



# SK1118 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 April 4, 15, to adopt this syllabus to apply from HT2020, diary number: S-2020-0285.

## Grading scale

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

## Education cycle

First cycle

## Main field of study

Technology

## 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 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

- Electrostatics: Field strength and electrical potential, Gauss's theorem, metals and dielectrics, the capacitor, electrostatic energy.
- Magnetism: Origin, magnetic forces, magnetic materials, coils, magnetic energy.
- Technical applications, magnetic induction.
- Maxwell's equations.
- Fundamental notions of waves.
- Electromagnetic waves: Generation, polarization, interference and diffraction, technical applications

## Specific prerequisites

SF1624 Algebra and Geometry, SF1625 Calculus in One Variable and IE1206 Embedded Electronics.

## Examination

- LAB1 - Laboratory Work, 1.5 credits, grading scale: P, F
- TEN1 - Examination, 6.0 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

Written, problem-based exam. The grading will be based on the exam score. To pass the course, two sessions of laboratory work need to be approved. These will only be offered during the period the course is scheduled.

## 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.