

Academic Year: ( 2019 / 2020 )

Review date: 20-04-2020

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: DOMINGUEZ GONZALEZ-SECO, ESTEBAN PATRICIO

Type: Electives ECTS Credits : 6.0

Year : Semester : 2

## OBJECTIVES

This course provides:

- Understanding the importance of electric power efficiency in home automation and lighting systems.
- Understanding the importance of planning and knowledge of basic tools for designing and controlling lighting devices.
- Understanding the importance of planning and knowledge of basic tools for designing the lighting systems either indoor, outdoor or in the street.
- Understanding the most important home and building automation systems and their differences.

## DESCRIPTION OF CONTENTS: PROGRAMME

This course will be mainly practical. Students will receive information about certain aspects of electrical installations. In particular, home and building automation systems and electrical installations for lighting.

### OBJECTIVES:

- To know the principles and applications of light and vision.
- To describe the different sources of light and the elements of the lightning system (lamps, ballasts, lamps, etc..).
- To know the criteria for a lighting project.
- To manage the tools to design a lighting installation.
- To know the basic concepts regarding electric power efficiency.
- To analyze the different home and building automation systems, their characteristics, their different configurations, their application areas, etc.
- To set up systems for home and building automation, using the standard system European Installation Bus.
- To diagnose faults in home and building automation installations.

### PROGRAMME:

#### MODULE 1: INTRODUCTION TO LIGHTING SYSTEMS

1. Design of electrical lighting: scope and objectives.
2. Lighting: incandescent lamps and special lamps.

#### MODULE 2: CALCULATION OF LIGHTING INSTALLATIONS

3. Interior lighting project.
4. Outdoor lighting project.

#### MODULE 3: INTRODUCTION TO CONTROL SYSTEMS

5. Lighting control
6. Introduction to electrical energy efficiency and home and building automation systems.

#### MODULE 4: DESIGN OF CONTROL SYSTEMS

7. Overview of the most important home and building automation systems.

## LEARNING ACTIVITIES AND METHODOLOGY

Students should read each lesson before each class and study it immediately thereafter. They must also resolve questions and practice exercises before each practical session.

Various visits will be planned to facilities or companies.

The tutorials are set up via email.

## ASSESSMENT SYSTEM

The student assessment is based on:

- Tests. There will be four tests over the course and a final evaluation;
- Practice sessions (development work using specific calculation software).

The weight of the five evaluations and practices is as follows:

- First test: 35%
- Second test: 15%
- Third test: 25%
- Practice sessions: 25%

They may pass the course provided a minimum of 5 points in each of the five parties that form the continuous assessment is obtained.

<b>% end-of-term-examination:</b>	50
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	50

## BASIC BIBLIOGRAPHY

- LON-Nutzerorganisation LONWORKS installation handbook : LONWORKS in practice for electrical technicians , VDE, 2005
- Miguel Moro Vallina INSTALACIONES DOMÓTICAS, A. MADRID VICENTE, EDICIONES, 2014
- ROJAS RODRIGUEZ, S., RUIZ CELMA, A Instalaciones de Iluminación, Servicio Publicaciones de la ETSII (UPM), 1998
- William Bolton Instrumentación y control industrial, Paraninfo, 2015