


 Faculty of Applied Sciences

ELEC2560 MICRO AND NANOFABRICATION TECHNIQUES

[30h+30h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Vincent Bayot (coord.), Denis Flandre, Jean-Pierre Raskin
Language: French
Level: Second cycle

Aims

At the end of the course, the students will be able to :

- understand the fabrication processes of electronic and electromechanical devices at micro and nanometer scales,
- use the numerical simulation tools for running and optimizing fabrication processes,
- make themselves micro and nanofabrication steps in cleanrooms

Main themes

Identical to the contents of the course

Content and teaching methods

The content of this course is the following : description of fabrication processes for semiconductor integrated devices and circuits, material deposition methods, oxidation, implantation, doping, photolithography, electron-beam lithography, wet and dry etching, plasma surface treatments, etc.

A first project based on the use of numerical simulation tools will help the students to learn more about modelling of fabrication procedures and characterization of integrated devices.

The students will have the opportunity to realize some key fabrication steps of a particular complete process flow in the cleanroom facilities during a second project.

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

5-6 classroom lectures will be given about the main micro and nanofabrication as well as characterization (electrical and physical) techniques. Afterwards, the students will make 2 projects in groups of 2-3 students depending on the chosen subject : (1) process simulations, (2) fabrication/characterization in cleanrooms.

Prerequisites :

Basic knowledges in electronics, solid-state physics and chemistry

Assessment :

Oral presentation and writing of a report (about 15-20 pages written as a journal article) for the 2 projects approved by the teachers.

Could be given in English

Other credits in programs

ELEC22	Deuxième année du programme conduisant au grade d'ingénieur civil électricien	(5 credits)
ELME23/M	Troisième année du programme conduisant au grade d'ingénieur civil électro-mécanicien (mécatronique)	(5 credits)
FSA3DA	Diplôme d'études approfondies en sciences appliquées	(5 credits)
MATR22	Deuxième année du programme conduisant au grade d'ingénieur civil en science des matériaux	(5 credits)
MECA23	Troisième année du programme conduisant au grade d'ingénieur civil mécanicien	(5 credits)