

28622 - Installations II

Syllabus Information

Academic Year: 2019/20

Subject: 28622 - Installations II

Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia

Degree: 422 - Bachelor's Degree in Building Engineering

ECTS: 6.0

Year: 3

Semester: First semester

Subject Type: Compulsory

Module: ---

1.General information

1.1.Aims of the course

To get the student to acquire basic and practical knowledge about regulations, schemes, layout, calculation and control of fire protection, electrical, ventilation, air conditioning, telecommunications and elevator facilities that are integrated into the building.

1.2.Context and importance of this course in the degree

This course is the extension of the subject Basics of Installations, in which the necessary foundations have been laid for the understanding of the phenomena related to installation design.

This subject, together with Installations I, intends to provide the necessary skills so that the student can plan and design the premises of a building.

This knowledge is complemented with other building courses so that the student can have a global vision of the elements that make up a building and how they are carried out.

1.3.Recommendations to take this course

This subject does not need any previous requirements or demand specific complementary knowledge.

Nevertheless, knowledge and strategies from subjects related to Technical Drawing, Computer Science, Physics, Chemistry and Mathematics will be an asset for the development of the subject Installations II.

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, computer practice sessions, tutorials, and autonomous work and study.

4.2.Learning tasks

This course is organized as follows:

- **Lectures:** from the first day of the course, the student will begin to solve practical cases on facilities. In each case, the teacher will provide the plans of a building and through the application of rules and regulations, the students will design and calculate the installation suggested. The teacher will be a support to guide them in the application of the regulations and explain, at certain times, the part of the installation that is necessary. The teacher will have slides with graphic examples that will make it easier for students to understand the facilities being designed.
- **Computer practice sessions:** The contents will be studied through practical cases applied to different types of buildings.
- **Tutorials:** They can be online or on-site.

4.3.Syllabus

This course will address the following topics:

Unit 1. Fire protection facilities.

- 1.1. The DB-SI.
- 1.2. Passive fire protection
- 1.3. Active fire protection: constituent elements of fire protection installations.
- 1.4. Practical cases:
 - Installation in a residential building.
 - Installation in other types of buildings.

Unit 2. Electrical installations

- 2.1. Low-voltage electrotechnical regulations
- 2.2. Application to both private housing and public building installations.
- 2.3. Interior lighting and the CTE-HE3
- 2.4. Calculations and sizing of installations:
 - Calculation of wire sections for electrical installations
 - Calculation of interior lighting

Unit 3. Ventilation installations.

- 3.1. Regulations: CTE HS3 and RITE.
- 3.2. Design and dimensioning of ventilation installations.
- 3.3. Practical cases of ventilation installations:
 - Calculation of the housing ventilation system
 - Calculation and design of the ventilation system in the garage, including pipeline calculations and extractor selection.
 - Calculation and design of ventilation installation in storerooms.
 - Calculation and design of ventilation installation in waste warehouses.
 - Calculation and design of installation of ventilation in premises.

Unit 4. Air conditioning installations.

- 4.1. Regulations: Introduction to CTE HE1 and RITE.
- 4.2. Types of AC systems.
- 4.3. Air conditioning calculations:
 - Calculation of thermal loads
 - Equipment selection
 - Calculation and design of duct networks

Unit 5. Telecommunication installations.

- 5.1. The regulation of common telecommunications infrastructures
- 5.2. Example of application in a residential building

Unit 6. Lifts in building

- 6.1. Applicable regulations
- 6.2. Types of lifts and typical elements.
- 6.3. Choice of lift for different types of buildings.

Practice tasks of the course

The first four units discussed in the previous section have associated practice sessions. The student will be provided the model in Revit of a building and must make memory, calculation and model in Revit-MEP of the following facilities:

- Practice 1. Design and calculation of fire protection installation.
- Practice 2. Design and calculation of the electrical installation of a residential building.
- Practice 3. Design and calculation of the ventilation installation of a residential building including the garage.
- Practice 4. Design and calculation of the installation of the air conditioning of a house.

4.4.Course planning and calendar

The overall distribution of the subject will be as follows:

- 40 classroom hours to solve practical cases.
- 16 hours of practice tasks and supervised work, in 2-hour sessions.
- 4 hours of written tests (two hours per test)
- 40 hours of group work, over the 15 weeks of the semester.
- 50 hours of personal study, over the 15 weeks of the semester.

The written evaluation tests will be related to the following topics:

- Test 1: Units 1 and 2.
- Test 2: Units 3, 4, 5 and 6.

The building on which the practices will be carried out will be proposed in the first week, being the deadline at the end of each topic. Dates will be specified during the course.

Further information concerning the timetable, classroom, office hours, assessment dates (<http://www.eupla.unizar.es/asuntos-academicos/examenes>) and other details regarding this course will be provided on the first day of class or please refer to the Faculty of EUPLA website and Moodle.

4.5.Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=28622&year=2019

Resources

Material	
Theory of the syllabus Schedule slides Case Studies	Paper/Digital
Technical manuals and regulations.	Paper/repository Digital/Moodle