EE-532

Integrated circuits technology

Cursus	Sem.	Type
Electrical and Electronical Engineering	MA1, MA3	Opt.

Language of teaching	English
Credits	2
Session	Winter
Semester	Fall
Exam	Written
Workload	60h
Weeks	14
Hours	**2 weekly**
Courses	2 weekly
Number of positions	

Remark

Pas donné en 2021-22

Summary

This course will give an overview of some of the most relevant aspects of CMOS technology used to design and fabricate integrated circuits. Current research and challenges brought about by shrinking Field Effect Transistors down to the nm scale will also be tackled.

Content

•Introduction & Basics of integration technology
•Cleaning processes
•Thermal treatments
•Implantation
•Semiconductor Film growth
•Lithography
•Etching processes
•Metallization
•Process Integration
•Advanced multigate nano scale FET architectures.

Keywords

Silicon
CMOS
MOSFET
SOI
Implantation.
Etchning.
Annealing
isolation
oxide

Learning Prerequisites

Important concepts to start the course

No prequisite is needed, however very basic knowledge about MOSFET principles is welcome.

Learning Outcomes

By the end of the course, the student must be able to:

- Synthesize informations on technology processes
- Classify technological steps to fabricate an IC
- Visualize the process flow

Transversal skills

- Set objectives and design an action plan to reach those objectives.

Teaching methods

Class lectures.
Correction of exercices left for home work.

Expected student activities

Some training exercices.

Assessment methods

Written examination without documents:
Balance between question on the course content and exercices

Supervision

Office hours	Yes
Assistants	No
Forum	No

Resources

Moodle Link

- https://moodle.epfl.ch/course/view.php?id=16341