Academic Year/course: 2024/25

26904 - Computer Science

Syllabus Information

Academic year: 2024/25
Subject: 26904 - Computer Science
Faculty / School: 100 - Facultad de Ciencias
Degree: 447 - Degree in Physics
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Basic Education
Module:

1. General information

The subject and its expected results respond to the following approaches and objectives: the use of computers for the numerical resolution of problems is common in science and, in particular, in Physics. It is common for a research group to design and implement specific programs to study the problems it is working on. Nowadays it is also essential to represent physical quantities and solutions to equations graphically.

2. Learning results

The subject will allow the student to obtain the following results:

1. Acquire skills in the use of computer techniques and programming

2. Understand the need for the use of computers in today's science

3. Know and use some basic mathematical and numerical methods applicable to Physics

4. Know and use the basic concepts (decisions, loops etc ...) on which programming languages are based 5. Know the basic architecture of a computer and its operating principles

6. Acquire skills in the implementation of simple algorithms in a programming language

7. Acquire skills in the use of a numerical and symbolic calculation package

8. Manage data analysis and graphical representation packages

3. Syllabus

1. Basic concepts

2. Elementary sentences

3. Structured sentences: block, conditional and loop.

4. Sub algorithms.

5. Data structures: vectors, records, pointers and files.

6. Algorithm basics

7. Notions of data analysis and graphical representation. Use of calculation packages.

4. Academic activities

The subject has 6 ECTS (150 hours of student work) which are distributed as follows:

Lectures dedicated to the transmission of knowledge required for the design and implementation of software (2 ECTS).

Implementation and resolution of exercises and problems. These activities will be carried out both on the blackboard (analysis, design and discussion of alternative solutions) and in the computer (1.5 ECTS)

Completion of practical tasks of an integrative nature. The tasks, developed in teams, aim to apply knowledge in Computer Science to solve Mathematics and Physics problems (2.5 ECTS)

5. Assessment system

The evaluation activities are:

Activity 1: Completion of assignments proposed throughout the term (30% of the final grade).

These tasks will be posed, and must be answered, through the Digital Teaching Ring (ADD). They will consist of solving mathematical or physical problems, and will be carried out in teams. At least 75% of the proposed assignments must be delivered within the deadlines indicated. The minimum grade to pass this activity is 5 out of 10.

Activity 2: Performance of part P1 of the single comprehensive test described below.

Passing the subject by means of a single global test, which will consist of the following parts:

- P1: theoretical-practical questions (70% of the final grade).
- P2: solving mathematical or physical problems (30% of the final grade). Those who have passed

Activity 1 may be exempted from this part.

To pass this single global test it is necessary to obtain a minimum grade of 4.5 (out of 10) in each of the two parts of which it consists, in which case the final grade will be the weighted average of both parts ($0.7P1+0.3P2$). If the student does not reach the minimum grade of 4.5 in one of the parts, the final grade will be the one obtained in that part.

6. Sustainable Development Goals

9 - Industry, Innovation and Infrastructure