



MJ2501 Solar Energy Systems for Buildings and Cities 6.0 credits

Solenergisystem för byggnader och 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

Course syllabus for MJ2501 valid from Spring 2017

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Bachelor of science degree. Preferably with knowledge in Applied Thermodynamics (example MJ1112, 9 ECTS) or corresponding.

Language of instruction

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

Intended learning outcomes

The students, after accomplishment of this course, will be able to:

- Describe the principles of solar thermal technologies in the urban energy systems including the design, dimensioning, and system integration
- Explain the important factors in design and dimensioning and integration of Solar electricity to the urban energy systems
- Evaluate the cost-effectiveness of Solar PV systems integrated to the urban built environment considering different policies and regulations
- Analyze energy storage strategies and methods combined with solar energy systems
- Develop the system model for PV and PV/Thermal systems combined with heat pumps and other components of the urban energy systems
- Assess the dynamic behavior of solar energy systems in buildings and cities

Course contents

- solar thermal technologies in the urban energy systems: Design, dimensioning, system integration,
- Solar electricity for buildings and cities: design, dimensioning, system integration,
- Solar energy economics, financing, policies and regulations
- Solar energy and energy storage
- Combination of solar PV, PV/Thermal and heat pump systems
- Solar Energy system modeling and simulation

Course literature

- Solar Engineering of Thermal Processes, 4th Edition
- Kurskompendiet
- Solar Engineering of Thermal Processes, 4th Edition
- The course compendium

Examination

- PRO1 - Project, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- PRO2 - 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.

Other requirements for final grade

- PRO1 - Project, 1.5, grade scale: A, B, C, D, E, FX, F
- PRO2 - Project, 4.5, grade scale: A, B, C, D, E, FX, F

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.