

SUBJECT TEACHING GUIDE

G706 - Elasticity and Resistance of Materials

Degree in Industrial Technologies Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Industrial Technologies Engineering			Type and Year	Compulsory. Year 3
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Elasticity and Strength of Materials Module in Common with the Industrial Branch				
Course unit title and code	G706 - Elasticity 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				
Name of lecturer	JOSE RAMON IBAÑEZ DEL RIO				
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Other lecturers	HAYDEE BLANCO WONG				

3.1 LEARNING OUTCOMES

- 1. Understanding of the fundamentals concepts of the Elasticity and strength of materials: stresses and forces, deformations and Strain, strain energy.
- 2. Being able to analyze structural elements under tension, compression, torsion and bending.
- 3. Being able to analyze basic statically indeterminate structures

4. OBJECTIVES

1. Introduction to linear elasticity and strength of materials. Deformable solids.
2. Explanation of the basic internal actions: Axial Force, Shear Force, Bending Moment and torque. Analysis of the stresses in cross sections.
3. Deformations of basic structures under different actions . Introduction to the solution of statically indeterminate structures. Introduction to the energy methods.
4. Study of the stresses caused by the combination of actions. Introduction to the behavior of advanced structures: composite sections, arches, frames.

6. COURSE ORGANIZATION

CONTENTS	
1	1. Introduction to linear elasticity and strength of materials. Deformable solids.
2	2. Axial forces
3	3. Torque moments
4	4. Bending moments
5	5. Shear forces
6	6. Beam deformation
7	7. Hyperstatic beams
8	8. Energy methods

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Moodle evaluations - Computer assignment 10%	Activity evaluation with Virtual Media	No	Yes	10,00
First partial exam (15%) Second partial exam (15%)	Written exam	No	Yes	30,00
Final exam (60%)	Written exam	Yes	Yes	60,00
TOTAL				100,00
Observations				
<p>Those students who have not been able to do partial exams or tests for justified reasons, will be given extra exercises in the extraordinary exam for compensation.</p> <p>It is required to do the laboratory and computer practices and submit the required reports to consider the classroom evaluations (Moodle tests and partial exams).</p>				
Observations for part-time students				
<p>Part time students will not do Moodle tests and the partial exams will count 40% (20% each), they must do the laboratory and computer practices and submit the required reports.</p>				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Resistencia de Materiales. Luis Ortiz Berrocal. Editorial McGraw Hill. ISBN: 978-84-481-5633-6

Resistencia de Materiales. Manuel Vazquez. Editorial Noela. SBN 978-84-88012-05-0

Elasticidad. Luis Ortiz Berrocal. Editorial McGraw Hill. ISBN 978-84-481-8229-8

Desarrollos teóricos y prácticos del Aula Virtual de la asignatura