



EE1210 Wave Propagation and Antennas 7.5 credits

Vågutbredning och antenner

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 EE1210 valid from Autumn 2007

Grading scale

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

The course gives the connection between electric and magnetic fields and explains the generation, propagation and receiving of electromagnetic waves in various media.

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

- use Maxwells equations to calculate fields from dynamic charge/current distributions
- analyse plane waves in lossless and lossy media
- analyse TEM waves in transmission lines
- analyse EM-waves in waveguide
- explain the meaning of retardation
- analyse antennas and radiating system
- calculate fields from antennas and antenna systems

Course contents

Lectures

Maxwells equations. Application of Maxwells equations. Plane wave-propagation. Reflected and refracted wave in lossless and lossy media. Transmission lines. Rectangular waveguides. Antenna and antenna systems. Antenna patterns. Directivity. Gain. Radiation resistance. Half-wave dipole. Antenna arrays. Friis transmission formula. Radar equation.

Exercises:

Problem solving related to the various parts of the course.

Course literature

Cheng: Field and Wave Electromagnetics. Addison-Wesley.
Petersson: Elektromagnetism (In Swedish)

Examination

- KON1 - Examination, 2.0 credits, grading scale: P, F
- KON2 - Examination, 2.0 credits, grading scale: P, F
- TEN1 - Examination, 3.5 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

Two written control tests (KON1; 2 cr.), (KON2; 2 cr.)
One written examination (TEN1; 3,5 cr.).

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.