



SK1115 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

The Head of School at the SCI School has decided on 2020-02-20 to adopt this syllabus to apply from HT2020, diary number: S-2020-0291.

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

One-variable analysis (SF1625) and Algebra and geometry (SF1624) are recommended, but are read parallel to this course, hence no formal prerequisites.

Language of instruction

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

Intended learning outcomes

After completing the course the student should be able to:

- solve technical problems in basic physics related to electric and magnetic fields, mechanical and electromagnetic waves, and assess the reasonableness of the solution
- use physical measurement methods and instruments, evaluate measurement data and report results and evaluate limitations.

Course contents

Electrical statistics: Electric power, field strength and potential, Gauss's theorem, electric field and potential in metals and dielectrics, capacitor, electrostatic energy.

Magnetic field: Origin, power effect, magnetic material, magnetic energy. Electromagnetic induction. Introduction to the relationship between electric and magnetic field and Maxwell's equations.

Mechanical waves: Basic wave concepts. Acoustics.

Electromagnetic waves: Generation, polarization, interference and diffraction, technical applications.

Examination

- INL1 - Hand in tasks, 1.5 credits, grading scale: P, F
- LAB1 - Laboratory experiments, 1.5 credits, grading scale: P, F
- TEN1 - Written exam, 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

The course is examined through a written exam (TEN1; 4.5 credits, grade scale A, B, C, D, E, Fx, F), assignments (INL1; 1.5 credits, grade scale P/F) and approved laboratory exercises (LAB1; 1, 5 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.