29707 - Fundamentals of computing

1.General information

1.1.Introduction

1.2.Recommendations to take this course

1.3.Context and importance of this course in the degree

1.4.Activities and key dates

2.Learning goals

2.1.Learning goals

2.2.Importance of learning goals

3.Aims of the course and competences

3.1.Aims of the course

3.2.Competences

4.Assessment (1st and 2nd call)

4.1.Assessment tasks (description of tasks, marking system and assessment criteria)

5.Methodology, learning tasks, syllabus and resources

5.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. It is based on active participation of the student so that the development of communication and decision-making skills are favored. A wide range of teaching and learning tasks are implemented, such as lectures, guided assignments, laboratory sessions, autonomous work, and tutorials. Students are expected to actively participate in the class throughout the semester.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course

syllabus, as well as other course-specific learning materials. Further information regarding the course will be provided on the first day of class.

5.2.Learning tasks

The course includes 6 ECTS (150 hours) organized according to:

- Lectures: 30 hours.

- Problem solving lessons: 15 hours

- Laboratory sessions: 15 hours.

- Guided assignments: 10 hours.

- Autonomous work: 75 hours.

- evaluation: 5 hours.

Lectures: the professor will explain the theoretical contents of the course and solve illustrative applied problems. These problems and exercises can be found in the problem set provided at the beginning of the semester. Lectures run for 2 weekly hours. Although it is not a mandatory activity, regular attendance is highly recommended.

Laboratory sessions: sessions will take place every 2 weeks (6 sessions in total) and last for 2 hours each. Students will work together in groups actively doing tasks such as practical demonstrations, measurements, calculations, and the use of graphical and analytical methods.

Autonomous work: students are expected to spend about 75 hours to study theory, solve problems, and prepare lab sessions, and complete their assignments.

Office hours: the professor's office hours will be posted on Moodle and the degree website to assist students with questions and doubts. It is beneficial for the student to come with clear and specific questions.

5.3.Syllabus

1. Introduction. Computer structure and functions. Hardware. Introduction to Operative Systems, applications of interest for the grade, programming languages, compilers and interpreters.

2. Basic data types, operators and expressions.

3. Control structures. Sequential, conditional, and iterative structures. Procedures and functions.

4. Complex data types. Data structures. Arrays: vectors and matrices.

5. Data input/output. Binary and text files.

5.4.Course planning and calendar

For further details concerning the timetable, classroom and further information regarding this course please refer to the "Escuela de Ingeniería y Arquitectura " website (https://eina.unizar.es/)

5.5.Bibliography and recommended resources

[BB: Basic Bibliography / BC: Additional Bibliography]

- [BB] L. Joyanes Aguilar, I. Zahonero Martínez, "Programación en C - Metodología, algoritmos y estructura de datos", McGraw-Hill, 2001
- [BB] Donnie L. Cearley, "The C programming Language: The Ultimate Beginner's guide", EasyProgramming, 2016
- [BB] Peter Prinz, Ulla Kirch-Prinz, "A Complete Guide to Programming in C++ (1st ed.)", Jones and Bartlett Publishers, 2002.