



UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Advanced Programming

Academic Year 2023/2024

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Computer Engineering

3. Cycle

1st

4. Course Unit

Advanced Programming (L9018)

5. Scientific Area

6. Curricular Year

2nd

7. Type of Curricular Unit / Semester

2nd Semester



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8. Class type and workload (work time)

Theoretical classes:

Practical classes:

Theoretical-Practical Classes 30,00

Tutorial Guidance: 20,00

9. ECTS Credits

6,00

10. Scientific Area Coordinator

11. Regent

Prof. Doutor BEREND WILLEM MARTIJN KUIPERS

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

Teaching and practice of object-oriented programming concepts based on the C++ language.

Give theoretical sequence to the Programming CUs by developing a new programming paradigm.

15. Specific Objectives

Understanding the essential elements of the OO programming paradigm, as well as the ability to define models of reality from this paradigm, are achieved through learning the subjects covered in the object-oriented programming paradigm.

The fundamentals of object-oriented programming will enable the student to understand and apply the fundamental concepts of object-oriented programming using one of the existing object-oriented programming languages.

16. Skills to be acquired

Points 1 to 10 introduce the basic concepts of object-oriented programming. In each of the points, practical examples are presented that, complemented with the carrying out of laboratory work, allow the acquisition of practical experience in the use of these concepts in several proposed situations.



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17. Teaching Methodology

Expository theoretical-practical classes, with resolution of practical exercises.

Laboratory classes with problem solving and implementation of the solution.

Continuous evaluation.

In the theoretical-practical classes, the theoretical subject is briefly addressed through slides and extensively illustrated with examples executed in the programming environment (API) of the chosen language (C++).

18. Course Unit Program

During the semester we study the following topics:

- 1 - Characteristics of Object Oriented Programming.
- 2 - Languages based on Classes (instantiation of classes and objects).
- 3 - Class Architecture.
- 4 - Mechanism of inheritance.
- 5 - Polymorphism.
- 6 - Abstract Classes and Interfaces.
- 7 - Exceptions.
- 8 - Generic types and functions. Anonymous functions.
- 9 - Event-oriented programming and interactivity.
- 10 - Development languages and environments; object-oriented analysis, design, and implementation

19. Assessment Methods

The Continuous Assessment (AC) consists of:

1. Two Practice Tests (80%).
 2. One theoretical assessment point (20%).
- A percentage of attendance $\geq 70\%$ is required.

20. Didactic Resources

Computers in practical classes with the C++ and CLion compiler; Digital content projector device (Data show), connected to the computer.

21. Sustainability Objectives

4. Quality Education
5. Gender Equality
9. Industry, Innovation and Infrastructure

22. Keywords

OOP - Object Oriented Programming

C++



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23. Main Bibliography

Author(s): Bjarne Stroustrup
Title: Programming: Principles and Practice Using C++
Edition: 4 Year: 2014
Local:
Publisher: Addison Wesley

Author(s): Michael D. Adams
Title: Programming in C++ : The C++ Language, Libraries, Tools, and Other Topics
Edition: Year: 2022
Local: <https://ece.engr.uvic.ca/~frodo/cppbook/>
Publisher: Online

Author(s):
Title:
Edition: Year:
Local:
Publisher:

24. Complementary Bibliography

Author(s):
Title:
Edition: Year:
Local:
Publisher:

Author(s):
Title:
Edition: Year:
Local:
Publisher:



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Ficha técnica MIP / MIP Datasheet	
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Autor / Author	Prof. Doutor BEREND WILLEM MARTIJN KUIPERS
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
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