

**COURSE DATA****DATA SUBJECT**

Code: 34653
Name: Informatics
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1400 - Degree in Computer Engineering	Escola Tècnica Superior d'Enginyeria	1	First quarter
1936 - Double Degree Program in Mathematics-Telematics Engineering	Facultat de Ciències Matemàtiques	1	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1400 - Degree in Computer Engineering	Information technology	BASIC
1936 - Double Degree Program in Mathematics-Telematics Engineering	Primer curso	COMPULSORY

COORDINATION

FERRIS CASTELL RICARDO

SUMMARY

In this subject one is to learn the basic knowledge of what it is a computer, which are their basic components, potential uses and their limitations. One will introduce to the student in the knowledge and handling of the operating system, as well as the description and the use of the network like fundamental part in the communication of information between computers. Also one will occur a basic knowledge of different computer science tools, as well as a small introduction him to the basic concept of data. One will be to secure a sufficient knowledge of the design of algorithms by means of structured programming, as well as of the structures of fundamental data. Concerning the practical part, in this subject we will deal with which the student as much strengthens the knowledge seen in the theoretical part in the knowledge of the computer as of the basic tools for his use and acquires abilities of development of programs in a programming language structured of general intention and extended use.

The lecturers of this subject are members of the Teaching Innovation Consolidated Group in Collaborative, Cooperative and Competitive Teaching Methodologies, and they participate in the Teaching Innovation Network proposal with reference UV-SFPIE_F013-147196.



PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

They do not settle down.

COMPETENCES / LEARNING OUTCOMES

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B1 - Ability to solve the mathematical problems that may arise in engineering. Ability to apply knowledge of linear algebra, differential and integral calculus, numerical methods, numerical algorithms, statistics and optimisation.

B2 - Understanding and mastery of basic concepts of fields and waves and electromagnetism, electrical circuit theory, electronic circuits, physical principles of semiconductors and logic families, electronic and photonic devices and their application for solving problems in engineering.

B3 - Ability to understand and master the basics of discrete mathematics, logic, algorithms and computational complexity and their application for solving problems in engineering.

B4 - Have basic skills in the use and programming of computers, operating systems, databases and computer software for use in engineering.

B5 - Knowledge of the structure, organisation, operation and interconnection of computer systems, programming fundamentals, and their application for solving problems in engineering.

G8 - Knowledge of basic subject areas and technologies that serve as a basis for learning and developing new methods and technologies, and of those which provide versatility to adapt to new situations.

G9 - Ability to solve problems with initiative, decision making, autonomy and creativity. Ability to communicate and transmit the knowledge, skills and abilities of a computer engineer.

DESCRIPTION OF CONTENTS

Concept of computer:

Basic concepts.

Internal structure of the computer.

Software:

Operating system.

Utilities.



1. Introduction.

Concept of computer:
Basic concepts.
Internal structure of the computer.
Information management.

2. Programming in high level languages

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

3. Structured programming.

Theorem structured programming.
Design of structured
Control Structures
Sequential structure.
Conditional structure.
Iterative structure.

4. Files

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

5. Modular programming.

Module definition
Modular programming.
Definition sub: 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 databases.

Introduction and Basics.
Operations and examples.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Theory	30,00
Laboratory	20,00
Classroom practices	10,00
Total hours	60,00

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	15,00
Independent study and work	0,00
Preparation of lessons	65,00
Preparation for assessment activities	10,00
Resolution of case studies	0,00
Total hours	90,00

TEACHING METHODOLOGY

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



- Classes of problems and issues in the classroom
- Regular discussion and resolution of problems and exercises that the students have previously worked
- Labs
- Conducting 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 directed, issues and problems as well as the preparation of classes and exams (study). These tasks will be primarily on an individual basis, in order to enhance self-employment, but additionally include work requiring the participation of small groups of students (4-6) to build capacity for integration into working groups.

It will use the platform of e-learning (virtual classroom) of the University of Valencia in support of communication with students. Through it you will have access to course materials used in class as well as solve problems and exercises.

EVALUATION

The evaluation of the course is conducted by:

- Continuous assessment based on participation and degree of involvement in the teaching-learning process, taking into account regular attendance provided onsite activities and resolution of issues and problems raised as well as newsletters (N_Continua) . It must be at least 2.5 in each newsletter to make the average of the newsletters. Occasionally you may make oral presentations (individually and / or group) to evaluate the processing capacity and knowledge transfer documents.
- Individual objective test consisting of multiple controls throughout the semester and a final examination, which consists of both theoretical and practical issues as problems (N_Examenes).

$N_{Examenes} = 60\% \text{ Controls} + 40\% \text{ Final Exam}$

The value of all controls is the same. You must obtain a minimum grade of 4 in the final exam to be able to take the average.

- Assessment of practical activities based on the achievement of objectives in the laboratory sessions, and preparation of papers / reports, including the final project. (N_Practicas). Attendance at practices is considered mandatory to pass the course, both as a primer on second call.

$N_{Practicas} = 30\% \text{ Work laboratory} + 70\% \text{ Final Project}$

You have to get at least a 4 on the Final Project in order to make the average.



The final grade for the course will be:

Final = 20% N_Continua + 50% N_Examenes + 30% N_Practicas

Must be obtained, at least 3.5 out of 10 in each of the parties to mediate the note.

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). It states basically that the marks 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"

9 to 10: "Outstanding" or "with honours Outstanding"

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 it 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

- Apuntes PROPIOS 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)



- [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)