1. BASIC INFORMATION

Course	Computer Science for Engineering
Degree program	Bachelor's Degree in Aerospace and Aircraft Engineering
School	Architecture, Engineering and Design
Year	First
ECTS	6 ECTS
Credit type	Basic
Language(s)	English
Delivery mode	On-site
Semester	First
Academic year	2025-2026
Coordinating professor	PhD. Hector Eloy Sanchez Sardi

2. PRESENTATION

Fundamentals of computing is a course designed for first-year students to provide them with basic knowledge and skills in computer science. The course provides a basic knowledge related to hardware organization and theoretical foundation of data representation as well as algorithm development. Additionally, the course covers an introduction to programming using C/C++ as well as the use of engineering tools for scientific and engineering calculation such as MATLAB. The course also comprehends a basic introduction to databases and data organization.

3. LEARNING OUTCOMES

Knowledge

KNO2 (CON02) Basic knowledge of the use and programming of computers, operating systems, databases, and software applications in engineering.

Specific knowledge of the subject:

- Identify the fundamental concepts of computer usage and programming.
- Describe operating systems and databases.

Skills

SK04 (HAB04). Use computer tools to search for bibliographic or information resources (Information Search).

Specific skills of the subject:

- Handle computer applications for engineering and assess their potential for engineering work

- Program scripts in computer applications for engineering.
- Utilize software programs applicable to engineering within its scope.

Competences

CP12. Generate new ideas and concepts from known ideas and concepts, reaching conclusions or solving problems, challenges, and situations in an original way in the academic and professional environment.
CP13. Convey messages (ideas, concepts, feelings, arguments), both orally and in writing, strategically aligning the interests of the various parties involved in communication in the academic and professional environment in the field of aerospace engineering.
CP14. Employ information and communication technologies for data search and analysis, research, communication, and learning in the field of aerospace engineering.
CP15. Influence others to guide and lead them towards specific objectives and goals, taking into consideration their viewpoints, especially in professional situations arising from the volatile, uncertain, complex, and ambiguous (VUCA) environments of the current world.
CP16. Collaborate with others in achieving a shared academic or professional objective, actively participating, demonstrating empathy, and practicing active listening and respect for all team members.
CP17. Integrate analysis with critical thinking in an evaluation process of different ideas or professional possibilities and their potential for error, relying on evidence and objective data that lead to effective and valid decision-making.
CP18. Adapt to adverse, unexpected situations that cause stress, whether personal or professional, overcoming them and even turning them into opportunities for positive change.
CP19. Demonstrate ethical behavior and social commitment in the performance of professional activities, as well as sensitivity to inequality and diversity.

4. CONTENT

- Introduction to computer science
- Representation of the information
- Introduction to programming
- Introduction to C programming
- Introduction to data bases
- Applications of computer science in engineering: MATLAB

5. TEACHING-LEARNING METHODOLOGIES

The types of teaching-learning methodologies used are indicated below:

- Survey of objectives and interests
- Master class
- Investigation in groups or problem solving in groups.
- Designs

6. LEARNING ACTIVITIES

Listed below are the types of learning activities and the number of hours that the student will spend on each one:

Campus-based mode:

Learning activity	Total time	In-class Time	Use of AI
Lectures / masterclasses	30 hours	30 hours (100%)	Allowed
Laboratory / working sessions / exams	24 hours	12 hours (100%)	Not Allowed
In class resolution of exercises, problems	50 hours	18 hours (47%)	Assessed
Self-study	46 hours	0 hours (0%)	Promoted
TOTAL	**150 hours**	**60 hours (40%)**	

In the case where the use of AI is Not Allowed, if the Professor suspects the use of AI Tools by any student, the Professor can perform additional oral proof of knowledge to any student. If the student answers do not demonstrate knowledge or disagree with the work a 0 is assigned to the assignment.

7. ASSESSMENT

Listed below are the assessment systems used and the weight each one carries towards the final course grade:

Campus-based mode:

Assessment system	Weight
SE01 – Exams and objective tests	30-35%
SE02 – Articles, essays and reports	15-30%
SE03 – Peer-evaluation, auto-evaluation, portfolio production and other alternative assessment procedures	15-30%
SE04 – Off-class events, conferences and seminars (*)	10%
SE05 – Core/cross-curricular competences (performance)	10-15%

(*) If these activities could not be carried out, the corresponding weight would split evenly between systems SE02 and SE03.

When you access the course on the *Campus Virtual*, you will find a description of the assessment activities you have to complete, as well as the delivery deadline and assessment procedure for each one.

Further details about the AI-use policy will be published through the virtual campus platform once the course has started.

