

	SUBJECT DESCRIPTION	MODELO PED.013.02
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<i>Course</i>	Industrial Mechanics and Informatics	<i>Academic year</i>	2021/2022			
<i>Subject</i>	Electrical and Electronic Circuits	ECTS	6			
<i>Type of course</i>	Compulsory					
<i>Year</i>	1 st	<i>Semester</i>	2 nd	<i>Student Workload:</i>		
<i>Professor(s)</i>	João António Lobão Andrade		<i>Total</i>	162	<i>Contact</i>	60
<i>Area/Group Coordinator</i>	Rui António Pitarma S. Cunha Ferreira					

Planned SD

1. LEARNING OBJECTIVES

- 1 - Describe the basic principles of electricity and electronics and their importance in the Industrial context;
- 2 - Describe the main basics electric and electronics operators, energy converters and their operation and applications;
- 3 – Understand and analyses the operation of electric circuits (DC and AC) applied to industry.

2. PROGRAMME

Chapter 1 - Electricity and Electrical Circuits

- History of electricity
- Mains electrical quantities
- DC and AC current
- Basic electrical elements and their effects
- Fundamentals analysis circuit laws
- Single phase and tri-phase AC systems
- Analysis of electrical circuits applied to industry.

Chapter 2 - Semiconductors and electronics circuits

- History of electronics
- Semiconductors
- Fundamental electronic elements and their effects
- Semiconductors, diodes and transistors
- Electronic energy converters
- Analysis of electronic circuits applied to industry.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

- Chapter 1 is consistent with the objective of describing and understanding electrical principles, applications and circuits operation in industrial applications;
- Chapter 2 is consistent with the objective of describing and understanding electronic principles and applications in energy conversion and in industrial applications.

4. MAIN BIBLIOGRAPHY

- Teacher's notes;
- Afonso Marques, (2011) Eletrónica XXI, Publindustria; ISBN: 9789728953881
- Manuel de Medeiros Silva, (2014) Introdução aos Circuitos Eléctricos e Electrónicos - 6ª ed GULBENKIAN; ISBN: 9789723106961

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Teaching methodologies:

- Lectures using presentations and Internet;
- Interactions with demonstrations and student work in laboratory;

Evaluation methodologies:

- Normal continuous evaluation is based on two items with different percentages: written test (60 %) and laboratory work (40%) with minimum grade of 9.5.
- Other evaluations:
Best grade between written test of exam evaluation alone and continuous evaluation.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

- Lectures are consistent with the objectives of providing the students with the fundamentals of electric and electronic technologies;
- Interaction with demonstrations and student work in laboratory are consistent with the objectives of identification and analysis of electric and electronic circuits in industrial applications.

7. ATTENDANCE

N.A.

8. CONTACTS AND OFFICE HOURS

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