POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	**SUBJECT DESCRIPTION**	**MODELO** PED.013.03

Course	**Design and Manufacturing**					
Subject	**Principles and Applications of Materials**					
Academic year	2023/2024	*Curricular year*	2nd	*Study period*	2nd semester	
Type of subject	Compulsory	*Student workload (H)*	Total: 140	Contact: 60	*ECTS*	5
Professor(s)	Paula Amaro Rodrigues José Reinas dos Santos André					
☒ *Area Coordinator* ☐ *Head of Department* *(select)*	José Reinas dos Santos André					

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

Know the most relevant properties for the selection of materials.

To transmit basic knowledge about the structure, properties of materials and their applications, in order to allow the selection of materials for a given application in terms of the required properties, the cost and the availability.

2. PROGRAMME

1. Mechanical behavior of materials;

2. Types of polymers and classification;

3. Thermoplastic;

4. Elastomers;

5. Thermosets;

6. Wood;

7. Ferrous leagues;

8. Aluminum and its alloys;

9. Shape memory alloys;

10. Copper and its alloys;

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

The syllabus topics were defined according the objectives to be achieved and the competences acquired by students.

The competences about the structure, properties of materials and their applications are acquired in all syllabus.

4. MAIN BIBLIOGRAPHY

- André, J. R. S., (2021), Materials, Guarda, Guarda Polytechnic Institute;

- Smith W. F., (1998), Fundamental of Science and Engineering of the Materials, Lisbon, 3ªed., McGraw-Hill;

- Carbas R.; Borges C., Silva L., Marques E., Introdução à Ciência e Engenharia dos Materiais (Teoria), Engebook, 2023;

- Charles, J.A., Crane, F.A.A.A., Furness, J.A.G., (2001), Selection and use of Engineering Materials, Oxford, Ed. Butterworth-Heinemann;

- Ashby, M.F., Johnson, K, (2013), Materials and Design, Oxford, Ed. Butterworth-Heinemann.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Carrying out two tests and a work, for continuous assessment; exam and resource exam with the whole matter.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

Lectures, moments involving exposure with audiovisual support, theoretical-practical classes with problem-solving and laboratory classes provide the students with the knowledge needed to achieve the proposed objectives.

7. ATTENDANCE

There are no minimum requirements, however attendance is strongly recommended

8. CONTACTS AND OFFICE HOURS

e-mail: paula.amaro@ipg.pt

office # 1

office hours: Thursday: *10:00 – 12:30*

16:00 – 17:30

DATE

15 de março de 2024

SIGNATURES

Professor

(signature)

Area Coordinator

(signature)

Assinatura na qualidade de (clicar)

(signature)

Assinatura na qualidade de (clicar)

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