



FKE3140 Applied Electrochemistry 6.0 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 FKE3140 valid from Autumn 2022

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Eligible for studies at the third-cycle level and bachelor of science in chemical engineering, chemistry, physics, materials or equivalent. Depending on the background, extra studies may be needed during the course.

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 the doctoral student should have the knowledge and ability to

- understand and be able to use basic electrochemical concepts and relationships for analysis of electrochemical processes
- be able to perform simple electrochemical experiments and evaluate data to draw conclusions from the results
- be able to discuss and elaborate on results from electrochemical experiments
- describe electrochemical applications as batteries, fuel cells, electrolytic processes
- describe different types of electrochemical energy storage (batteries, fuel cells, electrolysis for hydrogen production) in a future sustainable energy system

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
- Seminars in conjunction with the laborations

Examination

- LAB1 - Laboratory work, 2.0 credits, grading scale: P, F
- TEN1 - Written exam, 4.0 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.

Other requirements for final grade

Approved home assignments, laboratory exercises, corresponding reports and written exam.

Transitional regulations

If the examination form is changed, the student will be examined according to the examination form that applied when the student was admitted to the course. If the course is

completed, the student is given the opportunity to be examined on the course for another 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.