60946 - Microelectronic circuit design

Información del Plan Docente

Academic Year	2018/19
Subject	60946 - Microelectronic circuit design
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	533 - Master's Degree in Telecommunications Engineering
ECTS	5.0
Year	2
Semester	First semester
Subject Type	Optional
Module	---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as

- Teaching sessions will have a predominantly practical orientation. In lectures, the basis of mixed-mode microelectronic design will be presented, setting out the fundamental aspects of the design flow.
- Laboratory sessions with in small groups of students, where they will work with microelectronic design CAD tools.
- Workshops (T6) and autonomous work will be encouraged to elaborate, as a result, the complete design of a mixed IC.

Students are expected to participate actively in the class throughout the semester.

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Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, task instructions, the course syllabus, as well as other course-specific learning materials.

4.2.Learning tasks

The program, offered to the students to achieve the learning goals, includes the following activities:

IN PERSON ACTIVITIES (2 ECTS - 50 hours):

- **A01 Lectures** (15 hours) and **A02 practice sessions** (15 hours). The main contents of the course will be explained and illustrated with a set of representative problems on mixed microelectronic design. Lecture notes will be available on Moodle in advance.
- **A03 Laboratory sessions** (15 hours). Several practice sessions where CAD tools for microelectronics design will be used, so that students acquire the skills and abilities necessary to address a mixed IC design. The instructions will be available on Moodle in advance.
- **A05 Tutorials** (3 hours). Teacher-student sessions in order to supervise the assignments.
- **A08 Assessment** (2 hours). A final exam.

Autonomous work (3 ECTS: 75 hours):

- **T7 Autonomous work and study.** Individual work aimed at achieving the adequate pursuit of the course, conducting lab sessions and assignments, and tutorials.
- **T6 Workshops and/or seminars.** T6 assignments and reports related to lab sessions are included. Students will have access to the material provided by the teacher, manufacturers of integrated circuits, and on-line resources. The assessment criteria includes the student's autonomy, the quality of the solution, and the participation of each of the group members.

4.3.Syllabus

The course will address the following topics:

- Topic 1. Introduction
- Topic 2. CMOS submicronic technologies
  - Technological process
  - Devices, characterization and modelling
- Topic 3. Analog design flow
- Topic 4. Digital design flow
- Topic 5. Design of analog-digital mixed systems

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course, will be provided on the first day of class or please refer to the EINA website.

4.5.Bibliography and recommended resources

1. Teaching materials. Available at http://add.unizar.es (To access this resource, the student must be enrolled in the course).

- Slides. They are considered the notes of the subject.
- Task instructions.
- Supplementary teaching materials: catalogs of manufacturers, component data sheets, CAD tools manuals, etc.

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