



IH2659 Nanofabrication Technologies 7.5 credits

Tillverkningsstekniker för nanokomponenter

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 IH2659 valid from Spring 2019

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

Courses on BSc the level or higher in solid state physics and semiconductor devices are recommended.

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 review and discuss:

1. Unit manufacturing processes for micro- and nanofabrication on wafers
2. Moore's law and advanced process technologies
3. Process integration examples.

The student will fabricate devices in a clean room (Electrum laboratory) and use a number of unit processes included in the course.

Course contents

The course covers process technologies that are used in micro- and nanofabrication of devices and systems on wafers. Applications include all technologies that are based on wafer scale fabrication such as integrated circuits, micro-electro-mechanical systems and optical devices. The basic unit processes deposition, patterning, etching, doping and heat treatment are covered, followed by process integration to build complex devices. Moore's law and the basic economics for integrated circuits are covered and exemplified by reviewing the state-of-the-art process technology nodes. The course gives the student basic understanding of the sustainability aspects in integrated circuit fabrication.

Course literature

Fabrication engineering at the micro- and nanoscale, S. A. Campbell, Fourth Edition, Oxford University Press, 2013.

Examination

- LAB1 - Lab, 1.0 credits, grading scale: P, F
- TEN1 - Examination, 6.5 credits, grading scale: A, B, C, D, E, FX, 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.

Other requirements for final grade

Laboratory session and examination are compulsory for a pass final grade.

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.