

POLI ESCOLA SUPERIOR TECNOLOGIA GESTÃO TÉCNICO GUARDA	SUBJECT DESCRIPTION	MODELO PED.013.03
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Course	Mechanical and Industrial Informatics					
Subject	Materials Technology					
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)	José Reinas dos Santos André					
☒ Area Coordinator ☐ Head of Department	(select)	José Reinas dos Santos André				

PLANNED SUBJECT DESCRIPTION

1. LEARNING OBJECTIVES

- O1. Characterize materials based on their structure, properties and applications
- O2. Selecting materials for different applications
- O3. Analyze results of mechanical tests and characterize material properties
- O4. Identify and characterize types of intra/intermolecular binding
- O5. Classify solids and identify crystal structures
- O6. Analyze balance diagrams
- O7. Characterize heat treatments of Fe-C alloys.

2. PROGRAMME

- 1. Mechanical properties of materials and mechanical testing
- 2. Ferrous alloys
- 3. Aluminum and its alloys
- 4. Copper and its alloys
- 5. Heat treatments
- 6. Shape memory alloys (SMA).

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

- 1. Mechanical properties of materials and mechanical tests (O1, O2, O3)
- 2. Ferrous alloys (O2, O4, O5, O6)

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3. Aluminum and its alloys (O2, O4, O5, O6)

4. Copper and its alloys (O2, O4, O5, O6,)

5. Thermal treatments (O2, O7)

6. Shape memory alloys (SMA) (O2, O4, O5).

4. MAIN BIBLIOGRAPHY

I) *Textos de Apoio coligidos pelo Prof. Reinas André, Instituto Politécnico da Guarda, 2023.*

II) *Smith W. F., Princípios de Ciência e Engenharia de Materiais, 3ªed., McGraw-Hill International Editions, 1998, ISBN 9789728298685.*

III) *Chiaverini, V., Tecnologia Mecânica, Vol. I, 2ª ed., Pearson Universidades, 1995, ISBN 978-0074500897.*

IV) *Carlos Moura Branco, Mecânica dos Materiais, 5ª ed., Fundação Calouste Gulbenkian: Lisboa, 2011, 9789723111477.*

V) *Pinto Soares, Aços Características e Tratamentos, 6ª ed., Publindústria, 2010, ISBN 9789892017976.*

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Problem solving; debate; performing mechanical tests; laboratory classes.

Two tests performed; exam with the entire matter; appeal exam with the entire matter. Students who obtain a grade equal to or greater than 9.5 are approved in the course.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

The lectures and problem solving will provide the student with the necessary knowledge regarding the structure, properties and transformation of materials in general. Debate, observation of experiences and problem solving with tutorial guidelines will allow better consolidation of knowledge.

7. ATTENDANCE

jandre@ipg.pt; Gabinete 13; horário de atendimento: 3ª feira 14-16 + 5ª feira 14-15.

8. OTHERS

DELETE SECTION 9. IN COMPLETED SUBJECT DESCRIPTION

DATE

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23 de Fevereiro de 2024

SIGNATURES

Professor


(signature)

Area Coordinator


(signature)

Assinatura na qualidade de (clicar)


(signature)

Assinatura na qualidade de (clicar)


(signature)