

## SUBJECT TEACHING GUIDE

### G629 - Environmental Technology in Mining

#### Degree in Mining Resources Engineering

Academic year 2023-2024

1. IDENTIFYING DATA			
Degree	Degree in Mining Resources Engineering	Type and Year	Compulsory. Year 4
Faculty	School of Mines and Energy Engineering		
Discipline	Subject Area: Mining Pre-Technology Module: Training in Common with the Mining Branch		
Course unit title and code	G629 - Environmental Technology in Mining		
Number of ECTS credits allocated	6	Term	Semester based (1)
Web			
Language of instruction	English	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS Y TECNICAS DEL AGUA Y DEL MEDIO AMBIENTE		
Name of lecturer	CARLOS RICO DE LA HERA		
E-mail	carlos.rico@unican.es		
Office	E.T.S. de Ingenieros de Caminos, Canales y Puertos. Planta: + 2. DESPACHO (2032)		
Other lecturers	ANA LORENA ESTEBAN GARCIA RUBEN DIEZ MONTERO		

3.1 LEARNING OUTCOMES
- Ability to interpret a basic analysis of water .
- Capacity to design simple water treatment processes
- Ability to identify or characterize a waste or a contaminated soil
- Simple design capacity of simple waste treatment systems or recovery of contaminated soils
- Ability to identify environmental management tools and to interpret environmental indicators.
- Ability to identify the need to perform an Environmental Impact Assessment and to apply simple methods to study the Environmental Impact
- Capacity to control the atmosphere of the mine

4. OBJECTIVES
Knowing the basics of Environmental Engineering
Interpret basic water quality analysis
Basic design of water treatment processes by origin and specific objectives
Classify wastes according to its properties and characteristics
Categorize soils according to its pollution content
Design basic treatment systems for wastes and polluted soils
Knowing the environmental management tools and their applicability.
Knowing the applicability of the Environmental Impact Assessment and methods to study the Environmental Impact in the mining framework.

6. COURSE ORGANIZATION	
CONTENTS	
1	Introduction to environmental technology. Environmental management. Public health. Environmental toxicology. Environmental engineering. Air pollution. Water quality. Impurities and water contaminants. Characterization of the water
2	Mine atmosphere. The air in the mine. Firedamp. Firedamp explosions. Dust at mine sites.
3	Ventilation Theory. Data collection, circuits and basic formulas. Mechanical ventilation equipment. Ventilation facilities. Secondary ventilation.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Description Reports of field visits	Work	No	No	10,00
Description Coursework	Work	No	Yes	15,00
Description Lab practices	Laboratory evaluation	No	No	15,00
Description Exam	Written exam	Yes	Yes	60,00
<b>TOTAL</b>				<b>100,00</b>
Observations				
The exam will have theoretical and problem parts.				
Observations for part-time students				
According to regulations of the University				

**8. BIBLIOGRAPHY AND TEACHING MATERIALS**

## BASIC

Introduction to Environmental Engineering (Fifth Edition). Mackenzie L. Davis, David A. Cornwell. McGraw-Hill, 2013.

Wastewater Engineering: Treatment and Reuse (Fourth Edition). George Tchobanoglous, Franklin L. Burton, H. David Stensel. McGraw-Hill, 2003.

Industrial Water Pollution Control (Second Edition). W. Wesley Eckenfelder. McGraw-Hill, 1989.

Integrated Solid Waste Management: Engineering Principles and Management Issues. George Tchobanoglous, Hilary Theisen, Samuel Vigil. McGraw-Hill, 1993.