Universidad Europea

1. BÁSIC DATA

Asignatura	Computer Science in Engineering
Titulación	GIA: Grado en Ingeniería Aeroespacial
Escuela/ Facultad	Escuela de Arquitectura, Ingeniería y Diseño
Curso	Primero
ECTS	6 ECTS
Carácter	Básica
Idioma/s	Inglés
Modalidad	Presencial
Semestre	Primer semestre
Curso académico	2020/2021
Docente coordinador	Nourdine Aliane

2. PRESENTATION

Fundamentals of computing is a course designed for first-year students to provide them with basic knowledges and skills in computer sciences. 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 tools scientific and engineering calculation. The course concludes with a basic introduction to databases and data organization.

3. COMPETENCIES AND LEARNING OUTCOMES

Transversal competencies:

- CT2. Autonomous Learning. Skills to select search strategies, analysis, evaluation and management of the information provided from different sources as well as to learn to put in practice what they have learned.
- CT5. Analysis and problem solving. To be able to assess the information, to split complex situations in their simple parts, recognize patterns, and consider alternatives approaches, in order to find optimal solutions and efficient negotiations.

Specific competencies:

- CE4. Basic knowledge of the use of computers, operating systems, databases and computer programs with application in engineering.

Learning outcomes:

- LO1. Analyze data representation in computers.
- LO2. Identify the different hardware parts of computers and they are organized
- LO 3. Understand the functions of an operating system and how its organized
- LO 4. Build simple computer applications using procedural programming

- LO 5. Solve technical problems using software for engineering and scientific calculation
- LO 6. Understand how Databases works and how data are organized.

The following table shows the relationship between the developed competencies and the learning outcomes:

Competencies	Learning outcomes
CT2, CT5 and CE4	**LO1, LO2, LO3, LO4, LO5, LO6**

4. CONTENTS

The content of the course is organized in the following learning units:

Unit-1. Introduction to computer: Hardware Organization and Operating Systems functions
Unit-2. Data and information representation
Unit-3. Introduction to programming: Flow-Charts and Algorithm development
Unit-4. Introduction to C programming
Unit-5. Introduction to Matlab
Unit-6. Introduction to Databases and data organization

5. TEACHING-LEARNING METHODOLOGIES

The following are the types of teaching-learning methodologies that will be applied:
AF1: Problems resolution, tests and handouts work.
AF2: Teacher dissertations and presentations.
AF5: Laboratory practices.
AF7: Follow-up tutoring for Individual or group.
AF10: Bibliographic and information search and reports writing.
AF11: Autonomous Learning.

6. TRAINING ACTIVITIES

The following table summarizes the type of training activities as well as their time distribution:

Training activity	Amounts of hours
AF1: Problems resolution, tests and handouts work.	30 h
AF2: Teacher dissertations and presentations	40 h
AF5: Laboratory practices.	20 h
AF7: Follow-up tutoring for Individual or group.	10 h
AF10: Bibliographic and information search and reports writing.	20 h
AF11: Autonomous Learning.	30 h
TOTAL	**150 h**

7. EVALUACION AND ASSESMENT

Next, are described the activities for assessment and their weights in the final grade:

Evaluation criteria	Weight
Test-1 Data representation, code conversions, algorithm and flowchart.	20%
Test-2: C programming: Flow control and functions use	20%
Test-3: Matlab: Matrices and graphs manipulation	20%
Final Exam: covers the complete course contents	40%

7.1. Ordinary call exam

To pass the subject in the ordinary call, the student must:

- Have a minimum attendance of 50%.
- Deliver all work.
- Have a grade greater than or equal to 5.0 in the final exam.
- Obtain a grade greater than or equal to 5.0 in the weighted average.

When any of the above criteria is not met, the final grade will be:

- The obtained weighted average it is less than or equal to 4.
- Will be 4 if the weighted average value is greater than 4.

The final grade in the ordinary call will be considered as NP (Not Presented, or No Show) when the student has not delivered any evaluable activity, which they are part of the weighted average.

7.2. Extraordinary call exam (or retake exam)

To pass the subject in the ordinary call, the final grade is determined according to the following criteria:

- The grades obtained in tests during the ordinary call will be kept.
- Obtain a grade greater than or equal to 5.0 in the extraordinary exam.
- Obtain a grade greater than or equal to 5.0 in the weighted average.

When any of the above criteria is not met, the final grade will be:

- The obtained weighted average if it is less than or equal to 4.
- Will be 4 if the weighted average value is greater than 4.

The final grade in the extraordinary call will be considered as NP (Not Presented, or No Show) when the student has not delivered any evaluable activity with compared to the delivered activities in the ordinary call.

8. SCHEDULE

This section indicates an approximate planning of the evaluable activities:

Evaluation activities	Date
Test-1	Weeks 3-4
Test-2	Weeks 8-9
Test-3	Weeks 11-12
Final Exam	Weeks 14-15

This schedule may be modified to adaptation to the incoming circumstances. However, any modification will be notified to the student with enough time.

9. BIBLIOGRAPHY

Recommended bibliography:

- Prieto, A. Lloris, J.C. Torres, Introducción a la Informática, McGraw-HilL
- Luis Joyanes Aguilar. Fundamentos de programación. McGraw-Hill
- Williams Stallings. Sistemas Operativos. Prentice-Hall
- H.M. Deitel. Cómo Programar en C/C++. Prentice-Hall.
- Matlab: Edición del estudiante. Prentice-Hall

10. DIVERSITY UNIT

For students with specific educational needs.

In order to guarantee equal opportunities to students with specific educational needs, any syllabus adaptations/readjustment is subject to a mandatory issuing of a report by the Diversity Unit (UAD). Thus, students with specific educational needs are urged to contact, using the email: unit.diversidad@universidadeuropea.es at the beginning of each semester