

## SUBJECT TEACHING GUIDE

M1637 - Project and execution of facilities for fuels

Master's Degree in mining engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Master's Degree in mining engineering			Type and Year	Compulsory. Year 1
Faculty	School of Mines and Energy Engineering				
Discipline	MINING				
Course unit title and code	M1637 - Project and execution of facilities for fuels				
Number of ECTS credits allocated	4,5	Term	Semester based (2)		
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	HERNAN FRANCISCO ANTICOI SUDZUKI				
E-mail	hernan.anticoi@unican.es				
Office	E.P. de Ingeniería de Minas y Energía. Planta: + 2. DESPACHO (232)				
Other lecturers					

### 3.1 LEARNING OUTCOMES

- Acquire a set of basic knowledge to Project and design a fuel facility

### 4. OBJECTIVES

Acquire a set of basic knowledge to Project and design a fuel facility

## 6. COURSE ORGANIZATION

### CONTENTS

1	<p>CHAPTER I: BASIC ENGINEERING</p> <p>Y.1. Definition of the design basis.</p> <p>I.2. Study and selection of the diagram (PFD's).</p> <p>I.3. Material balances.</p> <p>I.4. Diagram design conditions.</p> <p>I.5. Predimensioning equipment.</p> <p>I.6. Diagrams for selection of materials.</p> <p>I.7. Definition of control loops.</p> <p>I.8. Lines and Instruments diagram (P &amp; ID).</p> <p>I.9. Security and Control Valves.</p> <p>I.10. Materials Selection.</p> <p>I.11. Implementation plan (plot-plan).</p> <p>I.12. Hazard and Operability Analysis (HAZOP).</p> <p>I.13. Calculation of Assistive needs.</p> <p>I.14. Investment estimate.</p>
2	<p>CHAPTER II: DETAILED ENGINEERING</p> <p>II.1. Definitive Plan.</p> <p>II.2. Philosophy and Foundations of Security Classification Hazardous Area , ATEX.</p> <p>II.3. Piping Specifications.</p> <p>II.4. Isometric.</p> <p>II.5. Review the diagrams of lines and Instruments (P &amp; ID).</p> <p>II.6. Electrical Line Diagram.</p> <p>II.7. Selecting dynamic team.</p> <p>II.8. Programming</p> <p>CHAPTER III: CONSTRUCTION</p> <p>III.1. Planning.</p> <p>III.2. Organization.</p>
3	<p>THEMATIC BLOCK III: CONSTRUCTION</p> <p>III.1. Planning.</p> <p>III.2. Organisation.</p>
4	<p>CHAPTER IV: COMMISSIONER AND COMMISSIONING</p> <p>IV.1. Leakage test, sealing and drying.</p> <p>IV.2. Preparation and inerting circuit.</p> <p>IV.3. Checking the security systems.</p> <p>IV.4. Fluid loading procedures.</p> <p>IV.5. Commissioning of auxiliary systems.</p> <p>CHAPTER V: Transport and storage of solid, liquids and gases</p> <p>V.1. Legislation.</p> <p>V.2. Methods of transportation of solid fuels.</p> <p>V.3. Methods liquid transportation fuels.</p> <p>V.4. Methods of transport of gaseous fuels.</p> <p>V.5. Methods of storage of solid fuels.</p> <p>V.6. Methods of storage of liquid fuels.</p> <p>V.7. Methods of storage of gaseous fuels.</p> <p>V.8. Calculation process tanks and storage tanks.</p>

5	<p>THEMATIC BLOCK V: TRANSPORT AND STORAGE OF SOLIDS, LIQUIDS AND GASES</p> <p>V.1. Legislation.</p> <p>V.2. Methods of transport of solid fuels.</p> <p>V.3. Methods of transporting liquid fuels.</p> <p>V.4. Methods of transporting gaseous fuels</p> <p>V.5. Methods of storage of solid fuels</p> <p>V.6. Storage methods for liquid fuels</p> <p>V.7. Storage methods for gaseous fuels</p> <p>V.8. processes for calculation of storage tanks and reservoirs</p>
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### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Final exam	Written exam	Yes	Yes	60,00
Individual work	Work	No	Yes	20,00
Group work	Work	No	Yes	10,00
Resolution of practical activities	Others	No	Yes	10,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>The minimum scores required to pass the subject is 4.5 for the final exam, and 5 for the subject as a whole (taking into account the continuous evaluation). The maximum final numerical grade in the case of not passing the final exam would be 4.9.</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 software.</p>				
<b>Observations for part-time students</b>				
<p>Part-time students will be evaluated according to the Regulations of the University of Cantabria. In addition to passing the final exam, they will be offered the possibility to hand the two essays and the practical activities individually, on a date to be agreed with them.</p>				

### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

#### BASIC

- El gas natural. Del yacimiento al consumidor. Eloy Álvarez Pérez y Jacobo Balbán Peláez
- El Gas natural. Andrés Pulgar Díaz y María del Rosario Olay Lorenzo
- Apuntes de la Asignatura. Facilitados por el profesor.