

28847 - Basics of Programming

Syllabus Information

Academic year: 2024/25

Subject: 28847 - Basics of Programming

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 424 - Bachelor's Degree in Mechatronic Engineering

ECTS: 6.0

Year: 4

Semester: Second semester

Subject type: Optional

Module:

1. General information

The objective of the course is to introduce students to microcontroller programming using the Arduino framework. The course will begin with the basic learning of code structures and data used in the C language and will progress to mastering the more complex elements of the language. It will also cover the peculiarities of the hardware of the most commonly used boards and how to connect devices to your Arduino.

The approach to mastering the language will involve tackling increasingly complex challenges that will help you understand the intricacies of the C language.

2. Learning results

Understand the use of data types

Know the structures of the C language

Be able to solve a programming problem by dividing it into simpler problems.

3. Syllabus

1. Introduction
2. Data types, operators, and expressions
3. Control flow
4. Functions and program structure
5. Pointers and arrays
6. Structures
7. Input/Output
8. Arduino libraries
9. Programming in C++

4. Academic activities

On-site Activities:

- Theoretical classes: The theoretical concepts of the course are explained along with illustrative practical examples to support the theory.
- Practical classes: Problems and practical cases will be addressed as a complement to the theoretical concepts studied.

Off-site Activities:

- Study and assimilation of the theory presented in lectures.
- Understanding and assimilation of problems and practical cases solved in class.
- Solving proposed problems.
- Conducting group practicals and preparing reports.
- Preparing for continuous assessment tests and final exams.

The course consists of 6 ECTS credits, which represents 150 hours of student work for the course.

5. Assessment system

Assessment will follow a continuous evaluation system. Each week, a theoretical exam on programming concepts will be administered, the results of which will account for 20% of the grade.

The rest of the grade will be obtained by presenting and defending a series of programming exercises similar to those solved in class but with modifications. Each new exercise will include concepts developed in previous exercises and introduce new programming concepts.

If the course is not passed through continuous evaluation, a final exam will be available, consisting of the development of several programs on the Arduino board.

6. Sustainable Development Goals

- 5 - Gender Equality
- 7 - Affordable and Clean Energy
- 9 - Industry, Innovation and Infrastructure