

SUBJECT TEACHING GUIDE

G1449 - Mechanical Properties of Materials, Processing and Design

BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM

Academic year 2025-2026

1. IDENTIFYING DATA					
Degree	BILINGUAL UC-CU CIVIL ENGINEERING PROGRAM			Type and Year	Compulsory. Year 1
Faculty	School of civil Engineering				
Discipline	Obligatory Subjects				
Course unit title and code	G1449 - Mechanical Properties of Materials, Processing and Design				
Number of ECTS credits allocated	6	Term	Semester based (2)		
Web					
Language of instruction	English	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES				
Name of lecturer	CARLOS THOMAS GARCIA				
E-mail	carlos.thomas@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 0. DESPACHO (0005)				
Other lecturers	JOSE ANTONIO CASADO DEL PRADO ANA ISABEL CIMENTADA HERNANDEZ JOSE ADOLFO SAINZ-AJA GUERRA				

3.1 LEARNING OUTCOMES
- Knowledge of the experimental techniques that allow the determination of the properties of construction materials
- Acquire the basic knowledge related to the mechanical properties necessary to follow the subjects of successive courses
- Technical terminology associated with construction materials
- Know the types of structural steels and the existing strategies to modify their mechanical properties
- Know the different manufacturing and installation processes of construction materials and , in particular, the methods of design, production and placement of concrete

4. OBJECTIVES

Learn about the relationship between the structure and behavior of materials
Identify the main construction materials
Define and analyze the physical-mechanical properties of construction materials
Know and compare the properties of construction materials

6. SUBJECT PROGRAM

CONTENTS

1	Lesson 1. Introduction: general properties of materials.
2	Lesson 2. Physical properties of materials
3	Lesson 3. Mechanical properties of materials
4	Lesson 4. Metallic materials
5	Lesson 5. Binders, mortars and concretes
6	Lesson 6. Polymers, ceramics and composites
7	Lesson 7. Other construction materials
8	Lesson 8. Selection of materials

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
MIDTERM EXAM	Written exam	No	Yes	35,00
FINAL EXAM	Written exam	Yes	Yes	35,00
Continuous Evaluation	Others	No	No	20,00
Laboratory Test	Laboratory evaluation	No	No	10,00
TOTAL				100,00
Observations				
Observations for part-time students				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC
<p>Materials Science and Engineering: An Introduction, 6th Edition. William D. Callister. Publisher: John Wiley and Sons</p> <p>Materials Selection in Mechanical Design, 2nd Edition. Michael F. Ashby. Butterworth-Heineman</p> <p>Fracture Mechanics: Fundamentals and Applications; T.L. Anderson (2005)</p> <p>Spanish Structural Code</p> <p>Civil Engineering Materials 1st Edition - September 3, 2015, Peter Claisse, eBook ISBN: 9780128027516, Paperback ISBN: 9780081002759</p>