



# MJ2413 Energy and Environment 6.0 credits

## Energi och miljö

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 MJ2413 valid from Autumn 2007

## Grading scale

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

## Education cycle

Second cycle

## Main field of study

Environmental Engineering

## Specific prerequisites

Completed Bachelor of Science studies or equivalent

## Language of instruction

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

## Intended learning outcomes

Upon successfully completing this course the student should be able to:

- Describe – from an overall perspective – the major energy conversion processes, their accompanying resource requirements, and impacts on air, water, soil, wildlife, and humans, drawing distinctions between applications in industrialized nations and developing countries.
- Demonstrate clear engineering understanding of selected topics, including the ability to quantify key parameters via mathematical formulations like energy balances (see course schedule for more information).
- Present a first-order environmental impact statement and life cycle analysis for an energy-intensive industrial system.
- List major EU and international policy initiatives and related legislative and implementation instruments.
- Perform a basic scenario analysis with an energy forecasting tool (LEAP).
- Conduct major environmental studies embodying the concepts and tools listed above and including the assimilation of relevant technical, financial, and social aspects.

## Course contents

Lectures given by a variety of experts present the essential elements of a particular topic and also provide a framework for further in-depth study via a group project. A lab exercise using an energy economic forecasting tool (LEAP) is included. Field trips include innovative small-scale energy systems at Hammarby Sjöstad in Stockholm along with a voluntary field trip to Porjus (details to be confirmed), which allows participants to learn first-hand about hydropower development in Sweden and to see modern hydropower facilities.

## Course literature

Handouts distributed during lectures.

## Examination

- PRO1 - Project, 4.5 credits, grading scale: A, B, C, D, E, FX, F
- TEN1 - Examination, 1.5 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

Group project (4.5 hp): Includes 2-page formulation, written report, 2-page peer assessment of another group's report, and oral presentation. One grade (A-F) assigned per group.

Final exam (1.5) Tests knowledge of subjects presented at lectures. One grade (A-F) assigned per individual.

Individual grades ranging from A-F will be assigned based on the weighted contribution of the above.

## **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.