FEI3301 Waveguiding Methods 5.0 credits

Vågledarmetoder

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 FEI3301 valid from Spring 2020

Grading scale

P, F

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 passing the course, the student shall be able to

- solve parts of problems from most of the course content

in order to be able to use the electromagnetic laws in combination with mathematical methods to solve electromagnetic field problems.

Course contents

- decomposition of the fields and Maxwell's equations in isotropic media
- analysis of propagating and non-propagating TM, TE & TEM modes in metallic waveguides
- waveguides with rectangular and circular cross sections
- application of modortogonality in excitation from sources and in energy transport
- the mode matching method for analyzing scattering at discontinuities
- analysis of attenuation and coupling between waveguide modes
- analysis of resonance cavities, orthogonality relationship, losses and bandwidth
- flat dielectric waveguides and optical fibers
- analysis of quasi-TEM modes in multi-conductor systems.

Disposition

- lessons
- consultations

Course literature

Information about course literature is given in the course-PM.

Examination

- EXA1 - Examination, 5.0 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.

Assignments and project tasks.

Other requirements for final grade

Satisfactory performance in all home-assignments. 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.