

## SUBJECT TEACHING GUIDE

G881 - Simulation of Electrical Systems

Degree in Electrical Engineering

Academic year 2022-2023

1. IDENTIFYING DATA					
Degree	Degree in Electrical Engineering			Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Electrotechnology Optional Module: Electrical Engineering				
Course unit title and code	G881 - Simulation of Electrical Systems				
Number of ECTS credits allocated	6	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	ALBERTO ARROYO GUTIERREZ
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Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2026)
Other lecturers	MARIO MAÑANA CANTELI

### 3.1 LEARNING OUTCOMES

- Students will learn the techniques used in the simulation of electrical machines and power systems as well as tools commonly used in this type of analysis.

### 4. OBJECTIVES

Learning to use the techniques of analysis and design of electrical machines in an environment of computational design.

Learning to use the techniques of analysis of electrical power systems in an environment of computational design.

6. COURSE ORGANIZATION	
CONTENTS	
1	Introduction to simulation in electrical engineering.
2	Simulation of electrical machines and other electromechanical devices.
3	Simulation of electromagnetic transients in electrical systems.
4	Simulation of load flow in power systems.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
This evaluation will evaluate: - Part 1. Simulation of Electrical Machines and other Electromechanical Devices: (40% of total grade): 90% delivery of practical exercises and 10% assistance.	Laboratory evaluation	No	Yes	50,00
This evaluation will evaluate: - Part 2. Simulation of Load Flow in Power Systems: (30% of total grade): 90% delivery of practical exercises and 10% assistance. -Part 3. Simulation of Electromagnetic Transient Programs (30% of total grade): 90% delivery o	Laboratory evaluation	No	Yes	50,00
<b>TOTAL</b>				<b>100,00</b>
<b>Observations</b>				
<p>To pass by continuous assessment, the final grade must be equal to or greater than 5 out of 10.</p> <p>Those students who do not pass by continuous assessment may choose to sit the ordinary exam that will be graded on 100% of the grade for the course. Said ordinary examination will be carried out following the following structure:</p> <ol style="list-style-type: none"> <li>Exam Part 1. Simulations of Electrical Machines and other Electromechanical Devices (40%): it will consist of a practical exercise, and a minimum grade of 4 out of 10 must be obtained for this part to be considered compensable in the final grade (1 hour),</li> <li>Exam Part 2. Simulation of Electromagnetic Transients in Power Systems (30%): it will consist of a practical exercise, a minimum grade of 4 out of 10 must be obtained for this part to be considered compensable in the final grade (1 hour) and,</li> <li>Exam Part 3. Simulation of Load Flow in Power Systems (30%): it will consist of a practical exercise, and a minimum grade of 4 out of 10 must be obtained for this part to be considered compensable in the final grade (1 hour).</li> </ol> <p>In general, the rules governing the evaluation system of the module will be in accordance with the applicable law at the University of Cantabria.</p> <p>Only for duly justified causes (eg health restrictions) and whenever the academic authorities indicate so, the evaluation tests may be organized remotely. In this case, the teachers of the subject would evaluate the thematic blocks using various tools such as, email, videoconference software, Moodle, etc.</p> <p>The remote evaluation of the works, practical laboratory exercises and written tests is foreseen, in the case of a new health alert by COVID-19 making it impossible to carry out the evaluation in person.</p>				
<b>Observations for part-time students</b>				
There are no plans for special treatment for part-time students.				

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Simulación de sistemas eléctricos / M<sup>a</sup> Inmaculada Zamora Belver... [et al.].  
Madrid : Pearson Educación, [2005]