribution. Survey of electrochemical processes and power sources.

Experimental techniques.

Examination

- LAB1 - Laboratory Course, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- ÖVN1 - Homework, 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.

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.