



MJ1455 Future Energy Technology 7.5 credits

Framtidens energiteknik

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 MJ1455 valid from Spring 2010

Grading scale

P, F

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Completed and documented upper secondary schooling incl documented proficiency in Swedish and English.

Language of instruction

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

Intended learning outcomes

The overall objective with the course is to give the student an understanding of the Swedish and the global energy systems, explain why they look the way they do and what the technical, economic and the political boundary conditions are. After successful course completion, the student shall be able:

- to account for different energy technologies/systems as they exist today as well as future energy technologies/systems.
- to discuss the complex of problems that the energy supply must relate to (for example climate- and environmental impact, safety of supply, cost perspective) and formulate ideas for solutions from an overall perspective
- to describe advantages and disadvantages of different energy technologies/systems in relation to the external environment and to argue for and against different technical and economic solutions
- to perform simple calculations in order to judge the cost effectiveness, sustainability and safety of supply of different energy technologies/systems and be able to relate this to other effects such as environmental or social impact in a comprehensive manner.

Course contents

Energy systems: historical background, energy markets, energy sources and carriers, political and economic governance.

Energy production: various energy conversion and energy transmission technologies, their relationship to the cost-effectiveness, security of supply, sustainability, political and public opinion point of acceptance and climate and environment.

Transport: passenger and freight transport and their role in the energy system.

Energy use: buildings, energy efficiency in industry, energy-saving measures.

Disposition

The course runs full-time during five weeks starting period 5.

The course is given daytime on campus Valhallavägen and comprises lectures, seminars, home assignments, group assignments and study visits.

Course literature

Lecture presentation material (via BILDA)

For the interested student the following source is recommended for more detailed information:

CompEDU: educational platform developed at the department of energy technology, KTH:
<http://www.energy.kth.se/compedu/webcompedu/WebHelp/index.html>

Examination

- FÄL1 - Field Trip, - credits, grading scale: P, F
- INL1 - Exercises, - credits, grading scale: P, F
- PRO1 - Project, - credits, grading scale: P, F
- TEN1 - Examination, 7.5 credits, grading scale: P, F
- ÖVN1 - Exercises, - credits, grading scale: P, 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.

This course applies progressional examination, meaning that it is possible to pass the course through active participation in lectures and seminars. There will also be an exam at the end of the course (in two parts A and B) for complementary examination and to allow students to pass the course that could not participate in regular manner in lectures and seminars. The course marks are either pass or fail. The following examination forms are applied in the course:

1. Presence at lectures:

All lectures will end with a short quiz section to rehearse the fundamental information that has been taught. At least 60% of the quiz questions shall be answered correctly to give 1 bonus point per lecture for the exam part A.

2. Participation in study visits:

Below you will find more information about the content of the study visits. Before and after each visit an exercise shall be sent in. For satisfactory solution of the exercises 5 bonus points are obtained per study visit for the exam part A.

3. Active Participation in 4 Seminars:

In front of the seminars, the student shall have prepared an exercise (individual for the first seminar, group based for the other 3) resulting in a short written report and a presentation material in power point. The report will be given feedback with the help of peer review by the other students based on a peer review template, see below. Successful participation in the seminars renders the student 2 seminar points. 6 seminar points are required to pass the seminar part.

The 8th of July, a **two-part examination** will be held.

Part A will be held in the morning. Totally, 36 points can be achieved in exam part A; 27 points are needed to pass part A. The bonus points that have been achieved through active

participation in lectures and study visits will be added to the result. Thus, full points from lectures and study visits automatically lead to passing part A.

Part B will be held in the afternoon. Totally, 8 points can be achieved in exam part B, 6 points are needed to pass part B. The bonus points that have been achieved through active participation in the seminars will be added to the result. Thus, full points from the seminars automatically lead to passing part B.

Exam part B will only be reviewed and corrected if exam part A has been passed.

Other requirements for final grade

Either an exam or on going examination.

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.