

SUBJECT TEACHING GUIDE

371 - Characterisation of New Materials

Master's Degree in New Materials

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Master's Degree in New Materials			Type and Year	Compulsory. Year 1
Faculty	Faculty of Sciences				
Discipline	Module of Compulsory Subjects				
Course unit title and code	371 - Characterisation of New Materials				
Number of ECTS credits allocated	5	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. CIENCIAS DE LA TIERRA Y FISICA DE LA MATERIA CONDENSADA				
Name of lecturer	JESUS MARIA RODRIGUEZ FERNANDEZ				
E-mail	jesus.rodriguez@unican.es				
Office	Facultad de Ciencias. Planta: + 2. DESPACHO PROFESORES (2017)				
Other lecturers	ISIDRO ALFONSO CARRASCAL VAQUERO VIRGINIA MARTINEZ MARTINEZ GARIKOITZ BEOBIDE PACHECO BEGOÑA BAZAN BLAU				

3.1 LEARNING OUTCOMES

- To be able to select the most appropriate techniques to achieve the characterization of each type of required material .
- To be able to interpret the results of the most common characterization techniques .

4. OBJECTIVES

- To know the characterization methods of modern materials .
- To get a theoretical background of the fundamentals of the different techniques .
- To be able to interpret the results obtained with the different techniques .

6. SUBJECT PROGRAM	
CONTENTS	
1	Structural Techniques: Crystallography and X-ray diffraction, microscopies (electronics, optics), spectroscopy (NMR, FTIR, EPR, Mössbauer, Positron)
2	Analytical Techniques: EDX elemental analysis, chromatography, mass.
3	Specific characterization techniques: Thermal characterization, mechanical, electrical, magnetic....

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Written exam 60%	Written exam	No	Yes	60,00
Written work 40%	Work	No	No	40,00
TOTAL				100,00
Observations				
Students who fail the continuous evaluation will have a final exam				
Observations for part-time students				
Part-time students may substitute a part, never more than 50%, of the continuous assessment for a written work.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
"PHYSICAL METHODS FOR MATERIALS CHARACTERISATION" P. E. J. FLEWITT, R. K. WILD, INSTITUTE OF PHYSICS, LONDON (2003)
"FUNDAMENTALS OF POWDER DIFFRACTION AND STRUCTURAL CHARACTERIZATION" VITALIJ K. PECHARSKY, PETER Y. ZAVALIJ , SPRINGER (2005)
"MICROSTRUCTURAL CHARACTERIZATION OF MATERIALS" DAVID D. BRANDON, WAYNE D. KAPLAN, JOHN WILEY & SONS (2008)
"PRINCIPLES AND TECHNIQUES OF SCANNING ELECTRON MICROSCOPY" M. A. HAYAT, VAN NOSTRAND REINHOLD CO (1974)
"THE PRINCIPLES AND PRACTICE OF ELECTRON MICROSCOPY" IAN M. WATT, CAMBRIDGE UNIVERSITY PRESS (1997)
"ATOMIC AND NUCLEAR ANALYTICAL METHODS: XRF, MOSSBAUER, XPS, NAA ...", H R VERMA - SPRINGER (2007)