



# SK183N Environmental Science II. Physics and Applications 6.0 credits

## Miljövetenskap II. Fysiken och tillämpningar

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 SK183N valid from Spring 2014

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Physics, Technology

## Specific prerequisites

- **General requirements**, i.e. completed upper secondary education including documented proficiency in Swedish and English (for courses given in Swedish) or including documented proficiency in English (for courses given in English).

- **Specific requirements:** knowledge of Mathematics corresponding to Mathematics D/3C, Physics corresponding to Physics B/2 and Chemistry corresponding to Chemistry A/1 is required.

## Language of instruction

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

## Intended learning outcomes

The course will give knowledge about acoustics within environmental science, such as how infra sound can be used to perform environmental measurements. At Earth quakes, tsunamis, snow avalanches, ejection of missiles, blow outs at oil drill towers, infra sound can be used for detection. Undesired sound and noise and the dB-scale will be discussed. Electromagnetic radiation and protection against it, such as intense laser radiation will be discussed. Solar energy use in the form of large solar parks is a part of the course. Long time use of radioactive radiation, radioactive dose, protection against radioactivity is included. Radiation safety. Environmental laboratories is a part of the course, where for example the thickness of the ozone layer is treated.

After the course the student will be able to:

- solve problems concerning acoustic phenomena within the environmental field.
- perform calculations concerning radioactive decay, do dose determinations, make estimates about long term storage of radioactive material.
- perform calculations and measurements on the ozone layer and determine its thickness by using graphs from the laboratories.
- discuss various methods within environmental science for low level detection such as mass spectrometry that also is dealt with as a laboratory.

## Course contents

Acoustics within environmental science. Noise and the dB-scale. Infra sound and ultra sound. Electromagnetic radiation and laser radiation and how to protect against intense laser radiation. Radioactive decay and radioactive dose. Protection against radioactivity. Radon. Radioactive dating and long term deposit. Low level detection of pollutants.

## Disposition

Internetcourse examined over the Internet. The course is given in all periods as well as in the summer

## Course literature

Environmental science II, Internetlärobok, Lars-Erik Berg, 2009.

## Examination

- LAB1 - Laborations, 2.0 credits, grading scale: P, F
- TEN1 - Examination, 2.0 credits, grading scale: A, B, C, D, E, FX, F
- TEN2 - Examination, 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.

## 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.