SUBJECT TEACHING GUIDE

M1649 - Electrometallurgy and recycling of materials

Master's Degree in mining engineering

Academic year 2018-2019

1. IDENTIFYING DATA					
Degree	Master's Degree in mining engineering			Type and Year	Optional. Year 2
Faculty					
Discipline	BLOCK I, SPECIALTY EXPLOITATION OF MINES Optional Module				
Course unit title and code	M1649 - Electrometallurgy and recycling of materials				
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. CIENCIA E INGENIERIA DEL TERRENO Y DE LOS MATERIALES
Name of lecturer	CARLOS THOMAS GARCIA
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Other lecturers	ANA ISABEL CIMENTADA HERNANDEZ SORAYA DIEGO CAVIA

3.1 LEARNING OUTCOMES

- - Ability to understand and apply the basic concepts of recycling.
- Ability to understand and apply Electrometallurgy concepts, its electrochemical formulations and metal electrowinning.
- Ability to understand and apply the recycling processes, both metallic and non-metallic materials.

4. OBJECTIVES

The main objective is to introduce and motivate the student in the basic concepts of recycling, Electrometallurgy and the processes of recovery and reuse of both metallic and non-metallic materials.

6. COURSE ORGANIZATION

	CONTENTS
1	BLOCK I: Basic concepts of recycling of materials ITEM 1. Recovery and recycling ITEM 2. Life cycle SUBJECT 3. Value chain and recycling process ITEM 4. Main sectors of recycling
2	BLOCK II: Electrometallurgy UNIT 5. Introduction to the electrometallurgical process UNIT 6. Electrochemical formulations ITEM 7. Electro-winning on metals
3	BLOCK III: Material recycling processes ITEM 8. Recycling of metallic materials ITEM 9. Recycling of non-metallic materials UNIT 10. Special cases

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Reports of visits to companies	Others	No	No	10,00
Individual work and exposition of it	Work	No	No	30,00
Final exam	Written exam	Yes	Yes	60,00
TOTAL				100,00

Observations

Observations for part-time students

The evaluation of part-time students will be based on what is established for this purpose in the Evaluation Regulations of the University of Cantabria. In any case, the unique circumstances of each student who is in this situation will be assessed individually and the right of these students to overcome the subject in an evaluation process will be guaranteed.

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Metalurgia general. Tomos I y II; F. R. Morral, E. Jimeno, P. Molera; Editoral Reverté S.A.; 1985.
Metalurgia no ferrosa; Z. S. Jordens, A. Torres; Editorias Limusa; 1984.
Fundamentos de metalurgia extractiva; T. Rosenaqvist; Editorial Limusa; 1987.
Metalurgia extractiva. Tomo I. Fundamentos; A. Ballester et al.; Editorial Síntesis; 2000.
Metalurgia extractiva. Tomo II. Procesos de obtención; J. Sancho et al.; Editorial Síntesis; 2000.
Reciclado y tratamiento de residuos. Mª del Pilar Cabildo Miranda ... [et al.]. Madrid: Universidad Nacional de Educación a Distancia, 2008.