

## SUBJECT TEACHING GUIDE

### G796 - Waste Management

### Degree in Chemical Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Chemical Engineering			Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Option B: Industrial Environmental Management Optional Module				
Course unit title and code	G796 - Waste Management				
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. DE QUIMICA E INGENIERIA DE PROCESOS Y RECURSOS.				
Name of lecturer	ANA MARIA ANDRES PAYAN				
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Other lecturers	EVA CIFRIAN BEMPOSTA				

### 3.1 LEARNING OUTCOMES

- Being able to analyze the basic aspects of waste characterization; of different treatment for removing the pollution load of industrial waste; and clean technologies in the framework of industrial sector.
- Solve problems related to characterization, treatment and waste management in the industrial sector.

#### 4. OBJECTIVES

- Characterization and classification of waste.
- Introduce the concept of Circular Economy
- Analysis of the processes of industrial waste treatment.
- Analyze the decision making on the management of industrial waste
- Perform synthesis, analysis and evaluation of alternative waste minimization and valorisation.
- Application of Circulation Strategies to reduce the generation of waste.

#### 6. COURSE ORGANIZATION

CONTENTS	
1	<p>SECTION 1. CHARACTERIZATION AND CLASSIFICATION OF WASTE</p> <p>Item 1. CONCEPT OF CIRCULAR ECONOMY.            Item 2. ACTIVITIES GENERATING SOLID WASTE.            Item 3. CHARACTERIZATION OF SOLID WASTE POLLUTION.            Item 4. LEGISLATION ON SOLID WASTE.</p>
2	<p>SECTION 2. WASTE TREATMENT PROCESS</p> <p>Item 5. PROCESS OF PRE-WASTE TREATMENT            Item 6. PHYSICAL TREATMENT PROCESSES.            Item 7. CHEMICAL TREATMENT PROCESSES            Item 8. BIOLOGICAL TREATMENT PROCESSES            Item 9. WASTE INCINERATION            Item 10. SOLIDIFICATION/STABILIZATION TECHNOLOGIES            Item 11. WASTE DISPOSAL</p>
3	<p>SECTION 3. ALTERNATIVE TECHNOLOGIES OF WASTE MANAGEMENT TO PROMOTE THE CIRCULAR ECONOMY</p> <p>Item 12. TECHNOLOGICAL ALTERNATIVES: CLEAN PRODUCTION            Item 13. TECHNOLOGICAL ALTERNATIVES: MINIMISATION</p>
4	<p>SECTION 4. APPLICATION OF CIRCULAR ECONOMY STRATEGIES for REDUCING WASTE GENERATION</p> <p>Item 14: CIRCULATION STRATEGIES            Item 15. PRACTICAL CASES OF CIRCULAR ECONOMY IN THE INDUSTRIAL SECTOR</p>

### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Group Work Date of completion: Throughout the course. Recovery conditions: In ordinary/extraordinary call	Work	No	Yes	40,00
Written exam Date of completion: At the end of the teaching of Block II Recovery conditions: In ordinary/extraordinary call	Written exam	No	Yes	60,00
TOTAL				100,00
Observations				
Continuous assessment involves the obligation of the student attendance at classes.				
Observations for part-time students				
The final assessment for part-time students will be a percentage weight of 60% in the final assessment of the subject. And the evaluation of four individual work associated with each of the blocks allocated along the course, it will mean the remaining 40% of the final assessment.				

### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

#### BASIC

- Elias, X. Ed., Reciclaje de Residuos Industriales, Díaz de Santos, Barcelona, 2009.
- Rodriguez, J.J., Irabien, A. (Eds.), Los Residuos Peligrosos: Caracterización, tratamiento y gestión, Síntesis, Madrid, 2013.
- Guyer, H.H., Industrial Processes and Waste Stream Management, John Wiley & Sons, Inc., New York, 1998.
- Freeman, H.M., Harris, E.F. (Eds.), Hazardous Waste Remediation. Innovative Treatment Technologies, Technomic, Lancaster, 1995.
- Wang, L.K., Hung Y, Lo, H.H., Yapijakis, C. (Eds.), Handbook of Industrial and Hazardous Wastes Treatment, Marcel Dekker, Inc, New York, 2004.
- Serrano, F., Bruzzi, L. (Eds.), Gestión Sostenible del Ambiente: Principios, contexto y métodos, Universidad de Granada, 2012.