SUBJECT TEACHING GUIDE

M1632 - Carbon chemistry and petrochemistry

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	SCIENTIFIC EXPANSION				
Course unit title and code	M1632 - Carbon chemistry and petrochemistry				
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. INGENIERIAS QUIMICA Y BIOMOLECULAR
Name of lecturer	RUBEN ALDACO GARCIA
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Other lecturers	MARIA MARGALLO BLANCO

3.1 LEARNING OUTCOMES

- The student is expected to complete the concepts acquired in the Degree and complement them with new knowledge. Specifically, the student is expected to reach: 1.- Master the terminology of the field of industry and chemical technology. 2.- Knowing the techniques for measuring the properties of fuels. 3.- Knowing coal and its properties as a chemical-industrial raw material.

4. OBJECTIVES

Carbochemical engineering: industrial uses of coal as raw material for the production of liquid fuels and other chemicals; processes of pirolisis, liquefaction and gasification; environmental considerations (CO2 footprint).
Petrochemical engineering: definition of petrochemicals (feedstocks, intermediates and finished products) and conversion processes for selected petrochemicals.

6. COURSE ORGANIZATION

CONTENTS	
1	Part 1. Carbochemical engineering 1.1. Industrial uses of coal for the production of liquid fuels 1.2 Conversion processes: pirolysis, liquefaction, gasification 1.3. Envionmental considerations: CO2 footprint
2	Part 2. Petrochemical engineering 2.1. Definition of petrochemicals: feedstocks, intermediates, and finished products 2.2. Naphtha craking 2.3. Conversion processes of selected petrochemicals 2.4. Simulation of case studies
3	Part 3. Other environmental considerations 3.1. Carbon footprint

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Written exam of the subject (Parts 1, 2 and 3) Mínimum mark: 5,00 (0-10) Date: in dates fixed by the School for the ordinary and extraordinary calls. Contribution to overall grading mark: 60 %.	Written exam	Yes	Yes	60,00
Written reports of individual and group activities Mínimum mark: 5,00 (0-10) Date: two weeks after each acitivty is proposed and worked Contribution of the overall grading mark: 30 %	Work	No	Yes	30,00
Written reports of the practice activities Mínimum mark: 0,00 (0-10) Date: a week after each activity is completed Contribution of the overall grading mark: 10 %	Work	No	Yes	10,00
TOTAL				100,00

Observations

The recovery will take place in the special period dedicated to the effect (extraordinary evaluation call) and in the same form of the tests of the ordinary evaluation. Those students who have not passed the parts of computer practices and work, will be able to return the corrected reports before the dates of the evaluation test schedule established by the school.

Observations for part-time students

The evaluation of the subject can be adapted to the partial time students upon request.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Chaudhuri, U.R., Fundamentals of petroleum and petrochemical engineering, Taylor and Francis Group, 2011.
- Dubois, R.A., Gavioli, N. Producción de Olefinas : etileno, propileno, butileno y superiores, Nueva Librería, 2013.
- Gary, J.H., Handwerk, G.E., Petroleum refining, technology and economics, Marcel Dekker, 4 ed., 2001.
- Jayarama, R., Clean Coal Technologies, CRC Press, 2014.
- Speight, J.G., The chemistry and technology of coal, CRC Press, 3ed, 2013.
- Speight, J.G., The chemistry and technology of petroleum, CRC Press, 4 ed., 2007.
- Vian, A., Introducción a la química industrial, Reverté, 2ed, 1999.