30303 - Fundamentals of computer studies

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	438 - Bachelor's Degree in Telecomunications Technology and Services Engineering
ECTS	6.0
Course	1
Period	First semester
Subject Type	Basic Education
Module	---

1.Basic info

1.1.Recommendations to take this course

1.2.Activities and key dates for the course

2.Initiation

2.1.Learning outcomes that define the subject

2.2.Introduction

3.Context and competences

3.1.Goals

3.2.Context and meaning of the subject in the degree

3.3.Competences

3.4.Importance of learning outcomes

4.Evaluation

5.Activities and resources

5.1.General methodological presentation
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.

5.2.Learning activities

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.

5.3.Program

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

5.4.Planning and scheduling
Presential 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:

- 60 hours, aproximatelly, presential activities (master class (Theory and problems) and laboratory sessions.
- 20 hours work/projects
- 65 hours individual work/study (problem solving, coding, study, etc.)
- 5 hours exams

5.5.Bibliography and recomended resources
- Hahn, Brian D.. Essential Java for Scientists and Engineers / Brian D. Hahn , Katherine M. MalanButterworth Heinemann
- Sedgewik, Robert. Introduction to Programming in Java. An interdisciplinary Approach / Robert Sedgewik, Kewin Wayne Pearson, 2007