

30303 - Fundamentals of computer studies

Información del Plan Docente

Academic Year	2018/19
Subject	30303 - Fundamentals of computer studies
Faculty / School	110 - Escuela de Ingeniería y Arquitectura
Degree	438 - Bachelor's Degree in Telecommunications Technology and Services Engineering 581 - Bachelor's Degree in Telecommunications Technology and Services Engineering
ECTS	6.0
Year	1
Semester	First semester
Subject Type	Basic Education

Module

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

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 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 increasing difficulty.

4.2.Learning tasks

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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

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.

4.4.Course planning and calendar

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:

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

4.5.Bibliography and recommended 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