1. BASIC INFORMATION

Course	Object-Orientated Programming
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	S2
Academic year	2025-2026
Coordinating professor	

2. PRESENTATION

The course Object-Oriented Programming provides students with the knowledge required to understand and apply the use and programming of computers, operating systems, databases, and software relevant to engineering, as well as the structure, organization, functioning, and interconnection of computer systems and the fundamentals of their programming. Throughout the course, students will develop skills aimed at solving engineering-related problems by applying this knowledge in practice, contributing to the competence of developing reliable, secure, and high-quality applications and computer systems in accordance with ethical principles and current legislation and standards. The main contents include the implementation and advanced design of classes, attributes, constructors, methods, collections, single and multiple inheritance, polymorphism, design patterns, quality assurance, event management, and graphical user interfaces, thereby establishing the conceptual and practical foundations necessary to successfully undertake more complex software development projects in the professional field.

3. LEARNING OUTCOMES

Knowledge:

KNO02. Know the use and programming of computers, operating systems, databases and software with engineering applications.

KNO03.To know the structure, organization, operation and interconnection of computer systems, the fundamentals of their programming.

Skills:

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

Competences:
CMP08. Develop computer applications and systems, ensuring their reliability, security and quality, in accordance with ethical principles and current legislation and regulations.

4. CONTENTS

The Contents of the course/module are listed below:

- Class Implementation. Attributes, constructors, methods. Collections
- Advanced Class Design. Method Overloading and Overriding.
- Single Inheritance. Polymorphism. Multiple Inheritance.
- Design Patterns.
- Quality Assurance.
- Event Management. Graphical Interfaces.

5. TEACHING-LEARNING METHODOLOGIES

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

- Lectures/ web conferencing
- Problem-based learning
- Project-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	10
Practical seminars	20
Problem-solving	18
Workshops and/or laboratory work	24
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	5-15%
Performance assessment	0-15%
Workshops/lab work journal	15-50%

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
Activities Unit 1 (individual and group)	Week 3
Activities Unit 2 (individual and group)	Week 6
Activities Unit 3 (individual and group)	Week 9
Activities Unit 4 (individual and group)	Week 12
Activities Unit 5 (individual and group)	Week 13
Project	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:

- Documentación oficial de Java: https://docs.oracle.com/javase/
- "Piensa en Java". Eckel, Bruce. Pearson Prentice Hall. Ed. 2008
- WikiBooks: Object Oriented Programming.
- https://en.wikibooks.org/wiki/Object_Oriented_Programming
- Booch, G., Rumbaugh, J., & Jacobson, I. (2005). The unified modeling language user guide (2nd ed.). Addison-Wesley Professional.
- Larman, C. (2004). Applying UML and patterns: An introduction to object-oriented analysis and design and iterative development (3rd ed.). Prentice Hall.

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.