



FEI3336 Nanodielectric Insulation Materials, PhD Course 5.0 credits

Nanodielektriska isolationsmaterial, doktorandkurs

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 FEI3336 valid from Autumn 2011

Grading scale

Education cycle

Third cycle

Specific prerequisites

MSc in electrical engineering, physical engineering or similar. FEI3230 is good to have.

Language of instruction

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

Intended learning outcomes

After the course, the student should be able to:

- identify the properties of nanocomposite dielectric materials and compare the properties to other materials
- describe how well dispersed nanocomposites are manufactured
- explain how surface functionalization of nanoparticles will affect the macroscopic properties of the material
- use different characterisation methods for nanocomposites

Course contents

Physical properties of inorganic nanoparticles, methods for surface functionalization, dispersion of nanoparticles, physico-chemical characterization of nanocomposites, electrical characterization of nanocomposites, multi-core model

Disposition

Seminars/workshops (7*3h = 21 h), 1 simulation project

Course literature

J. K. Nelson (ed) , **Dielectric Polymer Nanocomposites**, Springer, 2010, research articles.

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.

Other requirements for final grade

One ten page long (font 12pt) essay on the properties of a particular nanocomposite. Participated in 5 out of 7 workshops, each time giving an oral presentation of something from a research article not older than 5 years. One technical report on repeated simulation of data from articles.

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.