VNIVERSITAT Ð VALÈNCIA

COURSE DATA

Data Subject	
Code	34921
Name	Informatics
Cycle	Grade
ECTS Credits	6.0
Academic year	2022 - 2023

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
1404 - Degree in Industrial Electronic Engineering	School of Engineering	1	First term

Subject-matter		
Degree	**Subject-matter**	**Character**
1404 - Degree in Industrial Electronic Engineering	6 - Information technology	Basic Training

Coordination	
Name	**Department**
FERRIS CASTELL, RICARDO	240 - Computer Science

SUMMARY

This course revises the basics subjects about computer machines, what are its basic components, potential uses and limitations.

It will introduce students to the understanding and management of the operating system as well as the description and use the network as a key part in communicating information between computers.

A basic knowledge of different tools useful for the programming task are also given, as well as a brief introduction to the concept of database.

An introduction to programming using structured programming paradigm, as well as an introduction to basic data structures is provided.

In regard to the practical part in this course, the student will put in practise the knowledge studied in theory and will adquire skills in the development of programs using a widely used general purpose programming language.

PREVIOUS KNOWLEDGE

Relationship to other subjects of the same degree

There are no specified enrollment restrictions with other subjects of the curriculum.

Other requirements

No previous specific knowledge is needed for this subject.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1404 - Degree in Industrial Electronic Engineering

- CG3 - Knowledge of basic and technological subjects that allows students to learn new methods and theories and provides them with versatility to adapt to new situations.
- CG10 - Ability to work in a multilingual and multidisciplinary environment.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

Learning Outcomes:

Describe the parts of the computer and explain their function.

List several peripherals explaining its function.

Perform basic operations on files.

Perform basic administration tasks in an operating system.

Edit technical documents, use spreadsheets, create presentations and small databases using application programs office.

Using network application programs to visit websites, find content on the internet, publishing content on web, etc.

Describe algorithmic solutions to problems.

Ability to use a programming language to design the algorithm that solves a problem.

Describe the basic data types, numeric and nonnumeric.

Simple computer programs to design one or more loops.

Simple computer programs to design structured by functions.

Simple computer programs to design structures using conditional.

Adequately document the programs built.

To include/understand the operation of the basic blocks that constitute the components of the computers and their paper in the development of their architecture.

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DESCRIPTION OF CONTENTS

1. INTRODUCTION

Concept of computer: Basic concepts. Internal structure of the computer.
Software: Operating system. Utilities.
Information management.

2. Programming in high level languages

Algorithm.
Languages and programming paradigms.
Characteristics of high-level programming languages: Variables and constants. Simple Data Types.
Stages in conducting a program: Analysis of the problem. Algorithm design. Programming the algorithm.

3. Structured programming.

Structured Program Theorem.
Design of structured programs
Control Structures: Sequential structure. Conditional structure. Iterative structure.

4. Files

Basics of files: Access types. Logical and physical files. Binary and text files.
Processing files.

5. Modular Programming

Module definition: Modular programming. Subprogram Definition: Functions. Parameters of a subprogram. Scope of identifiers.
Recursion.

6. Structured Data Types

Vectors, matrices, strings and records

7. Computer networks.

Introduction and Basics.
Utilities to share information.

8. INTRODUCTION TO DATA BASES

Introduction and Basics.
Operations and examples.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Laboratory practices	20,00	100
Classroom practices	10,00	100
Development of individual work	15,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	27,00	0
Preparation of practical classes and problem	38,00	0
TOTAL	150,00	

TEACHING METHODOLOGY

The activities based on theoretical subjects will be developed providing a global and inclusive vision, analyzing in detail the key issues, encouraging at all times the participation of students. These activities are complemented by practical activities in order to apply the basics and expand the knowledge and experience acquired during the performance of the proposed work. They include the following types of classroom activities:

- Problems resolution in classroom
- Discussion sessions and problem-solving exercises previously worked at home
- Lab. Practice
- Individual evaluation questionnaires in the classroom with the presence of teachers.

In addition to classroom activities, students must perform personal tasks (outside the classroom) on: monographs, literature search, issues and problems as well as the preparation of classes and exams (study). These tasks will be primarily an individual basis, in order to enhance the autonomous work, but additionally, work requiring the participation of small groups of students (4-6) to build capacity for integration into working groups will be Developer.

