



MJ2520 Energy Systems for Smart Cities 6.0 credits

Energisystem för smarta städer

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 15/10/2021, the Dean of the ITM School has decided to establish this official course syllabus to apply from autumn term 2023 (registration number M-2020-2025).

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, renewable energy, building energy systems and energy economy that can be found in the courses;

MJ2509 "Energy in the built environment"

MJ2411 "Renewable Energy Technology"

MJ2511 "Energy Management"

Language of instruction

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

Intended learning outcomes

The course intends to give the students the necessary skills to design and control building energy systems with a holistic perspective on technical, economic, environmental and social aspects.

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

1. Identify and describe the principles of design and control to build energy supply systems in the intelligent city
2. Implement appropriate methods to evaluate the technical, economic and environmental performance of buildings holistically in the intelligent city
3. Justify design and control - recommendations to different interested parties by means of appropriate performance indicators

Course contents

This course increases the students' design knowledge about building power supply systems by integrating with intelligent cities. The main study fields include:

- Technical, economic and political aims from several stakeholder perspectives in the energy system of a city
- Physical design of building energy systems in intelligent city context
- Advanced control technology considering dynamic market signals and practical technical limitations
- Storing for generation on site, network flexibility and resilience against network disruptions
- Energy societies and consumer units
- Human behaviour and the motives/impediments for intelligent city technology assumption

Examination

- INL1 - Assignment, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO1 - Project, 4.5 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.

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.