

SUBJECT TEACHING GUIDE

G1125 - Renewable Marine Energies

Degree in Maritime Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Maritime Engineering			Type and Year	Optional. Year 4
Faculty	School of Maritime Engineering				
Discipline	Subject Area: Optional Subjects Optional Module				
Course unit title and code	G1125 - Renewable Marine Energies				
Number of ECTS credits allocated	6	Term	Semester based (1)		
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ELECTRICA Y ENERGETICA				
Name of lecturer	CARLOS JAVIER RENEDO ESTEBANEZ				
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Other lecturers	ALBERTO PIGAZO LOPEZ				

3.1 LEARNING OUTCOMES

- Knowledge of renewable energies applied to the maritime sector

4. OBJECTIVES

Knowledge of basics on renewable energies applied to the maritime sector

Basic knowledge of technologies applied to renewable energies in maritime industries

6. COURSE ORGANIZATION

CONTENTS	
1	Introduction to Renewable Energies, National Energy Overview, Renewable Energies in the European Union, Vision of Renewable Energies, Search for Scientific Information on Renewable Energies, Wave Energy, Technologies for Harnessing Wave Energy, Energy from Tides, Hydraulic Turbines for the Use of Tidal Energy, Energy for Sea Currents, Technologies for the Use of Energy for Marine Currents, Marine Thermal Energy. Marine biomass
2	Photovoltaic energy, offshore wind and fuel cells
2.1	Photovoltaic Energy: Introduction.- The PV generator.- The photovoltaic inverter.- Supports, wiring, protections and monitoring.- Calculation of the expected annual production
2.2	Offshore wind energy: Introduction.- The rotor.- The generator and the electronic power converter.- Integration in wind farms.- Offshore
2.3	Fuel cells: Introduction.- PEM cells.- Operational considerations

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Exam of Part I	Written exam	Yes	Yes	30,00
Work Report of Part I	Work	No	No	20,00
Exam of Part II	Work	No	Yes	40,00
Resolution and Delivery of Proposed Exercises	Others	Yes	Yes	10,00
TOTAL				100,00
Observations				
<p>This subject is taught in Spanish.</p> <p>Partial marks are not saved for subsequent courses</p> <p>IT IS EXPECTED THAT, IN THE EVENT THAT THE SOCIAL DISTANCE MEASURES ESTABLISHED BY THE SANITARY AUTHORITIES DO NOT ALLOW THE PRESENTIAL DEVELOPMENT OF THE EXAMS (THEORETICAL-PRACTICAL EXAMINATION OF BLOCK I AND / OR THE RECOVERY DEVELOPMENTS) TO BE DEVELOPED. IN THIS PLATFORM THE SPECIFIC CONDITIONS OF REALIZATION WITH THE SUFFICIENT ADVANCE WILL BE EXPLAINED. IN THIS CASE STUDENTS WILL NEED TO HAVE THE DAY OF THE EXAMINATION OF: INTERNET CONNECTION, COMPUTER AND SCANNER OR CAMERA OF PHOTOS</p>				
Observations for part-time students				
Part-time students may be examined in the ordinary call. The exam may consist of three parts: a theoretical part, a problem part and a laboratory part				

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

Transparencias y/o apuntes utilizados por los profesores de la asignatura para impartir las clases

J. A. Carta González, "Centrales de energías renovables : generación eléctrica con energías renovables," Pearson Educación, Madrid, 2009.

P. Fernández, <http://es.libros.pfernandezdiez.es/?pageID=3>

T. Markvart (Editor), L. Castaner (Editor), Practical Handbook of Photovoltaics: Fundamentals and Applications . Elsevier Science. Octubre 2003.

J. D. Sorensen y J. N. Sorensen, "Wind Energy Systems," Springer, 2011.