The e-learning tool (Aula Virtual) of the University of Valencia will be used in support of communication with students. The student will have access to course materials used in class as well as solve problems and exercises through the e-learning tool.

EVALUATION

The evaluation of the subject will be carried out by:

- Continuous assessment, based on participation and degree of involvement in the teaching-learning process, taking into account regular attendance at planned face-to-face activities and resolution of proposed questions and problems. (N_Continua).
- Individual objective test, consisting of several controls throughout the semester, and a final exam, which will consist of both theoretical-practical questions and problems (N_Examenes).

$$N\_Examenes = 60\% \text{ Controls} + 40\% \text{ Final Exam}$$

The value of all controls will be the same.

- Evaluation of the practical activities based on the achievement of objectives in the laboratory sessions and problems, and the preparation of papers / reports as well as the final project (N_Practicas).

$$N\_Practicas = 30\% \text{ Work of practices} + 70\% \text{ Final Project}$$

Attendance at practices is considered compulsory to pass the course, both in first and second call. You have to get at least a 4 in the final project to be able to do the average.

The final grade for the course will be:

$$\text{Final Note} = 20\% \text{ N\_Continua} + 50\% \text{ N\_Examenes} + 30\% \text{ N\_Practicas}$$

It will be necessary to obtain, at least 3.5 out of 10 in each of the parts to be able to mediate the note.

The evaluation will be conducted in accordance Qualifications University of Valencia.At the time of writing this teaching guide, the current legislation is approved by the Governing Council of the UVEG of January 27, 2004, adjusted as provided for that purpose by the Royal Decrees 1044/2003 and 1125 / 2003. It states basically that the cards will be numbered from 0 to 10 with a decimal expression and must be added the qualitative rating scale for the following:

From 0 to 4.9: "Failed"

From 5 to 6.9 "Approved"

From 7 to 8.9, "Notable"

From 9 to 10: "Excellent" or "with honors Excellent"

On second call it is possible to improve the ratings for the Final Project (and not the practical work done in practical sessions) if attended practice sessions, bulletins and exam (the weight of controls shall be reduced to 20% in N_Examenes). The weights of each section are the same as in the first round, and also the conditions to pass the course.

Copies:

Any copy any part of any of the activities of the course will be a zero in the full activity (newsletter, practice, control, ...). Detection of two copies in different activities will suspend the subject in both the first and second call. Will apply the same criteria to both the original and the copy.

All the above measures will be applied irrespective of the disciplinary procedure that the student may initiate and, if applicable, the sanction that proceeds in accordance with current legislation (Reglament d'Avaluació i Qualificació de la Universitat de València Per a Títols de Grau i Màster (Aprovat en Consell de Govern de 30 de maig de 2017. AUGUV 108/2017)).

REFERENCES

Basic

- [G. Beekman (2005)]. Introducción a la informática (Prentice-Hall) (disponible también en versión electrónica).

- [W. Savitch (2007)]. Resolución de problemas con C++. El objetivo de la programación (Prentice-Hall).

- H. Korth, A. Silberschatz (2006)] Fundamentos de bases de datos (MacGraw Hill)
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  8&rfr_id=info%3Asid%2Fsummon.serialssolutions.com&rft_val_fmt=info%3Aofi%2Ffmt%3Akev%3Amtx%3Aboo
  01-01&rft.pub=McGraw-Hill+Espa%C3%B1a&rft.isbn=9788448146443&rft.externalDocID=EBC3195647&param

Additional

- [L. Joyanes (2006)]. Programación en C++: Algoritmos, estructuras de datos y objetos (MacGraw Hill).

- [L. Joyanes, I. Zahonero (2001)]. Programación en C: Metodología, algoritmos y estructuras de datos (MacGraw Hill).

- Robert C. Martin. Código Limpio. Prentice-Hall / Anaya. 2012.

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- [H.M. Deitel, P.J. Deitel (2009)]. C++ como programar (Prentice-Hall).
- [F. Martínez Gil, G. Martín (2003)] Programación Estructurada en C. Col.lecció materials. Servei Publicacions UV