

30046 - Digital Electronic Systems

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	436 - Bachelor's Degree in Industrial Engineering Technology
ECTS	6.0
Course	4
Period	First semester
Subject Type	Optional
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

The final grade for this course is based on the following weighting:

- Final exam (50 % of grade)
- Laboratory work, attendance, attitude, accomplishment during laboratory session , and reports (50 %)

5.Activities and resources

5.1.General methodological presentation

The course includes lectures, exercises and laboratory sessions.

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- The theoretical basis of digital electronic systems will be shown in lectures, illustrated with numerous examples.
- Several sessions will be devoted to apply the theoretical concepts to solve problems and case studies.
- Laboratory sessions will be conducted in small groups where students simulate, program and check the operation of the digital electronic systems.

5.2.Learning activities

Course structure : 2 hours of lectures and 1 hour of problems each week, plus six 2.5-hour laboratory sessions, one per week for selected weeks throughout the semester. Students will work in groups of two in the laboratory, and the lab reports will be prepared in groups too.

5.3.Program

Lecture outline :

- * Implementation technologies of Digital Circuits.
- * Designing Digital Circuits using VHDL.
- * MSP430 Microcontroller Basics.
- * Digital to Analog and Analog to Digital Conversion.
- * Implementation of LTI discrete-time systems
- * Digital Data Communication Techniques.

Brief description of laboratory sessions

- * P1: Introduction to Digital Circuit Design using Xilinx ISE Tools.
- * P2: VHDL modeling of sequential digital circuits.
- * P3: Angular velocity measurement of a dc motor in real time with an FPGA.
- * P4: PWM generation to control a servo motor using an FPGA.
- * P5: Digital voltmeter design using an MSP430.
- * P6: Sine wave generator design using an MSP430.

5.4.Planning and scheduling

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Lectures, problem and laboratory sessions are held according to schedule set by the EINA (schedules available on their website).

5.5.Bibliography and recommended resources

All course materials are posted on Moodle.

Moodle will be also used to communicate announcements and is where students will submit laboratory reports.

Basic bibliography could be found in the library site