Academic Year/course: 2023/24

29518 - Programming

Syllabus Information

Academic year: 2023/24
Subject: 29518 - Programming
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
Degree: 625 - Bachelor's Degree in Industrial Processes' Data Engineering
ECTS: 6.0
Year: 1
Semester: Second semester
Subject type: Compulsory
Module:

1. General information

The student will learn the technology and methodologies to be applied through the paradigm of object-oriented programming, with correct, robust and efficient designs.

With a strong applied character, the student will learn advanced concepts of object-oriented programming from a set of problems present in current software development.

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, target 7.3

Goal 8: targets 8.2 and 8.4.

Goal 9: targets 9.1 and 9.5.

2. Learning results

In order to pass this subject, students must demonstrate the following results:

- Analyze problems, and design and implement algorithmic solutions to those problems.
- Solve problems in a disciplined manner, obtaining a correct, effective and efficient implementation.
- Use the computer at user level, handling operating systems and programming environments.
- Know the computer equipment both physically and logically.
- Identify information needs to solve problems, retrieve it, interpret it and apply it to resolution.

3. Syllabus

Theoretical contents:

- **Object-oriented programming languages:**
  - Object-oriented programming paradigm.
  - Classes and objects.
- **Objects, classes, methods:**
  - Class definition: attributes and methods.
  - Object creation: constructors.
  - Method overloading.
- **Concept of inheritance:**
  - Inheritance and attributes.
  - Inheritance and methods.
  - Abstract methods and abstract classes.
- **Polymorphism and packages:**
  - Concept and implementation.
  - Interface definition, implementation and use.
  - Interface extension.
  - Exceptions: concept and mode of use.
  - Definition of packages.
  - Access protection.

- **Serialization and persistence:**

  - Data persistence

- ◦ Serialization of objects.
- **Graphical interfaces.**
- **Files.**
  - ◦ Storing and reading data in text files.
    - ◦ CSV files.
    - ◦ XML files.

4. Academic activities

The indicative time distribution of a week of classes is as follows:
- 1 hour of lectures
- 3 hours of laboratory practice
- 6 hours of other activities

However, the above table may be more detailed, taking into account the following global distribution:
- 15 hours of lectures.
- 41 hours of laboratory practice.
- 4 hours of written assessment tests, two hours per test.
- 45 hours of supervised exercises and assignments, spread over the 15 weeks of the semester.
- 45 hours of personal study, spread over the 15 weeks of the semester.

5. Assessment system

1.- Continuous assessment system:
- **Works:** The work will consist of practical exercises, solutions to proposed problems, questionnaires, etc. The correctness and quality of the results will be evaluated. These practices will be carried out in small groups, depending on the availability of computer rooms. The percentage of the overall grade for all these assignments will be 40%.
- Assessment tests: There are three throughout the semester. The percentage with respect to the overall grade of each test will be 20%.

It is necessary to pass the assignments and the evaluative tests separately so that they can contribute to the average of the final grade.

To be eligible for the Continuous Assessment system, at least 80% of the classroom activities must be attended (practicals, technical visits, classes, etc.).

2.- Global final assessment test.
- Exam: It is carried out in the official calls. This option can always be followed even if the student has used the continuous assessment system. (50% of the final grade).
- **Work, practical exercises, solutions to proposed problems, questionnaires, etc.,** that have not been delivered during the term and that can be delivered in a new version on the day of the exam. (50% of the final grade).