

## SUBJECT TEACHING GUIDE

### 593 - Design of Environmental Installations

#### Master's Degree in civil Engineering, Canal and Port Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in civil Engineering, Canal and Port Engineering			Type and Year	Optional. Year 2
Faculty	School of civil Engineering				
Discipline	SPECIALITY IN WATER, ENERGY AND THE ENVIRONMENT				
Course unit title and code	593 - Design of Environmental Installations				
Number of ECTS credits allocated	3	Term	Semester based (2)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE				
Name of lecturer	RUBEN DIEZ MONTERO				
E-mail	ruben.diezmontero@unican.es				
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. CIRCULACION 2029 (2029)				
Other lecturers	AMAYA LOBO GARCIA DE CORTAZAR				

### 3.1 LEARNING OUTCOMES

- - Identify the applicable regulation and the input required data to be used in the design of environmental facilities.
- - Select the most suitable flow line and processes for a given environmental facility.
- - Dimensioning of the elements and definition and specification of the necessary equipment, using design models.
- - Writing and presentation of projects of environmental facilities.

### 4. OBJECTIVES

To be able to develop a detailed project of an environmental facility, given the specifications of a real tender for a water treatment facility or a solid waste facility.

## 6. COURSE ORGANIZATION

CONTENTS	
1	1.- Introduction to Environmental Facilities (Water Treatment Plants, Wastewater Treatment Plants, Solid Waste Treatment Facilities). Regulation and requirements. Bidding process and documents for projects and services. Input data and objectives to be achieved.
2	2.- Alternative options. Technical, environmental and economic criteria to be considered. Multicriteria analysis and selection of alternatives.
3	3.- Design process and steps. Block flow diagram and process flow diagram.
4	4.- Sizing of processes. Equipment, technical specifications.
5	6.- Plant layout. Hydraulic study, piezometric line.
6	7.- Operation and Maintenance of environmental facilities. Power consumption indicators.
7	8.- Case Studies.
8	9.- Presentation of projects.

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
The project carried out during the course must be presented in an oral session, according to the guidelines indicated in the subject.	Work	Yes	Yes	100,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
The project carried out during the course must be presented in an oral session, according to the guidelines indicated in the subject.				
<b>Observations for part-time students</b>				
Part-time students will be evaluated with the same evaluation system				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC
Pliegos reales de concursos de Instalaciones Ambientales (estaciones de tratamiento de aguas potables, de aguas residuales, o Instalaciones de tratamiento de residuos).
Normas correspondientes a proyectos de las correspondientes instalaciones ambientales.