Universidad Zaragoza

Academic Year/course: 2024/25

30036 - Electrical Technology

Syllabus Information

Academic year: 2024/25
Subject: 30036 - Electrical Technology
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 436 - Bachelor's Degree in Industrial Engineering Technology
ECTS: 6.0
Year: 4
Semester: First semester
Subject type: Optional
Module:

1. General information

The design of the subject is eminently practical in nature.

In the Electrical Technology course, students are expected to:

Dimension low voltage electrical installations, according to current technical standards.

Assess the risks of electrical installations and the necessary protections to reduce them as much as possible.

Know the electricity market and be able to interpret and calculate an electricity bill.

Get to know the most common industrial electrical receivers.

2. Learning results

Generic competencies:

1. -Ability to solve problems and make decisions with initiative, creativity and critical reasoning (C4).

2. -Ability to use the techniques, skills and tools of Industrial Engineering necessary for its practice (C7).

3. -Ability to manage information, handling and application of technical specifications and legislation necessary for the practice of electrical engineering(C10)

4. -Ability to learn continuously and develop autonomous learning strategies (C11).

Specific competencies:

1. Knowledge of electrical power systems and their applications.

2. -Specific and integrated knowledge of industrial plants, systems, machines, vehicles, facilities, structures and processes of electrical, mechanical, environmental, energetic, chemical and manufacturing type, and on the tools of industrial electronics, automatics and industrial informatics tools that control them.

3. -Ability to apply the acquired knowledge and solve problems of industrial technologies in new or unfamiliar environments within broader, multidisciplinary contexts.

Learning Results

1. Know the principles of calculation of industrial electrical energy installations.

2. Know the principles of calculation of industrial communications and control installations.

3. Syllabus

Topics

1. Introduction

2. Electrical cables

3. Overcurrent protection

4. Protection against electrical contact

5. Engines

6. Wired logic

7. Reactive energy compensation

8. Transformer stations

9. Electrical installation work

10. Electricity supply contracting

11. Fundamentals of lighting technology

Practices

1. Computer-aided calculation of electrical installations (3 h)
2. Protection against indirect contacts (3 h)
3. Control of electrical systems I (3 h)
4. Control of electrical systems II (3 h)
5. Network analyzers. Measurement of electrical parameters (3 h)

4. Academic activities

Classroom classes (45 h)

Student participation will be encouraged through questions and comments.

Laboratory (15 h)

The students will have practice scripts provided in advance, with a description of the assemblies and the steps to be followed for the development of the activity.

Evaluable case studies (30 h)

The resolution of practical cases will be proposed.

Exams, assessment and self-study (60 h)

Periodically, the student will be proposed exercises and cases to develop, some of which will be solved in class.

Tutorials

For this purpose, the student has a tutoring schedule.

5. Assessment system

The student must demonstrate that they have achieved the intended learning results through the following assessment activities:

Continuous assessment: consisting of the resolution of a practical case (30% of the grade) and the completion of two theoretical-practical written tests (70% of the grade). Only those students who have completed all the practical laboratory sessions, obtaining a positive evaluation in all of them, will have the right to continuous assessment.

Performance of the laboratory practices, whose evaluation will be based on the reports elaborated by the students after the end of each one of the practices.

For those students who do not opt for continuous assessment, who do not pass the subject by this procedure or who would like to improve their grade (in this case, the best grade obtained will prevail), there will be a global test on the dates designated by the Center.

Global test: It will consist of a test composed of several parts, comprising theoretical and practical questions of the subject and problems, which will account for 80% of the grade, and a test on the practices, which must be passedin order to pass the subject, and which will account for 20% of the student's grade.

6. Sustainable Development Goals

7 - Affordable and Clean Energy
9 - Industry, Innovation and Infrastructure