Industrial Facilities II

Academic Year: (2022 / 2023) **Review date: 30-05-2022**

Department assigned to the subject: Department of Electrical Engineering

Coordinating teacher: ANTOLIN ARIAS, MANUEL

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Fundamentals of Electrical Engineering

OBJECTIVES

Know for planning and designing electrical and lighting, energy saving and efficiency, communications, home automation and intelligent buildings and security facilities.
Have sufficient criteria to search and select the appropriate material that is part of the electrical, telecommunications, home automation and intelligent and Security buildings facilities.
Know the constructive, functional and operational characteristics of electrical, telecommunications, home automation and intelligent and Security buildings facilities.
Know how to perform verification and control of electrical, telecommunications, home automation and intelligent buildings and Security facilities, in order to perform certifications and audits.
Consult and apply regulations codes.
Prepare a technical project for the design of an electrical, lighting, energy saving and efficiency, telecommunications, home automation and intelligent or Security buildings facility.

DESCRIPTION OF CONTENTS: PROGRAMME

1. Introduction: Three-phase distribution systems.
2. Medium voltage switchgear. Transformation centers.
3. Reactive power compensation. Practical exercises.
4. Liaison facilities. Indoor facilities Calculation of sections.
5. Low voltage switchgear: Protections (switches, circuit breakers, differentials).
6. Electrical pipes. Grounding facilities in buildings. Protection against indirect contacts.
7. Light sources: Incandescent and discharge lamps. Luminaires and associated equipment. Photometric characteristics Rules and regulations in lighting technology. Special lighting Lighting projects.
8. Installation automation: topology and programming of the EIB Bus. Applications Control lighting, temperature, etc. Building and security facilities monitoring.
9. Smart homes and buildings. Telecommunications facilities: television, telephony, data networks, AMR.
10. Inspection and certification of electrical and electronic installations in buildings.

LEARNING ACTIVITIES AND METHODOLOGY

Formation activities:
* Theoretical classes. Master Exhibitions (0.4 ECTS)
* Kinds of problems. Classroom exercises to understand the agenda. (0.6 ECTS)
* Practice in classroom facilities. (0.03 ECTS)
* Individual student work. (1.97 ECTS)

Teaching methodologies:
Preparatory and previous work of the student, master classes, practical sessions, laboratory practice.
Development of the design of an electrical, lighting, energy saving and efficiency, telecommunications, home automation and intelligent or Security buildings facility.

ASSESSMENT SYSTEM

Ordinary Call
50% First evaluation test
50% Second evaluation test

(The continuous assessment includes the evaluation of the student's work and individual work)
or
100% final exam
No approved parts are kept on continuous assessment

Extraordinary Announcement
100% of the exam mark 2 parts
No approved parts are kept on continuous assessment

% end-of-term-examination:	100
% of continuous assessment (assigments, laboratory, practicals…):	100

BASIC BIBLIOGRAPHY

- A.J. Conejo Instalaciones Eléctricas, Mc Graw-Hill, 2007
- Antonio Colmenar Santos y Juan Luis Hernández Martín Instalaciones Eléctricas en Baja Tensión: Diseño, Cálculo, dirección, Seguridad y Montaje, RA-MA.
- Grainger, Stevenson Análisis de Sistemas de Potencia, Mc Graw-Hill, 1995
- Martín Sánchez, Franco Manual práctico de iluminación , A. Madrid Vicente, 2005
- Martín Sánchez, Franco Manual práctico de iluminación , A. Madrid Vicente, 2005
- Rey Martínez, Francisco Javier; Velasco Gómez, Eloy EFICIENCIA ENERGÉTICA EN EDIFICIOS. Certificación y auditorías energéticas., Ediciones Paraninfo, S.A, 2006

ADDITIONAL BIBLIOGRAPHY

- null 18099 REAL DECRETO 842/ 2002, de 2 de agosto, por el que se aprueba el Reglamento electrotécnico para baja tensión, RD, 2002
- null Eficiencia Energética de las Instalaciones de Iluminación HE3 (del CTE), CTE, 2006
- null REAL DECRETO 337/2014, de 9 de mayo, por el que se aprueban el Reglamento sobre condiciones técnicas y garantías de seguridad en líneas eléctricas de alta tensión y sus instrucciones técnicas complementarias ITC-LAT, R.D., 2014