VNIVERSITAT ĎĎ VALÈNCIA

COURSE DATA

Data Subject	
Code	34831
Name	Informatics
Cycle	Grade
ECTS Credits	6.0
Academic year	2021 - 2022

Study (s)			
Degree	**Center**	**Acad. year**	**Period**
1407 - Degree in Multimedia Engineering	School of Engineering	1	First term

Subject-matter		
Degree	**Subject-matter**	**Character**
1407 - Degree in Multimedia Engineering	3 - Informática	Basic Training

Coordination	
Name	**Department**
DIAZ FERNANDEZ, MARIA ELENA	240 - Computer Science

SUMMARY

The course "Informática" is a core course of the first year of the Multimedia Engineering Degree. The course workload is 6 ECTS and it is given in the first four-month period of the first year.

This course tries to teach some basic computer concepts like, its basic components, potential uses and limitations.

Students will understand and management some basic concepts related to operating systems as well as the description and use the network as a key part in communicating information between computers.

They also will learn a basic knowledge of different tools, as well as a brief introduction to the concept of database.

One main objective of the course is to get a deeper knowledge of the design of algorithms using structured programming, as well as fundamental data structures.

In the laboratory sessions, the student will implement the theoretical concepts learned in the course, will use some basic software tools and will program some simple software developments using a general purpose structured 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

OUTCOMES

1405 - Grado en Ingenieria Multimedia

- G6 - Know the basic subject areas and technologies that serve as a basis to learn and develop new methods and technologies and those that provide versatility to adapt to new situations.
- B4 - Have basic skills in the use and programming of computers, operating systems, databases and computer software for use in engineering.
- B5- Know the structure, organisation, operation and interconnection of computer systems, the fundamentals of their programming and their application to solve engineering problems.
- MM28 - Be able to solve problems with initiative, decision-making and creativity and to communicate and transmit the knowledge, abilities and skills of a multimedia engineer.

LEARNING OUTCOMES

Learning goals of the course:

- Basic knowledge about the internal structure of a computer, in both, the physical (CPU, memory,...) and the logical scope (operating system, programs,...).
- Knowledge and use of the basic computer tools at the operating system level.
- Use the basic tools for managing files on a network.
- Understand the database operations and perform simple tasks on them.
- Analyze problems, design and develop algorithms to solve problems using a computer.
- Know the basic data types, variables, constants, control structures and data structures of the procedural programming languages to develop programs.
- Use the procedural programming paradigm to solve problems using a computer.
- Learn how to code simple algorithms using a structured programming language.

It is also pretended in this course to further develop the following skills:

- Logical reasoning.
- Analysis and synthesis.
- Oral and written communication skills.
- Personal work capacity.

Teamwork and group leadership skills.

DESCRIPTION OF CONTENTS

1. introduction

The computer concept: Basic concepts. Computer Internal structure.
Software: Operating system. Utilities. Information management.

2. Programming in high level languages.

Algorithm concept.
Languages and programming paradigms.
Characteristics of high-level programming languages: Variables and constants. Simple Data Types.
Program development phases: Analysis of the problem. Algorithm design. Programming

3. Structured programming.

Structured programming Theorem.
Design of structured programs.
Flow control structures: Sequential structure. Conditional structure. Iterative structure.

4. Modular programming.

Module definition
Modular programming.
Subprogram definition: Functions.
Subprogram parameters.
Identifiers scope.
Recusivity.

5. Structured Data Types

Vectors, matrices, strings and records

6. Files

The file concept.
Access types.
Logical and physical files.
Binary and text files.
Processing files.

WORKLOAD

ACTIVITY	Hours	% To be attended
Theory classes	30,00	100
Laboratory practices	20,00	100
Classroom practices	10,00	100
Development of group work	5,00	0
Development of individual work	5,00	0
Study and independent work	10,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	20,00	0
Preparing lectures	15,00	0
Preparation of practical classes and problem	20,00	0
Resolution of case studies	10,00	0
TOTAL	**150,00**	

TEACHING METHODOLOGY

Theoretical activities.

Description: The lectures will present the course contents providing a global vision, a detailed analysis of the key concepts and encouraging the student participation. The workload of this section for the students is 25% of the total of the course.

Practical activities.

Description: The practical activities complement the theoretical classes and allow the students to put into practice the contents and improve the understanding of the course concepts. They include the following types of classroom activities:

• Solving problems in class.
• Regular discussion of exercises and problems that the students have previously tried to work out.

• Laboratory sessions.

• Support tutorial sessions (individualized or in group).

• Individual evaluation of questionnaires to be done in class with the help of professors.

The workload of this section for the students is 25% of the total of the course.

Personal work.

Description: It is the work that the student must carry out individually out of the classroom timetable. It tries to promote the autonomous work habit. Activities in this group are: monographs, guided literature search, exercises and problems as well as preparation of classes and exams. The workload of this section for the students is 50% of the total of the course.

During the course the e-learning (pizarra virtual) platform of the University of Valencia will be used to support the teaching activities. This platform allows the access to the course materials used in the classes as well as additional documents, solved problems and exercises.

EVALUATION

The breakdown of the course assessment is the following:

(C) Continuous assessment. It is based on participation and the degree of involvement in the teaching-learning process. In this section it will be taken into account the resolution of exercises and problems. They are not recoverable in 2nd examination session.

(I) Individual examination. Consisting of several exams, they will include both theoretical and practical questions and problems. There will be some midterm exams distributed during the period of classes and a final exam out of this period that is fixed in the official exam calendar. The weight of these exams is as follows:

I= 60% Average of midterm exams + 40% Final Exam

(P) Laboratory activities assessment. The marks of this part will take into account the achievement of objectives in the laboratory sessions. That point includes the completion of a final project which is a fundamental requisite to pass the course in any examination session. They are not recoverable in 2nd examination session.

P = 70% Laboratory Sessions + 30% Final Project

A minimum mark of 4,5 out of 10 for each part is required to obtain a final average mark (M), which must be equal or higher than 5 out of 10 to pass the course. The student will fail the course if some mark (in the average of midterm exams, in the final exam, in the average laboratory sessions and in the final project) is below 4 or the average is lower than 5.

Attendance at laboratory sessions is required to pass the course in any examination session (first and second session examination). The final mark of the course in the first examination session will be calculated as follows:

$$M = 0.15*C + 0.55*I + 0.3*P$$

For the second exams session will not consider midterm exams and the final mark will be calculated as follows:

$$M = 0.10*C + 0.65*FinalExam + 0.25*P$$

If any kind of copy on any of the activities offered to students during the course would be detected, either from another student or any other source, all students involved in the copy including all members of the group in case of group activity, will not pass the current evaluation session.

In any case, the evaluation of this subject will be done in compliance with the University Regulations in this regard, approved by the Governing Council on 30th May 2017 (ACGUV 108/2017)

REFERENCES

Basic

- Apuntes de la asignatura.
- [G. Beekman (2005)]. Introducción a la informática (Prentice-Hall).
- [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)

Additional

- [H.M. Deitel, P.J. Deitel (2009)]. C++ como programar (Prentice-Hall).
- [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).

ADDENDUM COVID-19

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This addendum will only be activated if the health situation requires so and with the prior agreement of the Governing Council

If it is required by the sanitary situation, the Academic Committee of the Degree will approve the Teaching Model of the Degree and its adaption to each subject, establishing the specific conditions in which it will be developed, taking into account the actual enrolment data and the space availability.