



KE2300 Electrochemical Energy Devices 7.5 credits

Elektrokemiska energiomvandlare

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

Establishment

Course syllabus for KE2300 valid from Autumn 2018

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

_Admission requirements for independent students:

_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. Documented proficiency in English corresponding to English B.

_Admission requirements for programme students at KTH:

_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

The overall aim of the course is to let the participants attain knowledge about operating principles, materials, design, applications and system aspects of electrochemical energy devices, within the categories batteries, fuel cells and electrochemical solar cells.

After the course the student should be able to:

- Describe the operating principle of the electrochemical energy devices that are covered in the course, including design and materials
- Account for figures of merit and characterization methods for the three categories of devices
- Explain how selection of materials and design affects the properties of a device
- Discuss application areas and system aspects for the different devices
- Apply the knowledge on making choices and evaluating technologies and to be able to inform about the technology

Course contents

- Batteries
- Fuel cells
- Electrochemical solar cells

For each of these categories the following will be covered: operating principles, materials, design, properties and capabilities, applications and system aspects.

Course literature

Särtryck. Kompendium.

Examination

- PRO1 - Project, 2.5 credits, grading scale: P, F
- TENA - Examination, 5.0 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.

Other requirements for final grade

Project (PRO1; 2,5 hp)

Examination (TEN1; 5 hp)

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.