POLI
ESCOLA SUPERIOR
TECNOLOGIA
GESTÃO
TÉCNICO
GUARDA

SUBJECT DESCRIPTION

MODELO

PED.013.03

Course	**Industrial Mechanics and Informatics**					
Subject	**Electrical and Electronic Circuits**					
Academic year	2023-2024	Curricular year	1st	Study period	2nd semester	
Type of subject	Compulsory	Student workload (H)	Total: 162	Contact: 60	ECTS	6
Professor(s)	João Lobão Andrade					

☒ Area/Group Coordinator ☐ Head of Department	(select)	Rui Pitarma Fereeira

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

1 - Describe the basic principles of electricity and electronics and their importance in industry;

2 - Describe the main electric and electronic components, energy converters and their operation and applications;

3 – Understand and analyze how electric and electronic circuits (DC and AC) are applied to industry

2. PROGRAMME

Chapter 1

- History of electricity

- Main electrical quantities/capacities

- DC and AC currents

- Basic electrical elements and their effects

- Fundamental laws for the analysis of electrical circuits

- Single phase and three-phase AC systems

- Analysis of electrical circuits applied to industry.

Chapter 2

- History of electronics

- Semiconductors

- Fundamental electronic elements and their effects

- Semiconductors, diodes and transistors

- Electronic circuits in energy conversion

- Analysis of electronic circuits applied to industry.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

- Chapter 1 is consistent with the objective of describing and understanding principles of electricity, its elements and analysis of its applications in industrial applications;

- Chapter 2 is consistent with the objective of describing and understanding principles of electronics, what it is composed of and applications in energy conversion in industrial applications.

- In chapters 1 and 2, circuits applied in industry are analyzed.

4. MAIN BIBLIOGRAPHY

- Teacher's notes;

- Afonso Marques; Eletrónica XXI, PUBLINDUSTRIA, 2011, ISBN: 9789728953881

- Manuel de Medeiros Silva; Introdução aos Circuitos Eléctricos e Electrónicos, 6ª ed GULBENKIAN, 2014, ISBN:9789723106961

- J. A. Brandão Faria; Análise de Circuitos, IST PRESS,2013, ISBN: 9789898481207

- Acácio Manuel Raposo Amaral; Análise de Circuitos e Dispositivos Eletrónicos - 2ª edição, PUBLINDUSTRIA, ISBN:9789897230868

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Teaching methodologies:

- Lectures using presentations and Internet;

- Interactions with demonstrations and student laboratory work;

Evaluation:

- Normal ongoing evaluation is based on two items with different percentages: written test (60%) and laboratory work (40%) with a minimum grade of 9.5/20.

- Other evaluations:

Best grade between written test of exam, with or without laboratory work.

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. CONTACTS AND OFFICE HOURS

Prof. Lobão Andrade ofifice 11/2ª 14.30-16.30.

DATE

19 de fevereiro de 2024

SIGNATURES

Area/Group Coordinator

(signature)

Professor

(signature)

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