SUBJECT TEACHING GUIDE

G1895 - Energy and Telecommunications

Degree in Telecommunication Technologies Engineering

Academic year 2019-2020

1. IDENTIFYING DATA				
Degree	Degree in Telecommunication Technologies Engineering		Type and Year	Compulsory. Year 3
Faculty	School of Industrial Engineering and Telecommunications			
Discipline	Subject Area: Energy and Telecommunications Module in Common with the Telecommunications Branch			
Course unit title and code	G1895 - Energy and Telecommunications			
Number of ECTS credits allocated	6	Term	Semester based (2)	
Web	https://aulavirtual.unican.es/			
Language of instruction	English		Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ELECTRICA Y ENERGETICA
Name of lecturer	MARIO MAÑANA CANTELI
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Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2055)
Other lecturers	JESUS MARIA MIRAPEIX SERRANO CARMELA ORIA ALONSO

3.1 LEARNING OUTCOMES
- Ability to design and dimension the power supply infrastructure required for the operation of Telecommunication systems
- Ability to project generation, distribution and storage infrastructures for electric energy, both classic design and new approaches based on advanced renewable sources such as photovoltaic solar and wind power.
- Gain a basic knowledge of thermal solar systems applications and fundamentals of domestic and industrial design based on these technologies.
- Ability to design basic low voltage infrastructures in accordance to REBT (Reglamento Electrotécnico de Baja Tensión)

4. OBJECTIVES

Show an introductory overview of generation, transport and distribution of electrical energy from the point of view of both devices and system and the Spanish Regulation Framework.

The student will have basic knowledge of the use of energy sources for the supply of electronic systems. After that, the student will be able to choose and operate, under basic electrotechnics criteria, telecommunications power systems, with special focus on power supplies and batteries.

The student will have a basic knowledge of renewable power sources, focusing on solar and wind power and their integration methods.

6. COURSE ORGANIZATION

CONTENTS	
1	Introduction to power systems and renewable Energies.
2	Sinusoidal AC circuits.
3	Magnetic Circuits and Electrical Machines.
4	Electrical Infraestructures, REBT and ITCs (Spanish Regulation for LV installations).
5	Introduction to Power Electronics.
6	Renewable Energies and Storage Solutions.

7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Continuous Assessment	Activity evaluation with Virtual Media	No	No	40,00
Final Assessment	Written exam	Yes	Yes	60,00
TOTAL				100,00

Observations

In general, the rules governing the evaluation system module will be in accordance with the current legislation in the University of Cantabria. The evaluation system will have as main benchmark the continuous assessment . It will be performed through activities planned throughout during the semester .
Continuous assessment may be supplemented by a final test to be held at the end of the semester. In any case, the percentages corresponding to the continuous assessment and the final grade test shall comply with the following restrictions:
• Continuous assessment: 40% of the final score.
• Final exam: 60% of the final score.
Students who refuse to do the continuous evaluation or fail the final exam will be required to re-sit the exam period at the end of each semester.
For reference, the ongoing evaluation activities may consist of:
• Laboratory activities.
• Oral presentations.
• Individual or group work.

Observations for part-time students

The evaluation of partial-time students will be performed with the same criteria that the full-time students.

8. BIBLIOGRAPHY AND TEACHING MATERIALS
BASIC
Mañana, M and Mirapeix, J.M.; Class notes.
Hart, D. Power Electronics. McGraw-Hill. 2010 IND Básica E12A 21f
Reglamento Electrotécnico de Baja Tensión. (Spanish Regulations)