

## SUBJECT TEACHING GUIDE

### G1080 - Mechanics and Resistance of Materials

#### Degree in Marine Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Marine Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Maritime Engineering				
Discipline	Subject Area: Mechanics and Strength of Materials				
Course unit title and code	G1080 - Mechanics and Resistance of Materials				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ESTRUCTURAL Y MECANICA
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Other lecturers	

### 3.1 LEARNING OUTCOMES

- Capacity for organization and planning.
- Solving exercises.
- Autonomous learning.
- Ability to apply knowledge in practical situations.
- Capacity for analysis and synthesis.
- Ability to manage information.
- Oral and written communication in the language.
- Decision making.
- Ability to communicate with experts in other areas.
- Critical thinking.
- Working on an interdisciplinary team.
- Adapting to new situations.
- Creativity.
- Ability to work autonomously.

### 4. OBJECTIVES

Develop in students the ability to analyze any problem of mechanics and strength of materials simply and logically and the ability to apply in solving the basic principles of the behavior of materials for the design of structural elements

**6. SUBJECT PROGRAM**

**CONTENTS**

1	<ul style="list-style-type: none"> <li>Static point</li> <li>Equilibrium of rigid bodies</li> <li>inner strength</li> <li>Shear and bending functions</li> <li>Relations between charges</li> <li>Determination and stability of structure</li> <li>plane trusses</li> <li>3D Applications</li> <li>friction</li> <li>dynamic</li> <li>Field of velocities and accelerations</li> </ul>
2	<ul style="list-style-type: none"> <li>Stress</li> <li>balance</li> <li>Average normal stress</li> <li>Average shear</li>   <li>axial load</li> <li>Normal strain</li> <li>Hooke's Law</li> <li>elastic deformation</li> <li>Hyperstatic axial load</li> <li>thermal stress</li>   <li>torsion</li> <li>Deformation of a circular shaft</li> <li>Preliminary analysis of the efforts of a shaft</li> <li>Torsion formula</li> <li>Torsion angle</li> <li>flexion</li> <li>centroids</li> <li>Parallel axis theorem</li> <li>Deformation of straight members</li> <li>Flexure formula</li> <li>cutting</li> <li>Shear in straight members</li> <li>Formula shear</li> <li>Shear beams</li>   <li>combined loads</li> </ul>

### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Solving problems and theoretical questions	Written exam	Yes	Yes	25,00
Solving exercises	Work	Yes	Yes	15,00
Lab practices	Laboratory evaluation	Yes	Yes	10,00
Solving problems and theoretical questions	Written exam	Yes	Yes	25,00
Solving exercises	Work	Yes	Yes	15,00
Lab practices	Laboratory evaluation	Yes	Yes	10,00
TOTAL				100,00
Observations				
Overcoming these three blocks serve to pass the course. The final exam is the way to recovery.				
Observations for part-time students				
A personal study, from teacher demand, will have 30% of note, and final exam 70%.				

### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

#### BASIC

"Mecánica vectorial para ingenieros" Beer and Johnston.Ed. Mc Graw Hill. ISBN 0-07-079926-6  
 "Estática" Riley and Sturges.ISBN-84-291-4255-x  
 Apuntes de la asignatura