Universidad Zaragoza

Year : 2019/20

67234 - Microelectronic Design

Syllabus Information

Academic Year: 2019/20
Subject: 67234 - Microelectronic Design
Faculty / School: 110 -

Degree: 527 - Master's in Electronic Engineering

ECTS: 5.0
Year: 1
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:

- Theory sessions with a practical approach, where the basis of mixed-mode microelectronic design will be presented, setting out the fundamental aspects of the design flow.
- Laboratory sessions in small groups, where the students will work with microelectronic design CAD tools.
- Assignments (T6) oriented towards student autonomous work as a result of the complete design of a mixed IC.

The required material to develop these activities will be provided to the student well in advance.

4.2.Learning tasks

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

Classroom activities (2 ECTS: 50 hours):

- **Theory sessions** (A01 - 15 hours) and **practice sessions** (A02 - 15 hours). The fundamental contents of the course will be presented, with a practical orientation based on the mixed microelectronic design. The necessary

materials will be available to students on the virtual platform.

- **Laboratory sessions** (A03 - 15 hours). This activity is structured in different practical sessions that require CAD tools for microelectronics design, so that students will acquire the skills and abilities necessary to address a mixed IC design. The instructions will be available to students on the virtual platform in advance.
- **Tutorials** (A05 - 3 hours). Personalized teacher-student sessions in order to guide exercises and assignments.
- **Evaluation tests** (A08 - 2 hours). A final test.

Autonomous work (3 ECTS: 75 hours):

- **Study** (T7): This activity includes personal study aimed at monitoring the learning process, conducting lab sessions, preparing assignments, and the tutorials.
- **Assignments** (T6). T6 type activities and preparation of lab reports are included. In order to meet the requested results, students will have learning materials provided by the teacher, manufacturers' integrated circuits and on-line resources. The assessment criteria will take into consideration the student autonomy, the quality of the solution, and the participation of all 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 modeling
- 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

http://biblos.unizar.es/br/br_citas.php?codigo=67234&year=2019