Universidad Zaragoza

Academic Year/course: 2022/23

30303 - Fundamentals of computer studies

Syllabus Information

Academic Year: 2022/23
Subject: 30303 - Fundamentals of computer studies
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 581 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS: 6.0
Year: 1
Semester: First semester
Subject Type: Basic Education
Module:

1. General information

2. Learning goals

3. Assessment (1st and 2nd call)

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

The student must demonstrate that he has achieved the expected learning outcomes through the following assesment activities:

Practical test *(25%)*.The objective of this test is to evaluate the knowledge and skills that the students have acquired in practicas laboratory sessions. These sessions will consist of carrying out a series of exercises using the computer. The timely delivery of these activitites, and to obtain a grade greater than or equal to 5 points out of 10 will exempt the student from carrying out the final practical test in the laboratory.

Written test *(75%)* in which questions and/or problems must be solved. The quality of program, written in the general purpose programming language used during the course will be assessed. Serious semantic errors - ignorance of the basic rules of construction and coding of algorithms - could lead to the total penalty of the exercice.

To pass the subject, it is essential to obtain a grade greater than or equal to 5 points out of 10 in each of the types of evaluation activities. Only in this case, the global qualification of the subject will be according to the established wighting. In another case, the overall rating will be the minimum between 4 and the result fo applying the previous weighting. The subject is passed with a global grade of 5 points out of 10.

The evaluation of the subject in the **second call** will consist of **a only written test,** where the knowledge and skills acquired by the students to solve the problems proposed during the the different activities of the course will be evaluated.

4. Methodology, learning tasks, syllabus and resources

4.1. Methodological overview

The learning process has been designed according to the following activities:

1. Presentation of contents and techniques for problem solving by means of master classes.
2. Problem resolution in classroom,
3. Personal study and developing of problem solving skills by means of proposed problems.
4. Guided practical work in laboratories.

5. Programming simple solutions of incresing difficulty.

4.2. Learning tasks

According to the practical and theoretical approach of the subjects, and the need to develop in the students of the required skills to solve problems, we will intensively use example programs that solve intriguing problems, supported with exercises ranging from self-study drills to challenging problems that call for creative solutions. The aim is to learn to program in the context of scientific applications.

4.3. Syllabus

The course will address the following topics:

Basic concepts of Computers: Machine that executes Algorithms. Algorithms. Computers. Digital data, coding, hardware, software. Operating Systems. Databases. Networks. Programming: Programming styles, the hierarchy of languages, programming elements.

Abstraction with Procedures. Basic data types and algorithmic composition schemes. Constants and Variables. Basic data types: Boolean, char, integer, real. Control Structures, Procedure and Functions. Algorithm design techniques. Sequential processing.

Abstraction with Data. Tables. indexed acces. Sorting. Abstract data types: Modularity, objects, state.

4.4. Course planning and calendar

On-site sessions and works calendar.

The timing of the subject will be defined according to the timetable defined by the center in the academic calendar.

Hours devoted to the subject by the learner.

The estimation is about 150 hours distributed in the following way:

- 24 hours on-site activities, master class (Theory and problems)
- 20 hours on-site problem resolution
- 16 hours práctical work on laboratory
- 84 hours individual work/study (problem-solving, coding, study, etc.)
- 6 hours exams

4.5. Bibliography and recommended resources

http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=30303