

## SUBJECT TEACHING GUIDE

G998 - Applied Electrotechnics

Degree in Industrial Electronic Engineering and Automatic Control Systems

Academic year 2022-2023

| 1. IDENTIFYING DATA              |   |                  |                    |                  |                    |
|----------------------------------|---|------------------|--------------------|------------------|--------------------|
| Degree                           | Degree in Industrial Electronic Engineering and Automatic Control Systems |                  |                    | Type and Year    | Compulsory. Year 2 |
| Faculty                          | School of Industrial Engineering and Telecommunications                   |                  |                    |                  |                    |
| Discipline                       | Subject Area: Applied Electrotechnics<br>Module: Specific Technology      |                  |                    |                  |                    |
| Course unit title and code       | G998 - Applied Electrotechnics  |                  |                    |                  |                    |
| Number of ECTS credits allocated | 6   | Term             | Semester based (2) |                  |                    |
| 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  | FRANCISCO JAVIER LOPEZ GUTIERREZ  |  |  |  |  |

### 3.1 LEARNING OUTCOMES

- Students will be able to raise the necessary calculations in the design of industrial, commercial and residential electrical installations. They will be able to propose solutions to problems that occur in electrical systems in use. They will interpret and apply the legislation about electrical installations. Also they will have sufficient resources to manage the implementation of electrical installations with full safety guarantees for users.

#### 4. OBJECTIVES

Introduce students to design, calculation and execution of industrial, commercial or residential electrical installations. The most important aspects of the standards applicable to the field of electrical installations will be shown. The most common wiring diagrams will be studied. Dimensioning the power conductors will be defined. The most common electrical switchgear is also described with emphasis on protections. The most important aspects in electrical safety will be properly treated. Major issues such as reactive power compensation in electrical installations will also be treated. Finally, the basic parameters of the lighting loads will be shown, given their importance in the current facilities.

#### 6. COURSE ORGANIZATION

##### CONTENTS

|   |  |
|---|--|
| 1 | Introduction to electrical installations: Regulation. Electric schemes. Wires. |
| 2 | Electrical switchgear.   |
| 3 | Sizing of electrical installations.  |
| 4 | Protection and electrical safety   |
| 5 | Reactive power compensation and power quality.                                 |
| 6 | Lighting   |

#### 7. ASSESSMENT METHODS AND CRITERIA

| Description  | Type         | Final Eval. | Reassessn | %      |
|--------------|--------------|-------------|-----------|--------|
| Assessment 1 | Written exam | No          | Yes       | 50,00  |
| Assessment 2 | Written exam | Yes         | Yes       | 40,00  |
| Lab Work     | Work         | Yes         | Yes       | 10,00  |
| TOTAL        |              |             |           | 100,00 |

##### Observations

Students can pass the subject in two ways:

##### 1- Continuous assessment

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. Team work and Lab memory will add up to 10% to each final grade.

##### 2-. FINAL EXAM

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.

##### Observations for part-time students

Part-time students will be assessed in the same way as full-time students.

## 8. BIBLIOGRAPHY AND TEACHING MATERIALS

### BASIC

Martín Sánchez, Franco. Instalaciones Eléctricas en la Edificación. Ed. A. Madrid Vicente, 1997.

Guerrero Fernández A. Instalaciones Eléctricas en las Edificaciones. Ed. McGraw-Hill, 1996.

Reglamento electrotécnico para baja tensión.

Esquemas eléctricos y electrónicos : lectura e interpretación / Francisco Ruiz Vassallo 2005.

Colección de normas UNE.