Universidad Zaragoza

28828 - Programmable Electronic Instruments

Información del Plan Docente

Academic Year	2018/19
Subject	28828 - Programmable Electronic Instruments
Faculty / School	175 - Escuela Universitaria Politécnica de La Almunia
Degree	424 - Bachelor's Degree in Mechatronic Engineering
ECTS	6.0
Year	3
Semester	Second semester
Subject Type	Compulsory
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
1. Theory Classes: The theoretical concepts of the subject are explained and illustrative examples are developed as support to the theory when necessary, focus on calculation, design and development of a mechatronic system.
2. Laboratory Workshop. These classes are highly recommended for a better understanding of the concepts because those items whose calculation is done in theory clases are shown in working mode.
3. Tutorials related to any concept of the subject. This activity is developed in a presencial mode with a defined schedule or through the messaging and forum of the virtual classroom Moodle.

4.2.Learning tasks

Theory Classes. it will take 2 hours per week till the 40 hours, neccesary to acomplish the objetives of the subject study, will be reached.

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Laboratory Workshop. it will take 10 seassons of 2 hours duration. The group is divided up into various groups, according to the laboratory capacity.

Study and personal work. This non-presential part is valued in about 90 hours, necessary for the study of theory, problem solving and revision of documents Individual tutorials. Each teacher will publish a schedule of attention to the students throughout the four-month period.

4.3.Syllabus

The contents are distributed in nine teaching units forming treatment indivisible blocks. These topics collect the contents needed for the acquisition of predetermined learning outcomes.

Tema I	Introduction to the design of microprocessor based systems.
Tema II	Architecture of the AVR family.
Tema III	Programming in C.
Tema IV	Input/output digital.
Tema V	Interrupt system.
Tema VI	Timers and counters.
Tema VII	ADC amd DAC. (digital filters)
Tema VIII	Serial Communications.
Tema IX	Advanced microcontrollers.

4.4.Course planning and calendar

The theory classes and problems are given in the timetable established by the center, as well as the hours assigned to the practices.

The presentation of the works will be done on the last day of class of the subject.

4.5.Bibliography and recommended resources

Material	Format
Topic theory notes Topic presentations	Paper/repository
Topic presentations Topic problems Related links	Digital/Moodle E-Mail
technical manuals	Paper/repository Digital/Moodle
Software compiler and simulator	laboratory work station
Board Arduino UNO ATMEGA328 ATAVRDRAGON emulator, programmer for AVR.	laboratory