1. BASIC INFORMATION

Course	Fundamentals of IT
Degree Program	BSc degree in Computer Science
School	Escuela Politécnica
Year	2025-2026
Credits (ECTS)	6
Credit type	Basic
Language(s)	English / Spanish
Delivery mode	On campus
Semester	S1
Academic year	2025-2026
Coordinating professor	

2. PRESENTATION

Fundamentals of IT will enable the student to learn how a computer works from the inside, the parts it contains, as well as how the computer communicates at a low level.
The basic knowledge of how computers work at a low level, the components that form them, as well as the way in which information is transmitted will be established, allowing the student to interact with them at a low level and to understand how communication works at more abstract levels.
Largely due to the rapid evolution of technologies in the field of computer science, it is quite common for new professionals to interact with computers and lose sight of what is actually happening in the computer. This subject area fills this gap, giving students an in-depth view of the inner workings of a computer, enabling them to interact with it in an optimal way, as well as providing them with the necessary knowledge to participate in the innovation of platforms, architectures, components and, in general, the physical part of infrastructures.

3. LEARNING OUTCOMES

Knowledge:
KNO01. To understand the basic concepts of fields and waves and electromagnetism, electrical circuit theory, electronic circuits, physical principle of semiconductors and logic families, electronic and photonic devices.
KNO03.To know the structure, organization, operation and interconnection of computer systems, the fundamentals of their programming.
KNO07. To know the structure and architecture of computers and their basic components.

Skills:

SK01. Apply the basic concepts of fields and waves and electromagnetism, electrical circuit theory, electronic circuits, physical principle of semiconductors and logic families, electronic and photonic devices, to engineering problem solving.

SK03. Apply the knowledge of the structure, organization, operation, and interconnection of computer systems, and the fundamentals of their programming to solve engineering problems.

SK06. Evaluate the structure and architecture of computers, as well as the basic components that make them up.

4. CONTENTS

The Contents of the course/module are listed below:

- Introduction to computer science.
- Representation of the information.
- Basic electronic circuits.
- Boolean Algebra.
- Computer structure.
- Programming languages.

5. TEACHING-LEARNING METHODOLOGIES

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

- Lectures/ web conferencing
- Problem-based learning

6. LEARNING ACTIVITIES

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

Campus-based mode:

Learning activity	Number of hours
Lectures	12
Practical seminars	18
Problem-solving	22
Workshops and/or laboratory work	20
Independent working	56
Debates and discussions	8
Tutorials	12
On campus knowledge assessment tests	2
TOTAL	**150**

7. ASSESSMENT

Each assessable learning activity represents an opportunity for the student to make progress, receive feedback, and consolidate knowledge, skills, and competences. The Learning Outcomes outlined in this guide provide direction for this process and serve as benchmarks for their achievement.

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

Campus-based mode:

Assessment Systems	Weight (%)
On campus knowledge assessment tests	40-60%
Case/problem	10-30%
Performance assessment	0-15%
Workshops/lab work journal	15-30%

7.1. First exam period

In order to pass the course/module in the ordinary call, the student must obtain a grade greater than or equal to 5.0 (out of 10), in all the evaluation systems proposed in this guide. The final grade will be calculated from the weighted average of all the evaluation systems described.

If in any of the evaluation systems proposed in this guide, a grade lower than 5.0 (out of 10) is obtained, the final grade of the course/module will be "fail" even if, in the result of the weighted average, a value higher than 5.0 (out of 10) is obtained. In the latter case, the course/module would still be "failed" obtaining a final grade of 4.0 (out of 10).

Delivery of activities

Compliance with deadlines is essential to ensure the fairness and planning of the training process.

In case of not submitting an evaluable formative activity in due time and form, and without prior justification, it will not be evaluated and, therefore, will be recorded as "not submitted".

The student is encouraged to communicate with sufficient time in advance to the teacher of the course/module, any difficulty that may affect their participation in any activity.

Attendance

Active participation in the training sessions is a key component of learning. In order to pass the course/module, at least 50% attendance is required. If this minimum percentage is not reached, the teacher may consider the course/module as "failed", according to the evaluation regulations of the Universidad Europea de Andalucía.

7.2. Second exam period

The extraordinary exam offers a new opportunity for students to demonstrate their learning. To pass it, it will be necessary to obtain a final grade (weighted average) equal to or higher than 5.0 (out of 10.0).

Delivery of activities

The student must submit and pass those mandatory training activities not delivered or not passed in the ordinary call, respecting the new deadlines established. In case of failure to comply with these new deadlines, the activity will not be evaluated and, therefore, will be recorded as "not presented".

8. SCHEDULE

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

Assessable activities	Date
Binary number system	Week 2
Floating point binary number system	Week 3
Activity on logic gates	Week 5
Simple combination circuits	Week 7
Laboratory: Logic gates	Week 8
Complex combination circuits	Week 10
Memory and Cache Memory	Week 12
ALU	Week 14
Top500.org	Week 15
Assessment	Week 16

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

9. REFERENCES

The reference material for the subject area is as follows:

- Stallings, W. (2006). Organización y arquitectura de computadores. Madrid: Prentice Hall. Patterson, Hennessy (1995).
- Organización y diseño de computadores. Madrid: Mc. Graw Hill. Cerrada Somolinos, José Antonio (2001).
- Fundamentos de estructura y tecnología de The recommended bibliography is indicated below: Angulo, J.M., García, J., Angulo, I, (2003).
- Fundamentos y estructura de computadores. Madrid: Thomson. Sánchez Pérez, Omar (2003).

- Fundamentos para el diseño de computadores de ocho Bits. Servicio de Publicaciones, Universidad de Huelva. Karnaugh maps. Página explicativa sobre los mapas de Karnaugh. Available online Consult . [Septiembre2011].

10. AREA OF GUIDANCE, DIVERSITY AND INCLUSION

The Area of Guidance, Diversity and Inclusion (ODI) offers support to students throughout their university career, with the aim of facilitating their academic and personal development and supporting them in achieving their goals. This Area focuses its work on three Core pillars: the inclusion of students with specific educational support needs, the promotion of universal accessibility in the educational community and the guarantee of equal opportunities for all.

Among the services offered are:

- **Academic accompaniment and monitoring**, through counselling and the development of personalised plans aimed at those who need to improve their academic performance.
- **Attention to diversity**, through the implementation of non-significant curricular adjustments - in methodological and Assessment aspects - for students with specific educational support needs, in order to guarantee equal opportunities.
- **Extracurricular training resources**, aimed at developing personal and professional Competencies that contribute to the integral growth of students.
- **Vocational guidance**, through the provision of tools and advice to those who have concerns about their choice of Degree or are considering a change in their educational path.

Students in need of educational support can contact the Area via the following email address: orientacioneducativa@universidadeuropea.es

11. ONLINE SURVEYS

Participating in the Satisfaction Surveys is an enriching opportunity to contribute to the continuous improvement of the Degree as well as the institution. Thanks to them, it is possible to identify which aspects of academics, teaching staff and the teaching-learning process are working well and which can be further improved.

With the aim of encouraging active participation in the completion of surveys among students, various channels of dissemination have been set up. The surveys are available in the space provided on the Virtual Campus and are also sent by email to facilitate access.

The responses collected allow decisions to be made that have a direct impact on the quality of the learning experience and on the day-to-day life of the university community.