30329 - Digital Electronic Systems

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS	6.0
Course	
Period	Second semester
Subject Type	
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation

This course covers the systematic design of advanced digital systems using Field programmable gate arrays (FPGAs) and an introduction to ASIC design.

We will first review in detail the basic building blocks of FPGA programming. Second, we focus on architecture, design methodologies, best design practices, and optimization techniques for performance (frequency, latency, area, power, etc).

Finally, we will cover testbench development, simulation for bit-true design verification, and synthesis of complete digital systems.

The emphasis is on FPGA technology, but most of the design techniques can also be applied to ASIC devices.

5.2.Learning activities

This course includes a combination of lectures, laboratory assignments, and a final exam.

5.3.Program

course topics :

- Advanced VHDL coding

- Fixed point VHDL description.

- FPGA architectures

- High performance FPGA design

- CMOS Technology

- Introduction to ASIC design

- Testbench development

5.4.Planning and scheduling

The schedule of the lectures and lab sessions is posted on the university website.

5.5.Bibliography and recomended resources

- Electrónica digital : aplicaciones y problemas con VHDL / José Ignacio Artigas Maestre, Luis Ángel Barragán Pérez, Carlos Orrite Uruñuela, Isidro Urriza Parroqué Madrid [etc.] : Prentice Hall, D. L. 2002
- Ashenden, Peter J.. VHDL-2008: just the new stuff / Peter J. Ashenden, Jim Lewis Morgan Kaufmann, 2008

recomanded resources:

ISE WebPack **http://www.xilinx.com/support/download/index.htm**