

## SUBJECT TEACHING GUIDE

### M871 - Sustainable Use of Energy

#### Master's Degree in Industrial Engineering Research

Academic year 2020-2021

1. IDENTIFYING DATA					
Degree	Master's Degree in Industrial Engineering Research			Type and Year	Optional. Year 1
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Research in Electrical and Energy Technology Module - Sustainable Design in Industrial Systems Electroenergetic Module Electromechanic / Mechatronics Module				
Course unit title and code	M871 - Sustainable Use of Energy				
Number of ECTS credits allocated	5	Term	Semester based (2)		
Web	<a href="https://aulavirtual.unican.es">https://aulavirtual.unican.es</a>				
Language of instruction	Spanish	English Friendly	Yes	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ELECTRICA Y ENERGETICA				
Name of lecturer	MARIO MAÑANA CANTELI				
E-mail	mario.manana@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2055)				
Other lecturers	RAMON IGNACIO DIEGO GARCIA PABLO BERNARDO CASTRO ALONSO				

### 3.1 LEARNING OUTCOMES

- This subject has both a theoretical and practical approach to the electrical and thermal technologies. It is expected that students will gain knowledge of the principles and methodologies related with the generation of energy using renewable energies. In addition, students will learn how to use the energy in a more efficient way.

- It is expected that the students will be actively involved in the subject using IT tools.

#### 4. OBJECTIVES

The main aim of this subject is the analysis of the technologies related with a sustainable development. The content includes the analysis of the different sources of energy and the procedures for increasing the efficiency in their final use .

#### 6. COURSE ORGANIZATION

##### CONTENTS

1	Energy markets and sustainable development. (Mario Mañana)
2	Distributed generation and energy efficiency. (Mario Mañana)
3	Software tools for the analysis of electrical systems. (Mario Mañana)
4	Power Quality measurement and analysis. (R.I. Diego)
5	Energy efficiency in the industry and residential buildings. (Pablo Castro)
6	Software tools for the analysis of thermal systems. (Pablo Castro)

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous assessment.	Activity evaluation with Virtual Media	No	Yes	40,00
Final Assessment. A guide will be provided during the introduction of the subject.	Work	No	Yes	60,00
<b>TOTAL</b>				<b>100,00</b>

##### Observations

The University of Cantabria has an approved set of documents describing the assessment procedure.

The assessment will be carried out in a continuous way during the semester.

The remote evaluation of the works, practical laboratory exercises and written exams is foreseen, in the case of a new health alert by COVID-19 making it impossible to carry out the evaluation in a face to face way.

##### Observations for part-time students

Partial-time students have the same assessment rules that full-time students.

#### 8. BIBLIOGRAPHY AND TEACHING MATERIALS

##### BASIC

Apuntes y transparencias proporcionadas por los profesores de la asignatura que incluirán referencias básicas adicionales. La documentación estará disponible en la página de la asignatura en el aula virtual.