EI2460 Batteries for Energy Storage in Electrical Systems 6.0 credits

Batterier för energilagring i elsystem

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

On 2019-10-15, the Head of School of EECS has decided to establish this official course syllabus to apply from the spring semester 2020 (registration number J-2019-1136).

Grading scale

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

Education cycle

Second cycle

Main field of study

Electrical Engineering

Language of instruction

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

Intended learning outcomes

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

- account for different technologies for energy storage that can be used in electrical systems
- account for different technologies for charging of electrical systems
- account for batteries' life cycle in electrical system applications
- derive and use models for batteries in the context of electrical systems
- dimension and analyse battery storage systems for different applications in the context of electrical systems
- develop models for how battery storage in electrical systems influence the electricity market and the frequency regulation
- derive and use models for the analysis of cooperation between energy and transport systems

Course contents

- Different technologies for energy storage
- Planning, operation and maintenance of electric power system with battery storage This includes different aspects as; effect on electricity market, frequency regulation, charged and distributed systems.
- Life cycle cost analysis for electric power systems with energy storage in batteries
- Modelling and analysis of battery systems with applications to electrical systems
- Dimensioning and analysis of battery storage systems for different applications in electric power grids and transport systems
- Battery storages for energy and transport systems which include cooperation between energy and transport systems through electrification This includes different methods for charge; including inductive and fast charging

Specific prerequisites

Completed course EG2100 Analysis of electric power systems or the equivalent.

Completed course EJ2301 Power Electronics or the equivalent.

Examination

- INLA - Assignment, 1.0 credits, grading scale: P, F
- LABA - Laboratory work, 1.0 credits, grading scale: P, F
- TENA - Written exam, 4.0 credits, grading scale: A, B, C, D, E, FX, 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.

The examiner decides, in consultation with KTH's coordinator for disabilities (Funka), about possible adapted examination for students with documented, permanent disabilities. The examiner may permit other examination format for re-examination of 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.