FSK3750 Nanofabrication with Focused ion and Electron Beams 3.0 credits

Elektrostråle och jonstråle nanofabrikation

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 FSK3750 valid from Spring 2010

Grading scale

Education cycle

Third cycle

Specific prerequisites

Admitted in to a PhD program in physics, Chemistry microelectronics, or other related subject. Note that students wishing to receive training at the console, must have sponsorship of a research group who will pay laboratory usage fees.

Good general science or technical education. Advanced level courses are not necessary to understand the basic ideas. A good sense for physical apparatus and computer interfaces are needed to properly use this rather complex system.

Language of instruction: English

Language of instruction

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

Intended learning outcomes

This course is designed for students and researchers who are interested in using Electron Beam Lithography (EBL) or Focused Ion Beam (FIB) for nanofabrication in their research projects.

After this course the students are expected to be able to:

- Understand the basic concepts and be ready to receive training to use an EBL and FIB systems.
- Understand the fundamental principles and limitations of EBL and FIB.
- Know the main industrial and basic research applications of EBL and FIB.

Course contents

The course consists of 5 x 2 hours of lectures given in one week. The lectures will cover the basic principles of EBL and FIB, as well as the principles of Scanning Electron Microscopy (SEM). Students wishing to receive training at the EBL and or FIB console, will train with experienced users. Note that such training requires sponsorship of a research group to pay for the lab fees. Students not wishing to receive training, can do a literature study project.

- Electron Beam Lithography- principles and possibilities
- Focused Ion Beam nanofabrication.
- Advanced Exposure Strategies for EBL
- Principles of operation, Raith 150 and FEI Nova.

Lectures: 8 h, laboratory training ca. 25H

Course literature

Lecture notes, Handbook material and other articles, made available via a restricted access web site.

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.

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.