



SK2711 Environmental physics

6.0 credits

Miljöfysik

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 SK2711 valid from Autumn 2018

Grading scale

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

Education cycle

Second cycle

Main field of study

Engineering Physics, Physics

Language of instruction

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

Intended learning outcomes

The course covers the physics of solar energy, the carbon cycle, carbon-based, nuclear, and renewable energy, the Green-house effect, and how mankind affects the environment. The emphasis is on conceptual understanding of the relevant physical mechanisms.

The student will learn to:

- solve problems regarding the solar radiation, the Earth's carbon cycle and the Green-house effect
- analyze the structure of the atmosphere and the biospheric radiation balance
- perform calculations on conventional carbon-based and nuclear energy
- evaluate renewable energy sources - solar, wind, water, and bio
- analyze effects on the environment, various sources of pollution, as well as aspects of sustainable development of mankind

Course contents

Solar energy, the carbon cycle, the Green-house effect, fossil-fuel energy, heat engines, nuclear power, fission and fusion, renewable energy from sun, wind, water, biosources, environmental pollution in air, water, noise and radiation, climate changes, sustainable development.

Specific prerequisites

Introductory courses in Thermodynamics and Modern Physics at BSc level or equivalent.

Course literature

Environmental Physics, Sustainable Energy and Climate Change, E. Boeker and R. van Grondelle, Wiley 2011 (3rd edition), as well as own teaching material.

The textbook is available as e-text (English).

Examination

- TEN1 - Written examination, 6.0 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.

A written exam: TEN, 6 hp, grading scale A-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.