

Semester S8	ENSEA	New !
	Microelectronics	
US Credits : 3	Lecture : 36h, Laboratory 28h	Language : English

Summary

This course introduces the technological processes involved to produce integrated circuits. In the context of MOS or mixed MOS & bipolar transistor high performance, or FPGA targets, the design of analog and digital circuits is revisited. A rigorous method is presented to meet design goals (algorithms, performances, environment, and constraints) and achieve a physical realization.

Prerequisites

- Validation of analog and digital electronics courses.
- Basic knowledge about bipolar and MOS transistors.

Contents

- Presentation of technological processes for IC, introduction to nanotechnologies
- **Workshop in a clean room**, prototyping and characterization of a basic IC
- MOS Transistor, CMOS technology
- Introduction to design methods (full custom, semi-custom, prediffused). Design-flow
- Topology for integrated analog circuits : Op Amps, OTA. Design of state variables filters : gm-C and switched-capacitors approach. Translinear amplifiers, Gilbert multipliers.
- Initiation to Computer Aided Design in industrial environment: Cadence and its tools
- Full custom CAD of a simple analog function
- Innovative architectures : systems on chip

Laboratory project

- SOC programming

Textbook

Similar to the following courses

- IIT Chicago
- University at Buffalo
- University of Pittsburgh
- University of Illinois at Urbana-Champaign
- Mississippi State University
- University of Michigan at AA
- Michigan Tech