



# SK1111 Electromagnetism and Waves 7.5 credits

Elektromagnetism och vågrörelselära

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 SK1111 valid from Autumn 2008

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Physics, Technology

## Language of instruction

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

## Intended learning outcomes

After the course, the student will be able to:

- understand and solve technical problems, relevant for their program, which are related to electrical fields, magnetic fields, mechanical waves, and electromagnetic waves
- explain physical problems, conditions and restrictions to cooperation partners with non technical educations
- estimate size and reasonableness in physical problems
- use and understand restrictions in physical measurements and instruments
- evaluate and present physical measurements in text and in diagrams.

“Physical” in the text above, means that part of physics that is included in the main content (se below).

## Course contents

**Electrostatics:** Electric force, field and potential, Gauss’s theorem, electric field and potential in metals and dielectrics, principles of the capacitor, electrostatic energy.

**Magnetism:** Sources of the field, force and torque, magnetic materials and magnetic energy, technical applications, induction and inductance.

**Waves:** Mechanical waves and acoustics. Generation of electromagnetic waves, polarisation, interference and diffraction, coherence. Lasers. Basic geometrical optics.

Technical applications.

## Specific prerequisites

Recommended previous knowledge:  
Basic courses in mechanics and mathematics

## Course literature

Young and Freedman: University Physics, Pearson (the edition used will be announced on the course home page at least four weeks prior to the start of the course).

Instructions to lab experiments.

## Examination

- INL1 - Hand in Assignments, 1.0 credits, grading scale: P, F
- LAB1 - Laboratory Work, 2.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 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

Written exam (TEN1; 4.5 credits, grading scale A-F)

Hand-in assignments (INL1; 1 credit, grading scale P/F)

Passed lab experiments (LAB1; 2 credits, grading scale P/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.