

## DEA-GITT-323 Microprocessors

**SEMESTER:** Spring

**CREDITS:** 6 ECTS (4 hrs. per week. 2h Theory + 2h Lab)

**LANGUAGE:** Spanish

**DEGREES:** GITT

### Course overview

The main objective of the course is to be able to develop a digital electronic system based on a microprocessor, where sensors, actuators and communications are involved. There is a final project where the student has to integrate all the concepts of the subject and to demonstrate his learning. Examples of systems are: domotic systems, smart energy boxes, interactive games, robot systems, systems for cars, and so on.

### Prerequisites

Knowledge about C programming and digital electronics.

### Course contents

#### Theory:

1. Description of a Microcontroller.
2. Parallel Ports.
3. C Programming for Microcontrollers.
4. Timers.
5. Microprocessor Architecture.
6. Memory Map.
7. Interruptions.
8. Serial Communications.
9. Drivers.
10. Design of a Digital System based on a Microcontroller.
11. Real Applications of Digital Electronic Systems.

#### Laboratory:

Each unit described previously has at least one associated lab practice (2 hours/week)

- P1. Developments tools
- P2. Input and output

- P3.** Timers
- P4.** Assembly programming
- P5.** Interruptions and communications
- P6.** Exam
- P7.** Digital system design
- P8.** Final project

## Textbook

- Microprocesadores. Álvaro Sánchez Miralles. Year: 2013.

## Grading

- Final exam accounts for 35% of the final grade.
- Mid-term exam accounts for 15%.
- Laboratory exam accounts for 15%.
- The final project accounts for 15%.
- Lab reports must be handed in every week and they are graded and returned the following week. They account for 20% of the grade.