Universidad Zaragoza

Academic Year/course: 2023/24

28807 - Fundamentals of Programming

Syllabus Information

Academic year: 2023/24
Subject: 28807 - Fundamentals of Programming
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
Degree: 424 - Bachelor's Degree in Mechatronic Engineering
ECTS: 6.0
Year: 1
Semester: Second semester
Subject type: Basic Education
Module:

1. General information

To show the basic necessary concepts to know how to use the most common computer applications and the fundamentals of computer applications related to Mechatronics, as well as the design and debugging of algorithms.

Show the different components (hardware and software) necessary for the implementation and management of computer networks

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

Goal 7: Affordable and Clean Energy

- Target 7.3 By 2030, double the global rate of improvement in energy efficiency.

2. Learning results

To pass this subject, the student will be able to:

- Identify and evaluate fundamental criteria for the design of computer systems.
- To know how to select components and elements suitable for the application.
- Acquire fundamentals of operating systems, communications and hardware.

3. Syllabus

Contents.

Theoretical contents

Block 1

- Computer: Machine that executes Algorithms. Notion of Algorithm. Computer structure: Digital Nature, coding, hardware, software.
- Operating systems.
- Databases.
- Programming: Programming styles, language hierarchy, programming elements.
- Computer networks.

Block 2

- Function design.
- Text and input/output.
- Conditional.
- Notions of classes and objects.
- - Lists.
- Iteration.

Block 3

- Other collections: sets, tuples, dictionaries.
- Design algorithms.
- Searching and sorting.
- Files.

Block 4

- Classes, objects and methods.

Practical contents

Each topic discussed in the previous section has practices associated with it.

4. Academic activities

The time distribution of the activities will be as follows:

Lectures (30 hours), combining theoretical exposition with the resolution of examples that help to better understand the theory.

Practical classes (30 hours). Problems and exercises solved by the students during the lessons

Work and personal study (84 hours)

Assessment tests (6 hours)

5. Assessment system

The assessment process includes two types of actions:

- A system of continuous assssment, which will consist of the following group of gradable activities
    - practical work done and corrected in class (10%).
    - two written tests. The percentage of the overall grade for each written test will be 45% A global assessment test, reflecting the achievement of the learning results, at the end

of the teaching period. The exam will consist of two parts, corresponding to the written tests of the continuous assessment, which weight 45% and 45%. The grade of the practices will be added with a 10% of the grade.

The two written tests must be passed separately in order to contribute to the average of the final grade.

The grade for each written exam must be greater than or equal to 4 in order to contribute to the final grade average. If at the end of the assessment any of the written tests has a grade lower than 4, the final grade will be a maximum of 4.9, even if the average is higher.