FEI3302 Electromagnetic Waves in Complex Media 4.0 credits

Elektromagnetiska vågor i komplexa material

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

Establishment

Course syllabus for FEI3302 valid from Spring 2019

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 completion of the course the student shall be able to

- explain the constitutive relations for various complex media
- explain the concepts of reciprocal and nonreciprocal media

- derive dispersion relations for complex media and determine the wavenumbers and polarization states for the eigenwaves
- analyze scattering at canonical interfaces between complex and simple media and between different complex media

Course contents

Methods for analyzing propagation and scattering of electromagnetic waves in complicated materials

Examination

- EXA1 - Examination, 4.0 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.

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

Two homeassignments:

1. Eigenwave analysis of one reciprocal and one nonreciprocal media. Topics depending on interest, e.g. birefringerent crystals; ferrites; plasmas; Faraday media; chiral media.
2. Scattering of radiation from a line source in front of a layered structure. Topic depending on interest, e.g. lens; polarizer; reflector; absorber; etc.

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.