

## SUBJECT TEACHING GUIDE

G589 - Electrical Engineering

Degree in Energy Resources Engineering

Academic year 2021-2022

1. IDENTIFYING DATA					
Degree	Degree in Energy Resources Engineering			Type and Year	Compulsory. Year 2
Faculty					
Discipline	Subject Area: Fundamentals of Electrical Technology Module: Training in Common with the Mining Branch				
Course unit title and code	G589 - Electrical Engineering				
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	RAQUEL MARTINEZ TORRE				
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Other lecturers	SERGIO ORTEGA ALBA				

3.1 LEARNING OUTCOMES
- The student will be able to distinguish and calculate the various types of power systems according to their type of excitation DC, AC single-phase and AC three-phase.
- Students will learn about the different types of power generation; its calculation, measurement and correction for better use.
- The student will acquire knowledge about the different types of electric transport lines as well as the different types of conductors used.
- Students will design and calculate an electrical network based on their topology and source of energy.
- The student will know the different standards applied in low voltage for design and calculation of a electric network.

#### 4. OBJECTIVES

Calculate, measure, monitor and modify the values of the electrical quantities of circuits: DC, AC single-phase and AC three-phase.

Identify, calculate and select wires and switchgear for low voltage networks.

Design and calculation of power installations according to their topology and source of energy.

#### 6. COURSE ORGANIZATION

##### CONTENTS

1	1- Introduction to electric circuits and electromagnetic quantities.
2	2. Analysis of single-phase AC circuits.
3	3. Three-phase systems
4	4. Transport and distribution of electrical energy in low voltage

#### 7. ASSESSMENT METHODS AND CRITERIA

Description	Type	Final Eval.	Reassessn	%
Theoretical & practical exam 1	Written exam	No	Yes	30,00
Theoretical & practical exam 2	Written exam	No	Yes	30,00
Laboratory practices exam	Written exam	Yes	Yes	30,00
Continuous evaluation	Others	No	No	10,00
<b>TOTAL</b>				<b>100,00</b>

##### Observations

Overall grade calculation:

a) If student obtains grades equal to or greater than the minimum grades established, the overall grade will be the weighted average of the grades reflected in 'Evaluation Methods' (Theoretical & practical exam 1, Theoretical & practical exam 2, Laboratory practices exam and Continuous evaluation).

The student will pass the subject when obtains the minimum established grades and the overall grade is equal to or greater than 5.

b) If student does not pass the minimum grades established, the overall grade will be obtained as the minimum value between 4.9 and the weighted average of the different grades.

- Grades equal to or greater than minimum grades established will be kept until the extraordinary exam.

- If the students miss more than 20 % of the laboratory lessons, they will be graded negatively in continuous evaluation. These students will have to pass an additional exam in the Laboratory.

- The laboratory practices may be carried out in the normal classroom and in the Laboratory during the schedule established. Usually, the laboratory practices will last 1 hour per week, but sometimes, it will last 2 hours. The establishment of the groups will be exclusive competence of the lecturer.

##### Observations for part-time students

Part-time students, that miss more than 20 % of the laboratory lessons, will have to pass an additional exam in the Laboratory.

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

#### BIBLIOGRAFÍA BASICA.

- \* FRAILE MORA, J. "Electromagnetismo y Circuitos Eléctricos ". McGraw-Hill. teoría y Problemas.
- \* PARRA, V. y colaboradores. "Teoría de circuitos". Tomos I y II. UNED. Madrid.
- \* GURRUTXAGA. J. A. "Electrotecnia Básica para Ingenieros". Servicio de Publicaciones de la E.T.S.I. de Caminos, C. y P. de Santander.
- \* EGUILUZ, LUIS I. y colaboradores "Pruebas Objetivas de Circuitos Eléctricos". Eunsa.
- \* SANCHEZ BARRIOS, PAULINO. y Colaboradores. " Teoría de Circuitos". Prentice hall.
- \* PASTOR GUTIERREZ, ANTONIO. "Circuitos Eléctricos". UNED.
- \* IÑIGO MADRIGAL, RAFAEL. "Teoría Moderna de Circuitos Eléctricos". Piramide.
- \* Normativa: Reglamento de Baja y Alta Tensión. Normas Tecnológicas de la Edificación.