



FEI3301 Waveguiding Methods

5.0 credits

Vågledarmetoder

This is a translation of the Swedish, legally binding, course syllabus.

Establishment

Course syllabus for FEI3301 valid from Autumn 2011

Grading scale

G

Education cycle

Third cycle

Specific prerequisites

Language of instruction

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

Intended learning outcomes

After completion of the course the student shall be able to

- apply the decomposition technique on the fields and the Maxwell equations

- explain the concept waveguide mode, and analyse modes in metallic waveguides, cavity resonators, optical fibers and multiconductor transmission lines
- explain the concept of mode orthogonality, and apply it to waveguide analysis
- apply discrete and continuous spectral methods for analyzing mode coupling between waveguides, radiation from sources inside waveguides and from apertures in waveguide walls

Course contents

Mathematical methods for guided electromagnetic waves

Disposition

Lessons and consultations

Course literature

Collin, Field Theory of Guided Waves 2:nd ed
Norgren, course binder with lecture notes
Research papers

Examination

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.

If the course is discontinued, students may request to be examined during the following two academic years.

Three homeassignments:

1. Design of a waveguide feed and horn antenna
2. Design and analysis of a dielectrically loaded cavity resonator filter
3. Design and analysis of a slotted waveguide or a leaky cable antenna

Other requirements for final grade

Satisfactory performance in all homeassignments. Oral presentation of one assignment.

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.