



# SK184N Environmental Physics

## 9.0 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 SK184N valid from Spring 2016

### Grading scale

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

### Education cycle

First cycle

### Main field of study

Technology

### Specific prerequisites

Basic eligibility for university studies.

### 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
- discuss the structure of the atmosphere and the biospheric radiation balance
- perform calculations on conventional carbon-based and nuclear energy
- explain and make estimates on renewable energy sources - solar, wind, water, and bio
- discuss acoustical and electromagnetic 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.

## Course literature

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

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

## Examination

- TEN1 - Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN2 - Exam, 3.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN3 - Exam, 3.0 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.

## Other requirements for final grade

Three written exams: TEN1, 3 hp, grading scale A-F; TEN2, 3 hp, grading scale A-F; TEN3, 3 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.