29902 - Fundamentals of computer studies

Información del Plan Docente

Academic Year	2016/17
Academic center	110 - Escuela de Ingeniería y Arquitectura
Degree	435 - Bachelor's Degree in Chemical Engineering
ECTS	6.0
Course	1
Period	Half-yearly
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 that is designed for this course is based on:
- T he presentation of the contents of the course in lectures
- Analyzing and solving case studies in class.
- Personal study of the subject by students .
- The design and implementation of lab exercises by students , guided by teachers, in the computer laboratory .
- The development of simple programs of increasing difficulty proposed by the teachers as homeworks

Keep in mind that the course has both theoretical and practical orientation . Therefore, the learning process emphasizes both student attendance at lectures , as in the experiments in the laboratory, performing simple programs of increasing difficulty, and individualized study .

5.2.Learning activities

The program is offered to the student in order to help him / her to achieve the intended learning outcomes, and includes the following activities ...

- In classes taught in the classroom, the program of the course will be developed .
- In classes of case studies , problems will be solved illustrating the concepts and techniques presented in the lectures
- In the laboratory sessions, problems of information processing will be solved designing and implementing programs running in a computer

5.3.Program

The course program is organized into the following three blocks:

1. **Computer: A machine for the execution of algorithms.**
   Notion of Algorithm.
   Structure of the computer: Digital nature, coding, hardware, software.
   Operating systems.
   Databases.
   Programming: Programming Styles, Hierarchy of languages, Programming elements.
   Computer networks
2. **Abstraction with procedures.**
   Data types and algorithmic composition schemes:Data type concept.
   Constants and variables.
   Basic data types: Boolean, character, integer, real.
   Control structures, procedures and functions.
   Algorithm Design Techniques. Treatment of Sequences (sequential files and search). Recursion.
3. **Data abstraction.**
   Tables.
   Indexed access.
   Sorting algorithms as an example.
   Abstract Data Types: Modularity, objects and state.
   Introduction to Object Oriented Programming.
   Introduction to techniques of object-oriented design.

The concepts, methods and tools of the above paragraphs are illustrated through examples, as realistic as possible, within the fields of chemical engineering, covering aspects such as: performing mathematical calculations, treatment of non-numerical information, simulation, etc.

5.4.Planning and scheduling

Scheduling of the sessions and presentation of works
The schedule of the course will be defined by the School in the academic calendar of the corresponding academic year.

5.5.Bibliography and recomended resources

BB	Desarrollo de algoritmos y técnicas de programación en Pascal / Cristobal Pareja Flores...[et al.] . - [1a. ed.] Madrid : RA-MA, 1997
BC	Leestma, Sanford. Programación en Pascal / Sanford Leestma, Larry Nyhoff ; traducción, Natalia López, Fernando

29902 - Fundamentals of computer studies

Rubio, Clara Mª Segura ; revisión técnica,
Sebastián Dormido Bencomo . - 4ª ed. en
español, reimp. Madrid : Pearson
Educación, 2006

LISTADO DE URLs:

C. Pareja, M. Ojeda, Á. L. Andeyro, C.
Rossi, "Desarrollo de algoritmos y técnicas
de Programación en Pascal", Ed. Ra-Ma,
1997. I.S.B.N. 84-7897-290-0. Permitida
su copia, reproducción y difusión, según
consta en la página web.
[http://antares.sip.ucm.es/cpareja/libroAlgoritmos/]
Enlace a la página web desde donde se
puede descargar e instalar el entorno de
desarrollo Dev-Pascal utilizado en la
asignatura.
[http://www.bloodshed.net/devpascal.html]
Página desde la que se pueden descargar
los manuales, en formato pdf, de lenguaje
Pascal utilizado en la asignatura.
[http://www.freepascal.org/docs.var]