



MJ2508 Energy Systems for Sustainable Development 6.0 credits

Energisystem för hållbar utveckling

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

Establishment

On 27/03/2024, the Dean of the ITM School has decided to establish this official course syllabus to apply from autumn term 2024 (registration number M-2024-0605).

Grading scale

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

Education cycle

Second cycle

Main field of study

Mechanical Engineering

Specific prerequisites

English B/6 or equivalent, knowledge in the subjects mathematics and physics, and thermodynamics from a Bachelor of Science (the equivalent of course MJ1112).

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 student should be able to

1. Evaluate alternative energy supply strategies in relation to climate plans and given goals for sustainable development, taking into account varying conditions in different parts of the world.
2. Discuss and evaluate strategies for energy supply and use linked to ongoing geopolitical events, processes and international technology and market developments.
3. Analyze the impact of policies, resources and competing uses of the same, on cost-optimal development scenarios for energy supply and energy infrastructures using regional energy system models.

Course contents

The course covers energy systems and their adaptation for sustainability by highlighting several different perspectives: energy and climate – trends and scenarios, energy mix, the effect of various technology options, market, policy actors and so-called integrated planning of access to energy services. In all parts of the course, we bring up differences in effects and possible solutions for industrialised countries, compared to developing countries. Furthermore, a so called nexus perspective is central, as it deals with inter-dependencies between the resources energy-land-water and effects on these systems from the climate changes

Examination

- PROA - Project, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PROB - Project, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- PROC - Project, 2.0 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.

Other requirements for final grade

Requirements for final grade are approved projects (PROA 2cr, PROB 2cr, PROC 2cr), and the final mark is weighted according to the number of higher education credits for the different projects.

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.