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.

Establishment

Course syllabus for MJ2501 valid from Spring 2020

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

Candidate/B.Sc. or the equivalent + MJ1112 Applied Thermodynamics or the equivalent

Language of instruction

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

Intended learning outcomes

On completion of the course, the student should be able to:

- Describe the bases of solar heating and solar cells for buildings, including design, finance and system integration
- Analyse and communicate the technical-economical properties for solar energy systems for the built environment

Course contents

- Solar thermal systems, including design, dimensioning and system integration
- Solar cell systems, including design, dimensioning and system integration
- Economy, financing, policies and legislation for solar energy in buildings
- Combination of solar energy with auxiliary energy machines, particularly heat pumps
- Energy storage techniques for building and city level
- Solar energy system modelling and simulation
- Technical, economical, and environmental related result indicators

Course literature

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

Examination

- OVNA - Exercises, 1.5 credits, grading scale: A, B, C, D, E, FX, F
- PROA - 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.

If the course is discontinued, students may request to be examined during the following two academic years.

The contents and structure of the course have only minor changes compared with previous official course syllabus. The examination in PRO1 from the earlier official course syllabus

is transferred directly to the OVNA in the new official course syllabus, while PRO2 in the earlier official course syllabus now becomes PROA. Students of a previous course offering who have not completed PRO1 are offered to complete OVNA for 1.5 credits. Students of a previous course offering who have not completed PRO2 are offered to complete PROA for 4.5 credits. PROA is a group activity, therefore, students must participate actively in the course during period 3. OVNA is an individual assignment and can be completed any time.

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.