

SUBJECT TEACHING GUIDE

1114 - Sustainable Use of Energy

Master's Degree in Industrial Engineering Research

Academic year 2023-2024

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	1114 - Sustainable Use of Energy				
Number of ECTS credits allocated	5	Term	Semester based (2)		
Web	https://aulavirtual.unican.es				
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 objective of the course is to analyze the different energy techniques that allow progress towards the objectives of the 2030 Agenda for Sustainable Development and the SDG 7 to achieve sustainable development. Different sources of energy, both conventional and renewable, are reviewed, studying their environmental impact, as well as procedures for improving efficiency in their use. Students are introduced to the use of simulation and instrumentation tools (data measurement and analysis, thermography, and power quality).

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
TOTAL				100,00
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.