



FCK3340 Batteries 6.0 credits

Batterier

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

Establishment

The official course syllabus is valid from the autumn semester 2025 as decided by the Faculty Board decision PA-2025-0010. Date of decision: 2025-10-01.

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

Eligible for studies at the third-cycle level in the subject Chemical Engineering or equivalent.

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 characterization 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 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 characterization of batteries.
- Manufacturing 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.

Examination

- TEN1 - Written exam, 4.0 credits, grading scale: P, F
- PRO1 - Project, 2.0 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.