



# CK2300 Batteries 7.5 credits

## Batterier

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

## Establishment

Course syllabus for CK2300 valid from Autumn 2023

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Chemical Science and Engineering

## Specific prerequisites

Bachelor's degree in chemical engineering, chemistry, energy technology, energy and environment, materials science, mechanical engineering, technical physics or equivalent.

## Language of instruction

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

## Intended learning outcomes

The overall goal is for the participants to acquire knowledge of the entire value chain for batteries.

For a passing grade, after completing the course, students must be able to:

- Describe the principle of operation, performance measures and characterisation methods for batteries.
- Explain and calculate how operating conditions, material choice and design affect the battery's properties.
- Discuss application areas and system aspects, compare and evaluate different battery technologies, and to inform about the technology.

## Course contents

The course mainly deals with the following areas:

- Basic principles of electrochemical energy storage.
- Different types of batteries.
- Materials, design, properties and performance of different types of batteries.
- Modelling of battery characteristics.
- Experimental characterisation of batteries.
- Manufacturing of batteries.
- Battery control.
- Use of batteries for electromobility, in the power grid and for portable applications.
- System integration, socio-economic aspects, safety, recycling, circularity and sustainability.

The course is carried out mainly through lectures and a larger project. The project includes experimental and calculation tasks, and a smaller literature study which is presented orally and in a written report. The final grade is based on a written exam and the project.

## Examination

- TEN1 - Written exam, 4.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 3.5 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.

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.