



SK1117 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 SK1117 valid from Autumn 2019

Grading scale

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

Education cycle

First cycle

Main field of study

Technology

Specific prerequisites

Active participation in SF1625 Calculus in One Variable and SG1120 Mechanics I.

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 relevant to its program related to electric and magnetic fields, mechanical and electromagnetic waves, and assess the solution's reasonableness
- use physical measurement methods and instruments as well as report results and evaluate limitations

By "physical" is meant the part of physics that is included in the course content below.

Course contents

Basic wave concept. Mechanical waves and acoustics. Sound intensity and sound intensity level.

Interference. Electricity: field strength and potential, Gauss's theorem, metals and dielectrics, capacitor, electrostatic energy. Technical applications. Electromagnetic induction. Basic wave concept. Mechanical waves and acoustics. Electromagnetic induction. Electromagnetic waves: Generation, polarization, interference and diffraction, technical applications. The laser. Coherence. Basic geometric optics.

Course literature

Young and Freedman: University Physics, Pearson (aktuell upplaga anslås på kursens hemsida senast fyra veckor innan kursstart).

Young and Freedman: University Physics, Pearson (current edition is posted on the course's homepage no later than four weeks before the course starts).

Examination

- INL1 - Home tasks, 1.0 credits, grading scale: P, F
- LAB1 - Laboratory work, 2.0 credits, grading scale: P, F
- TENA - 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

To pass the course, all three examination parts must be approved (INL1, LAB1, TENA).

The grade on the exam (TENA) gives the grade for the entire course.

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.