

## SUBJECT TEACHING GUIDE

1138 - Maintenance techniques in mining installations

Master's Degree in mining engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in mining engineering			Type and Year	Optional. Year 2
Faculty	School of Mines and Energy Engineering				
Discipline	BLOCK I, SPECIALTY EXPLOITATION OF MINES Optional Module				
Course unit title and code	1138 - Maintenance techniques in mining installations				
Number of ECTS credits allocated	3	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. TRANSPORTES Y TECNOLOGIA DE PROYECTOS Y PROCESOS				
Name of lecturer	RUBEN PEREZ ALVAREZ				
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Office	E.P. de Ingeniería de Minas y Energía. Planta: + 2. DESPACHO (228)				
Other lecturers					

### 3.1 LEARNING OUTCOMES

- After passing the course, students will master the maintenance techniques of mining installations.

### 4. OBJECTIVES

To master the maintenance techniques of mining installations.

## 6. COURSE ORGANIZATION

CONTENTS	
1	General concepts and types of maintenance
2	Predictive Maintenance Technologies
3	Methods and techniques for continuous improvement of maintenance
4	RCM Method
5	Reliability and maintainability
6	Maintenance and quality
7	TPM
8	Maintenance management
9	Standardization of maintenance
10	Maintenance contracts.
11	Spare parts management
12	Human resources management and maintenance
13	Maintenance and safety
14	The costs of maintenance and its optimization
15	Mechanical and electrical maintenance of mining operations

## 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Group work	Work	No	Yes	10,00
Individual work	Work	No	Yes	20,00
Final exam	Written exam	Yes	Yes	60,00
Individual resolution of exercises	Others	No	Yes	10,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>The student will be required to obtain minimum scores of 4,5 in the final exam, and 5,0 in the subject as a whole (taking into account the continuous evaluation). If these requirements are not satisfied, the final score will be obtained as the weighted average of the different items of evaluation, until a maximum of 4.9. Any passed item would be kept for the extraordinary evaluation.</p> <p>The final exam will be held on-site. However, if Health and Educational Authorities suspended in-class activities, it would be developed by means of Moodle, and monitored with Teams.</p>				
<b>Observations for part-time students</b>				
<p>Part-time students will be evaluated according to the Regulations of the University of Cantabria. Given the nature of the continuous assessment items, in addition to having to pass the final exam, they will be subject to them in the same way as regular students.</p>				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Asociación Española de Normalización y Certificación. Gestión del mantenimiento. Madrid: Aenor Ediciones, 2011.

Roldán Vilorio, J. Mantenimiento de Instalaciones eléctricas. Madrid: Creaciones Copyright. 2011.

González Fernández, F.J. Gestión económica del mantenimiento. Cuadernos AEM de mantenimiento.

Fernández González, F.J. Contratación avanzada del mantenimiento. Madrid: Díaz de Santos. 2008

Crespo Márquez, A. Ingeniería de mantenimiento: técnicas y métodos de aplicación a la fase operativa de los equipos. Madrid: AENOR. 2004

Macián Martínez, V. et al. Mantenimiento de motores diesel. Valencia: Editorial de la UPV. 2002.

Kelly, A. Gestión del mantenimiento industrial. Madrid: Fundación Repsol. 1998.

Botín González, J.A. Gestión del Mantenimiento: [Apuntes de la Asignatura] . Madrid: Fundación Gómez Pardo. 2005.

Boucly, F. Gestión del Mantenimiento. Madrid: AENOR. 1999.

Ortea Valera, E. Montaje y mantenimiento mecánico. Oviedo: Gráficas Naranjo. 2008.