

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

Code: 34806
Name: Informatics II
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1402 - Degree in Telecommunications Electronic Engineering	Escola Tècnica Superior d'Enginyeria	2	First quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1402 - Degree in Telecommunications Electronic Engineering	Information technology	BASIC

COORDINATION

MARTINEZ PLUME JAVIER

SUMMARY

Following the course 34805 (Informatics), is to delve into the basic concepts introduced in it. This will introduce the concept of object and use this type of programming. Students use the concept of class and object and use it in programming.
Also be introduced to students in the rudiments of algorithms, so learn how to evaluate basic algorithms and algorithms work on basic data structures, sorting, searching, etc. general purpose structured programming language.

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PREVIOUS KNOWLEDGE**RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE**



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

OTHER REQUIREMENTS

Have taken and passed the courses Matemàtiques I y II, Informàtica

COMPETENCES / LEARNING OUTCOMES

1402 - Degree in Telecommunications Electronic Engineering

B2 - Basic knowledge of the use and programming of computers, operating systems, databases and computer software with applications to computer engineering.

G3 - Acquisition of the knowledge of the basic and technological subjects that allows students to learn new methods and theories and endows them with the versatility to adapt to new situations.

G4 - Ability to solve problems with initiative, decision-making and creativity, and to communicate and transmit knowledge, abilities and skills, understanding the ethical and professional responsibility of the activity of a telecommunications technical engineer.

DESCRIPTION OF CONTENTS

1. Algorithms and complexity

Design and analysis of algorithms

2. Arrays algorithms

Search algorithms
Sorting algorithms

3. Dynamic memory allocation

Pointer
Dynamic memory allocation

Structure of a class
The concept of object
examples



4. Concept of class and object. Object-Oriented Programming

Structure of a class
The concept of object Inheritance

5. Data structures. Abstract data types

Lists, Stacks and Queues

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	10,00
Independent study and work	15,00
Preparation of lessons	35,00
Preparation for assessment activities	20,00
Resolution of case studies	10,00
Total hours	90,00

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 20% 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 20% 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 45% of the total of the course.

Teamwork in small groups.

Description: It will be carried out by small groups of students (2-4). It consists of work to be done out of the class timetable in form of exercises and problems. This work tries to improve the teamwork and leadership skills. The workload of this section for the student is 15% of the total charge 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.



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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 attendance to classroom activities and the resolution of exercises and problems. The weight of this part will be 20% of the final mark.

(E) 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. This part of the assessment will represent the 50% of the final mark and the weight of each individual exam is as follows:

$$E = 60\%(\text{average of midterm exams}) + 40\%(\text{final exam})$$

The weight of all of the midterm exams will be the same.

(P) Laboratory activities assessment. The marks of this part will take into account the achievement of objectives in the laboratory sessions. These activities will be carried out individually and/or in-group and its weight is 30% of the final mark.

The final mark of the course will be calculated as follows:

$$M = 0.2 * C + 0.5 * E + 0.3 * P$$

A minimum mark of 3,5 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 is below 3,5 or the average is lower than 5.

Alternate assessment: aimed at students study part-time or who can not attend class

$$\text{Nota Final} = 0,1 * C + 0,7 * I + 0,2 * P$$

The second exams session for this course will be based on a single final exam.

REFERENCES

- Apuntes de la asignatura.
- Como programar en C++, Harvey M. Deitel & Paul J. Deitel, Pearson Educación, 2003. (CI



681.3.06 DEI)

- [W. Savitch (2007)]. Resolución de problemas con C++. El objetivo de la programación (Prentice-Hall).
- TADs, estructuras de datos y resolución de problemas con C++ /Larry R. Nyhoff Madrid. Prentice-Hall 2006. (CI 681.3 NYH)
- Data structures and algorithms in C++. Michael T Goodrich, Roberto Tamassia, David M. Mount New York, John Wiley & Sons, 2004 ISBN 0471429244.
- Fundamentals of data structures in C++. Ellis Horowitz, Sartaj Sahni, Susan Anderson-Freed New York. Silicon Press, 2007 (CI 681.3.06 HOR)