7.1. First exam period

To pass the course in the first exam period, you must:

- Obtain an average grade greater than or equal to 5.0 out of 10.0 in the continuous evaluation of class exercises and deliverables on the virtual campus. A 100% of all the mandatory evaluations must be delivered.
- Obtain a grade greater than or equal to 5.0 out of 10.0 in each one of the exams.
- Attend at least 50% of the lectures

When the minimum required to carry out the weighted average of the evaluable activities is not met (the minimum is not reached in any of the previous points), the final grade will be:

- the weighted average if the value is less than or equal to 4
- 4 if the value of the weighted mean is greater than 4

The grade in the first exam period will be considered as NP (Not Presented) when the student has not delivered any evaluable activity of those that are part of the weighted average.

7.2. Second exam period

To pass the course in the second exam period, you must:

- Obtain an average grade greater than or equal to 5.0 out of 10.0 in the continuous evaluation of class exercises and deliverables on the virtual campus. A 100% of all the mandatory evaluations must be delivered.
- Obtain a grade greater than or equal to 5.0 out of 10.0 in the final exam
- The final exam content and grade weight would be the content and weight of the exam or exams that were failed or not delivered in the first exam period.

When the minimum required to carry out the weighted average of the evaluable activities is not met (the minimum is not reached in any of the previous points), the final grade will be:

- the weighted average if the value is less than or equal to 4
- 4 if the value of the weighted mean is greater than 4

The grade in the second exam period will be considered as NP (Not Presented) when the student has not delivered any evaluable activity of those that are part of the weighted average.

The student must deliver the evaluated activities that were not delivered or not successfully completed in the first exam period.

8. SCHEDULE

This table shows the delivery deadline for each assessable activity in the course:

Assessable activities	Deadline

Exam 1	Weeks 3-4
Exam 2	Weeks 9-10
Exam-3	Weeks 15-16
Continuous evaluation	Weeks 2-15

This schedule may be subject to changes for logistical reasons related to the activities. The student will be notified of any change when appropriate.

9. BIBLIOGRAPHY

The recommended bibliography is:

- C Programming and Numerical Analysis – An Introduction, Seiichi Nomura. Chapter 1: First Steps to Run a C program - Chapter 2: Components of C Language
- What Goes Around Comes Around, Michael Stonebraker and Joseph M. Hellerstein. Chapter 1: Data Models and DBMS Architecture
- Computer Organization and Architecture. Designing for Performance, William Stallings
- C How to Program: With an Introduction to C++, Paul and Harvey Deitel.
- MATLAB and Simulink Crash Course for Engineers, Eklass Hossain

10. DIVERSITY MANAGEMENT UNIT

From the Educational Guidance and Diversity Unit we offer support to our students throughout their university life to help them reach their academic achievements. Other main actions are the students inclusions with specific educational needs, universal accessibility on the different campuses of the university and equal opportunities.

From this unit we offer to our students:

1. Accompaniment and follow-up by mean of counselling and personalized plans for students who need to improve their academic performance.
2. In terms of attention to diversity, non-significant curricular adjustments are made in terms of methodology and assessment for those students with specific educational needs, pursuing an equal opportunity for all students.
3. We offer students different extracurricular resources to develop different competences that will encourage their personal and professional development.
4. Vocational guidance through the provision of tools and counselling to students with vocational doubts or who believe they have made a mistake in their choice of degree.

Students in need of educational support can write to us at:
orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Your opinion matters! The Universidad Europea encourages you to participate in several surveys which help identify the strengths and areas we need to improve regarding professors, degree programs and the teaching-learning process.
The surveys will be made available in the “surveys” section in virtual campus or via e-mail.
Your assessment is necessary for us to improve.
Thank you very much for your participation.

HOW TO COMMUNICATE WITH YOUR PROFESSOR

Whenever you have a question about the content or activities, don't forget to post it to your course forum so that your classmates can read it.

You might not be the only one with the same question!

If you have a question that you only want to ask your professor, you can send him/her a private message from the Campus Virtual. And if you need to discuss something in more detail, you can arrange an advisory session with your professor.

It's a good idea to check the course forum on a regular basis and read the messages posted by your classmates and professors, as this can be another way to learn.

PLAGIARISM REGULATION

In accordance with the current student disciplinary regulations at Universidad Europea:

- Plagiarism, in full or in part, of intellectual works of any kind, is considered a very serious offense.
- Very serious offenses relating to plagiarism and the use of fraudulent means to pass assessment tests shall result in exclusion from the exams for the relevant period, as well as the inclusion of the offense and its details in the student's academic record.

USE OF IA REGULATION

The student must be the author of his/her work/activities.

The use of Artificial Intelligence tools (AI) must be authorized by the teacher in each assignment/activity, indicating in what way its usage is permitted. The teacher will inform in advance in which situations AI tools may be used to improve spelling, grammar and editing in general. The student is responsible for clarifying the information given by the tool and duly declaring the use of any AI tool, according to the guidelines given by the teacher. The final decision on the authorship of the work and the appropriateness of the reported use of an AI tool rests with the lecturer and those responsible for the degree.