ESCUELA TÉCNICA SUPERIOR DE INGENIERÍA

DEA-TEL-523 Integrated Circuit Design

SEMESTER: Spring

CREDITS: 3 ECTS (2 hrs. per week: Theory and lab)

LANGUAGE: Spanish / English

DEGREES: MIT

Course overview

This course is an introduction to Integrated circuit design. We will focus I the theory part in all the steps required for the IC design. In the lab part we will learn to use Electric tool for analog design. A Lab project with schematic, simulation and layout will finish the course.

Prerequisites

Digital systems, analog electronics and programming.

Course contents

Theory:

1. Introduction to integrated circuit.
2. Introduction to integrated circuit manufacturing.
3. Design tools introduction.
4. Digital design flow.
5. Analog design flow.
6. Back end process.
7. Mixed signal design.

Laboratory:

There will be six 2-hour sessions between the third and the last lecture week, including the lab exam.

P1. Tools introduction.
P2. Analog design schematic and simulation
P3. Analog design layout
P4. Analog design extraction, and post-layout simulation

Textbook

- Jan M. Rabaey. "Digital Integrated Circuits. A design perspective". Prentice Hall.
- Weste, Neil, Harris, David. "CMOS VLSI Design: A Circuits and Systems Perspective (4th Edition)". Addison Wesley. 2011.
- Sedra, Adel. S, Smith, Keneth. "Microelectronics circuits" Oxford University Press. 2011. New York.
- P.R. Gray, R.G. Meyer: "Analysis and Design of Analog Integrated Circuits" 3rd Ed., John Wiley & Sons, 1993. ISBN: 0-471-59984-0

Grading

- Final exam accounts for 40% of the final grade.
- Several quizzes during the course (some handwritten, some on the design tools) account for 10% in total.
- Lab project presentation account for 50% of the grade.