28807 - Computer Science

Syllabus Information

Academic Year: 2019/20
Subject: 28807 - Computer Science
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

1.1.Aims of the course

To learn basic concepts for using computer applications and the basis of applications involved in Mechatronics. Also designing and debugging algorithms.

To show Software and hardware components necessary to implement and use network computers.

1.2.Context and importance of this course in the degree

The subject is mandatory. Is the first-year course and has 6 ECTS.

It provides an additional formation to a Mechatronic engineer in the computing area.

1.3.Recommendations to take this course

No previous programming knowledge is necessary.

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

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

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The course is strongly based on practice, so it has many practical works in classes.

- Lectures: Theoretical activities carried out mainly through exposition by the teacher, where the theoretical supports of the subject are displayed, highlighting the fundamental, structuring them in topics and or sections, interrelating them.

- Practice Sessions: The teacher resolves practical problems or cases for demonstrative purposes. This type of teaching complements the theory shown in the lectures with practical aspects.

- Laboratory Workshop: The lecture group is divided up into various groups, according to the number of registered students, but never with more than 20 students, in order to make up smaller sized groups.

- Individual Tutorials: Those carried out giving individual, personalized attention with a teacher from the department.

Said tutorials may be in person or online.

4.2.Learning tasks

The course includes the following learning tasks:

Face-to-face generic activities:

- Lectures: The theoretical concepts of the subject are explained and illustrative examples are developed as a support to the theory when necessary.
- Practice Sessions: Problemas and practical classes are carried out, complementary to the theoretical concepts studied.
- Laboratory Workshop: This work is tutored by a teacher, in groups of no more than 20 students.

Generic non-class activities

- Study and understanding of the theory taught in the lectures.
- Understanding and assimilation of the problems and practical classes solved in the practical classes.
- Solving proposed problems, project, etc.
- Preparation of laboratory workshops, preparation of summaries and reports.
- Preparation of the written tests for continuous assessment and final exams.

4.3.Syllabus

The course will address the following topics:

Specialization in business

1-Theoretical contents

Part I

- Computer: Machine that executes algorithms. Algorithm definition. Computer architecture: digital nature, codification, hardware, software.
- Operating systems.
- Databases
- Programming: programming styles, language hierarchy, programming elements
- Nets of computers.

Part I

- Introduction
- Function design
- Text and input/output
- Conditional branching
- Introduction to classes and objects
- Lists
- Iteration

Part III

- Other collections: sets, tuples, dictionaries
- Designing algorithms
- Search and sorting
- Files

Part IV

- Classes, objects and methods

2-Practical contents

Every part has related practices. As the concepts are shown, the practices are going to be presented, in the classroom or in the moodle platform.

4.4.Course planning and calendar

The subject has 6 ECTS credits, which represents 150 hours of student work in the subject during the trimester, in other words, 10 hours per week for 15 weeks of class.

A summary of a weekly timetable guide can be seen in the following table.

- 1 hour of lectures

- 3 hour of laboratory workshops
- 6 hours of other activities

Nevertheless, the previous table can be shown in greater detail, taking into account the following overall distribution:
- 16 hours of lectures.
- 42 hours of the laboratory workshop.
- 2 hours of written assessment tests, one hour per test.
- 45 hours of exercises and guided work, divided up the 15 weeks of the second semester.
- 45 hours of personal study, divided up the 15 weeks of the second semester.

There is a tutorial calendar timetable set by the teacher that can be requested by the students who want a tutorial.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=28807&year=2019