



# EI1260 Electromagnetic Theory, Introductory Course 6.0 credits

Teoretisk elektroteknik, grundkurs

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 EI1260 valid from Autumn 2007

## Grading scale

P, F

## Education cycle

First cycle

## Main field of study

Electrical Engineering, Technology

## Specific prerequisites

## Language of instruction

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

# Intended learning outcomes

When the students have passed the course, they shall be able to

- define electric and magnetic fields
- calculate electric and magnetic fields from stationary and dynamic charge and current distributions
- solve simple electrostatic boundary
- describe simple models for electromagnetic interaction with media
- explain the physical meaning of Maxwell's equations
- analyse energy in electromagnetic fields
- analyse plane waves

## Course contents

Lectures

Coulomb's law. Electric lines of force. Evaluation of electric field and potential in vacuum and with materials. Energy and forces in electrostatic systems. Static magnetic fields:

Biot-Savart's and Ampere's laws. Fields in magnetic materials. Electromagnetic induction. Faraday's law. Mutual and self-induction. Maxwell's equations. Plane waves: propagation, reflection and polarisation.

Exercises:

Problem solving related to the various parts of the course.

## Course literature

Griffiths: Introduction to Electrodynamics, 3:rd ed. Prentice Hall

Petersson: Stationära fenomen (In Swedish)

Petersson: Elektromagnetism (In Swedish).

## Examination

- INL1 - Assignments, 6.0 credits, grading scale: P, 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

Hand in exercises (INL1; 6cr.)

## 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.