



UNIVERSIDADE LUSÍADA
LISBOA

Course Unit Program
Digital Systems

Academic Year 2024/2025

1. Organic Unit

Faculty of Business and Economic Sciences

2. Course

Computer Engineering

3. Cycle

1st

4. Course Unit

Digital Systems (L9005)

5. Scientific Area

6. Curricular Year

1st

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

Familiarize students with the basic elements of the development of digital circuits.

Analysis and design of combinational and sequential logical circuits.

To understand the digital logic at the level of the doors and the switching, in the context of combinatory and sequential circuits.

Gain experience in computer-based digital drawing tools.

15. Specific Objectives

Analysis and design of combinatorial and sequential logic circuits.

16. Skills to be acquired

Understanding digital logic at the gates and comutation level, within combinatorial and sequential circuits.

Gain experience in computer-based digital drawing tools.

17. Teaching Methodology

Lectures will include the oral transmission of information related to the themes being studied, followed by the resolution of exercises that lead the students to the physical implementation of the problems being addressed.



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18. Course Unit Program

1. Introduction
2. Coding systems
3. Basic concepts
 - Logic gates
 - Boolean algebra
 - Simplification of Boolean expressions
 - Karnaugh diagrams
4. Combinatorial logic
 - Adders and Subtractors
 - Multipliers
 - Decoders and Coders
 - Multiplexers
5. Sequential logic
 - Latches and Flip-flops
 - Registers and Counters
6. Finite State Machines
7. Memory and Storage

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:

2 theoretical tests - 70%

Practical assignments - 30%

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 weighted average of the grades achieved in the frequency test and the continuous component.

20. Didactic Resources

The following simulators:

Circuit Maker
Logisim
DEEDS

21. Sustainability Objectives

4. Quality Education
5. Gender Equality
9. Industry, Innovation and Infrastructure
11. Sustainable Cities and Communities

22. Keywords



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Sequential Circuits
Combinatorial Circuits
Digital Logic
Boolean Algebra

23. Main Bibliography

Author(s): Thomas L. Floyd
Title: Digital Fundamentals: International Edition
Edition: 11 Year: 2017
Local:
Publisher: Prentice Hall

Author(s): Morris Mano
Title: Digital Design Global Edition
Edition: 1 Year: 2018
Local:
Publisher: Pearson

Author(s): Morgado Dias
Title: Sistemas Digitais, Princípios e Prática
Edition: 3ª Year: 2010
Local:
Publisher: FCA

24. Complementary Bibliography

Author(s): José Monteiro, Guilherme Arroz, Arlindo Oliveira
Title: Arquitectura de Computadores - dos Sistemas Digitais aos Microprocessadores
Edition: 2ª Year: 2009
Local:
Publisher: IST Press

Author(s): Acácio Amaral
Title: Eletrónica Digital - Fundamentos e Projeto
Edition: 1 Year: 2019
Local:
Publisher: Edições Sílabo



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Ficha técnica MIP / MIP Datasheet	
Título / Title	Course Unit Program 'SISTEMAS DIGITAIS': Academic Year 2024/2025
Autor / Author	Prof. Doutor JOAQUIM MESQUITA DA CUNHA VIANA
Classificação / Classification	-
Descritores / Descriptors	-
Colaborador(es) / Colaborator(s)	-
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