



FEK3150 Topics in Electromagnetic Interactions with Microsystems 3,0 hp

Topics in Electromagnetic Interactions with Microsystems

När kurs inte längre ges har student möjlighet att examineras under ytterligare två läsår.

Fastställande

Kursplan för FEK3150 gäller från och med HT12

Betygsskala

Utbildningsnivå

Forskarnivå

Särskild behörighet

Recommended:

MSc degree in electrical engineering, technical physics, or equivalent

- basic knowledge in microwave and/or photonics engineering
- basic knowledge in microsystem technology (such as the EK2350 Microsystem Technology Course at KTH, or equivalent)
- ongoing research activities within or related to electromagnetics and/or microsystems

Undervisningspråk

Undervisningspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

In the course of these meetings, the student will:

- have learned about the state of the art and research trends in research fields associated to his/her own research field
- have learned to get familiar with new problems related but not exactly within his research field, be able to assimilate new material quickly to reach a certain level of judgement
- have gained deeper understanding the theoretical background of wave propagation phenomena and interaction with microstructures
- have gained insight in modelling electromagnetic microstructures and in judging/questioning the simulation results
- have developed better understanding of the interdisciplinarity of associated fields: i.e. mutuality and differences between microwave systems and photonics engineering for different frequency ranges and applications
- have learned to present a certain topic to an audience which is not directly working on this topic but which is able to question the presented material
- have learned to give and to get feedback on presentations on topics related but not directly within his/her research field

Kursinnehåll

The general objective of the course is to create a learning, but also information exchange and discussion forum for graduate students and researchers working with electromagnetic signals in microsystems, including microoptics, photonics, and microwave/RF MEMS. The goal of the course is for the participants to deepen their knowledge in these fields and to gain understanding by giving and listening to presentations and by discussing topics in this field. More specifically, electromagnetic problems with strong focus on the interdisciplinary nature of interactions of microwaves with micromachined geometries of feature sizes both larger and smaller than the signal wavelengths are handled at the different meetings of the course. Individual discussion topics span from theoretical analysis, simulation models, to device characterization and applications.

Kursupplägg

The course is arranged as a seminar series with 2 (academic) hours long units every third week. Every unit consists of 1-2 presentations given by the participants on topics determined by the course responsible and the presenter, typically related to the research field of the presenter, and of a general discussion between all participants on the current topic. Every presentation also comprises an overview of general and recent publications, which must be sent out to all participants prior to the presentation, so that all participants can prepare the topic as a homework task for developing basic understanding before each seminar.

Alternatively to presentations by the course participants, lectures by the course responsible and external guests will be given.

Utrustning

None

Examination

Examinator beslutar, baserat på rekommendation från KTH:s handläggare av stöd till studenter med funktionsnedsättning, om eventuell anpassad examination för studenter med dokumenterad, varaktig funktionsnedsättning.

Examinator får medge annan examinationsform vid omexamination av enstaka studenter.

Övriga krav för slutbetyg

To get the full credits after a full academic year period, the student must:

1. be present on at least 80 % of the seminars
2. active participation by giving a certain number of presentations, determined by the course responsible at the beginning of each academic year (depending on the number of participants); the quality of the presentations and the preparation of the students will be judged by the course responsible
3. active participation by involvement in the discussions after the presentations; judged by the course responsible

The final grade for each student is determined by the active participation of the student in the course. As this is a PhD course the grading is either pass or fail.

Etiskt förhållningsätt

- Vid grupparbete har alla i gruppen ansvar för gruppens arbete.
- Vid examination ska varje student ärligt redovisa hjälp som erhållits och källor som använts.
- Vid muntlig examination ska varje student kunna redogöra för hela uppgiften och hela lösningen.