

## SUBJECT TEACHING GUIDE

M1213 - Industrial Structures and Buildings

Master's Degree in Industrial Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Master's Degree in Industrial Engineering			Type and Year	Compulsory. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Installations Installations, Plants and Complementary Buildings				
Course unit title and code	M1213 - Industrial Structures and Buildings				
Number of ECTS credits allocated	5	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS
Name of lecturer	PABLO PASCUAL MUÑOZ
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Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 1. DESPACHO PABLO PASCUAL MUÑOZ (1012)
Other lecturers	JAVIER TORRES RUIZ OSCAR RAMON RAMOS GUTIERREZ PEDRO LASTRA GONZALEZ ALVARO GAUTE ALONSO

### 3.1 LEARNING OUTCOMES

- To realize the structural behaviour by analyzing the form and structural materials
- To be able to analyze and calculate the construction issues of an industrial plant
- To select the construction machinery and auxiliary equipments, and to realize the construction methods and procedures

#### 4. OBJECTIVES

- The students will realize the mechanical basic concepts to design and calculate any structure and they will also use a commercial software to calculate structural behaviour
- To facilitate the application of the learning related to construction engineering to develop design project of industrial plants
- To introduce the students in the several construction technologies for singular industrial buildings
- To know the construction machinery and auxiliary equipment for construction engineering and construction methods and procedures to select the adequate resources for each construction task

#### 6. COURSE ORGANIZATION

CONTENTS	
1	Introduction
2	Resistance. Materials. Stresses
3	Types of structures
4	The Arc
5	The beam
6	Computational Lab: MIDAS
7	Supports
8	Beam and portico
9	Walls
10	Cables
11	Membranes
12	Plates
13	Sheets
14	Floors
15	Vibrations
16	Introduction to industrial construction and planning.
17	Location and Layout
18	Structural systems
19	HVAC, lighting, noise and fire safety.
20	Foundations
21	Earth movements
22	Concrete
23	Precasting construction
24	Construction management

### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Exam	Written exam	No	Yes	50,00
Exam	Written exam	Yes	Yes	40,00
Submission of exercises and/or practical assignments.	Work	Yes	No	10,00
<b>TOTAL</b>				<b>100,00</b>
Observations				
NOTE: DUE TO THE CURRENT UNCERTAIN HEALTH SITUATION, A DISTANCE EVALUATION MODALITY WILL BE ADOPTED USING TELEMATIC MEANS IN CASE THIS IS INDICATED BY THE COMPETENT HEALTH AND EDUCATIONAL AUTHORITIES. THIS WOULD NOT ALLOW THE DEVELOPMENT OF ANY EVALUATION ACTIVITY IN THE CLASSROOM.				
Observations for part-time students				
Given the current assessment methods, no adaptation is required for part-time students.				

### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

#### BASIC

Structures. Daniel L. Shodek. Prentice Hall. 1980.

Structure in Architecture. The Building of Buildings. M. Salvadori and R. Heller. Prentice Hall Inc. 1986.

Structural Design in Architecture. M. Salvadori and M. Levy. Prentice Hall 1981. Cuya versión castellana es: Diseño Estructural en Arquitectura. Compañía Editorial Continental. México.

Razón y Ser de los Tipos Estructurales. E. Torroja. Instituto Eduardo Torroja de la Construcción y del Cemento.

Construcción y Edificación Industrial. Jorge A. Capote Abreu (Publicaciones de la E.T.S.I.C.C. y P.; Universidad de Cantabria).

Construction Methods and Management. S.W. Nunnally (Editorial Pearson).

Máquinas de Movimiento de Tierras: Criterios de selección. F. Ballester, J. Capote (Editorial PEDECA; Madrid).

Construcciones para la Industria. Oswald W. Grube (Editorial Gustavo Gilí, S. A.).

Heavy Construction: Planing, Equipment and Methods. SaegmanSingls (A. A. Balkama; Rotterdam).

Arquitectura y Urbanismo Industrial. R. de Heredia (Publicaciones de la E.T.S.I.I.; UPM).

Dirección Integrada de Proyecto. R. de Heredia (Publicaciones de la E.T.S.I.I.; UPM).

Distribución en planta. R. Muther (Ediciones Hispano Europea S.A.).

Diseño de Instalaciones Industriales. S. Konz (Editorial Limusa).

APUNTES DE LA ASIGNATURA.