



FSK3760 Doktorandseminarium i nanofabrikation 7,5 hp

Graduate Seminar in Nanofabrication

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

Fastställande

Kursplan för FSK3760 gäller från och med VT10

Betygsskala

Utbildningsnivå

Forskarnivå

Särskild behörighet

Some experience of working in a lab, not necessarily a cleanroom. Good general science or technical education in Physics, Chemistry, Biophysics etc. 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 the rather complex systems in the Nano Fab Lab.

Undervisningsspråk

Undervisningsspråk anges i kurstillfällesinformationen i kurs- och programkatalogen.

Lärandemål

After the course you should be able to apply your knowledge in clean room instrumentation to different clean room processes and to be able to collaborate with other users in such a way that both parties can benefit from it. This means you should be able to:

- Describe and explain how the instrumentation of the NanoFabLab works and how it can be used.
- Design the different steps for a specific process and choose the appropriate parameters for each step.
- Identify the most appropriate instrument that will let you evaluate each step of a given process.
- Document the different processes in such a way that other users

Kursinnehåll

The course is divided in two parts: the first part consists of seminars in which we discuss the different instruments and their parameters; the second part involves lab work and meetings to discuss its progress.

Part I. Seminars

All seminars are 2 h- long.

Seminar 1: Course presentation; What is a clean room?

Seminar 2: What is a clean room and clean room processes

BLOCK I: Fabrication

Seminar 3: Lithography I: Resists, hotplates and ovens. Photolithography

Seminar 4: Lithography II: E- beam lithography and Focus Ion Beam

Hand in your own clean room process. Problems, improvements

Seminar 5: Etching. Wet and dry etching.

Seminar 6: Evaporation and Sputtering

BLOCK II: Evaluation Instruments

Seminar 7: Surface profiler & SEM

Seminar 8: Optical Microscopy

Seminar 9: AFM

Part II. Lab work and discussions

Seminar 10: Processes and group projects

Seminar 11: Presentation of the Group Project I

Seminar 12: Presentation of the Group Project II

Kurslitteratur

Hand outs distributed via Nanophys web- site.

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.

In order pass the course, each participant must:

- Attend all the seminars and meetings
- Carry out the two different group projects.
- Present the two group projects and his /her own project in such a way that the rest of the participants can follow and understand your process problems and solutions.
- Hand in a written report about the lab- projects following the guidelines.

Etiskt förhållningssätt

- 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.