MJ2436 Decentralized Smart Energy Systems in a Global Energy System 6.0 credits

Decentraliserade smarta energisystem i ett globalt energisystem

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

Establishment

Course syllabus for MJ2436 valid from Autumn 2021

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Knowledge in thermodynamics, heat transfer and applied energy or equivalent course
MJ1112 "Applied Thermodynamics",
MJ1401 "Heat transfer"
MJ2411 "Renewable Energy Technology"

Language of instruction

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

Intended learning outcomes

1. Assess the needs and formulate research question in the energy topic linked to the society.
2. Identify energy system technologies as well as their advantages, disadvantages and limitations
3. Calculate efficiencies, optimization potential in decentralized energy systems and evaluate economic aspects for energy system solutions.
4. Present orally and in a synthetic report assessing different energy integration solutions in decentralized energy systems.

Other skill evaluated in this course: the ability to work on an international team.

Course contents

This is a Project Work in energy and environmental technology, including financial, business and entrepreneurial aspects.

The challenge based module offered in DENSYS curriculum relies on learning by solving a challenging problem anchored in “real life”, i.e. arising from a local context (district level, city level, among others). The challenge topics are related to the design and management of decentralized energy systems including energy conversion and storage technology that belong to "key technologies in decentralized smart energy systems".

The project course complements and is a direct continuation of the courses taught in energy conversion, energy use, power plant technology and grid systems in year 1. The technological aspect includes renewable energy, systems analysis, environmental and ecology economics, innovative business models for energy systems with emphasis on the synergy and on the decentralized smart energy systems of the future.

Examination

- INL1 - Assignment, 1.0 credits, grading scale: P, F
- SEM1 - Seminar, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project (final report), 3.0 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.

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.