

## SUBJECT TEACHING GUIDE

### G738 - Electrical Engineering and Electric Machinery

#### Degree in Mechanical Engineering

Academic year 2024-2025

1. IDENTIFYING DATA					
Degree	Degree in Mechanical Engineering			Type and Year	Compulsory. Year 2
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Electrotechnics and Electrical Machines Module in Common with the Industrial Branch				
Course unit title and code	G738 - Electrical Engineering and Electric Machinery				
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	ALFREDO ORTIZ FERNANDEZ				
E-mail	alfredo.ortiz@unican.es				
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2029)				
Other lecturers	GERARDO DIEZ CAGIGAL				

### 3.1 LEARNING OUTCOMES

- Students will be able to solve electric circuits in DC and AC, both three-phase and single-phase. To do this they will know the basic laws that govern the fundamentals of circuit theory. An overview of the fundamentals of calculation in electrical installations will also be offered. In the same way, they will know the basic principles of operation of electrical machines, with special emphasis on transformers and induction motors.

### 4. OBJECTIVES

The student should be able to solve electric circuits both single phase and three phase. They will size correctly electrical equipment taking into account the basics of electrical safety.  
Students should understand the operation and basic parts of transformers and induction motors, being able to perform typical calculations associated with both electric machines.

6. SUBJECT PROGRAM	
CONTENTS	
1	Electrical circuits
2	Three-phase system
3	Introduction to electrical machines
4	Transformers and asynchronous motors
5	Low voltage electrical installations

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Assessment 1	Written exam	No	Yes	40,00
Assessment 2	Written exam	Yes	Yes	40,00
Lab practices	Work	No	Yes	10,00
Team work	Work	No	Yes	10,00
<b>TOTAL</b>				<b>100,00</b>
Observations				
<p>Students can pass the subject in two ways:</p> <p>1- Continuous assessment</p> <p>To pass on this way is required attendance to at least 80% of the classroom activities of the subject. Students must pass the assessments 1 and 2, needing to obtain a grade superior to 4 out of 10 to pass the course. Group work and Lab memory will add up to 10% to each final grade.</p> <p>2-. FINAL EXAM</p> <p>Students who have not followed or passed the continuous assessment, need to perform the final examination of the whole subject, in which must take a score equal to or greater than 5 out of 10.</p>				
Observations for part-time students				
Part-time students will be assessed in the same way as full-time students.				

8. BIBLIOGRAPHY AND TEACHING MATERIALS
<b>BASIC</b>
Electromagnetismo y Circuitos Eléctricos, Fraile,J., McGraw-Hill
Análisis Introductorio de Circuitos, Boylestad, Pearson
Teoría de Circuitos: Problemas y Pruebas Objetivas orientadas al Aprendizaje, Sánchez, P., Pearson
Pruebas Objetivas de Circuitos Eléctricos, Eguiluz,L.I., Eunsa
Instalaciones Eléctricas, Conejo, A.J., McGraw-Hill
Reglamento Electrotécnico de Baja Tensión
Manual de Instalaciones Eléctricas, Martín, F., Madrid Vicente
Instalaciones Eléctricas en las Edificaciones, Guerrero, A., McGraw-Hill
Máquinas Eléctricas, Fraile,J., McGraw-Hill
Máquinas Eléctricas, Sanz, J., Prentice Hall
Problemas de Máquinas Eléctricas, Fraile, J., Schaum

