UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Physics

Academic Year 2025/2026

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Computer Engineering

3. Cycle

1st

4. Course Unit

Physics (L9012)

5. Scientific Area

6. Curricular Year

2nd

7. Type of Curricular Unit / Semester

1st 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 JOAQUIM MESQUITA DA CUNHA VIANA

12. Assistants

13. Teaching Language

Portuguese

14. General Objectives

To teach the Basic concepts related to Electricity, Electromagnetism and Optics

15. Specific Objectives

To introduce the principles and applications of Electricity, magnetism and Optics
To get to understand the physics basis of engineering, in what concerns Electricity, Magnetism and Optics through the understanding of the basic phenomena of each of these areas of knowledge.
To be able to understand and apply the laws that rule Electric, Magnetic and Optical behavior.
To get to know some of the applications resulting from that behavior.

16. Skills to be acquired

At the end of this course, students shall be able to:
-Apply the basic laws of electricity and electromagnetism to simple engineering problems;
-Solve continuous and alternating current circuits using analytical methods;
-To interpret optical phenomena through light waves theory;
-Use concepts about electric a magnetic fields to predict the behaviour of charged particles;
-Analyze the propagation of electromagnetic waves in various environments.

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17. Teaching Methodology

Lecturing Will be based on the oral transmission of information related to the subjects being studied, followed by the resolution of adequately related exercises.

18. Course Unit Program

1. ELECTRIC CHARGES AND COULOMB?S LAW
2. ELECTRIC FIELD
3. GAUSS'S LAW
4. ELECTRIC POTENTIAL
5. CAPACITANCE AND DIELECTRICS
6. CURRENT AND RESISTANCE
7. CONTINUOUS CURRENT CIRCUITS
8. MAGNETIC FIELD
9. FARADAY'S LAW
10. ELECTROMAGNETIC INDUCTION
11. ALTERNATE CURRENT CIRCUITS
12. ELECTROMAGNETIC WAVES
13. THE NATURE OF LIGHT AND THE LAWS OF GEOMETRIC OPTICS
14. INTERFERENCE OF LIGHT WAVES

19. Assessment Methods

According to the school?s internal regulations, grading Will have a continuous component, as well as a frequency test. The continuous component will consist of:
Class attendance
2 theoretical tests
In case the student gets benefit from it, the final grade will be limited to the grade obtained in the frequency test, otherwise it will be the waged average of the grades achieved in the frequency test and the continuous component.

20. Didactic Resources

21. Sustainability Objectives

This course contributes to the following Sustainable Development Objectives(ODS):
-ODS 5 -Gender Equality: assuring an inclusive and fair transmission of knowledge related to technological areas;
-ODS 9 -Industry, innovation and infrastructure: through the acquisition of knowledge regarding how to apply it, in way that it can contribute to foster innovation within our society;
-ODS 11 -Sustainable Cities and Communities: By contributing to the efficiency of urban systems.

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22. Keywords

Electricity
Magnetism

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23. Main Bibliography

Author(s): Loureiro, J.
Title: ELETROMAGNETISMO E ÓTICA
Edition: 1 Year: 2019
Local: Lisboa
Publisher: IST Press
ISBN Code:

Author(s): Giancoli, Douglas C.
Title: Physics Principles With Applications
Edition: 7 Year: 2013
Local:
Publisher: Pearson Education Limited
ISBN Code:

Author(s): Tipler & Mosca
Title: Física para Cientistas e Engenheiros, vol. 2 (Electricidade e Magnetismo, Óptica.)
Edition: 6 Year: 2000
Local:
Publisher: LTC - GRUPO GEN
ISBN Code:

24. Complementary Bibliography

Author(s): Tipler & Mosca
Title: Physics for Scientists and Engineers, Extended Version, Media Update2020 Media Update
Edition: 6 Year: 2020
Local:
Publisher: W. H. Freeman
ISBN Code:

Author(s): Serway, R.A. & Jewett, J. W.
Title: Physics for Scientists and Engineers with Modern Physics.
Edition: 10 Year: 2018
Local:
Publisher: Cengage Learning

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