

Información del Plan Docente

Academic Year	2017/18
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.Introduction****1.2.Recommendations to take this course****1.3.Context and importance of this course in the degree****1.4.Activities and key dates****2.Learning goals****2.1.Learning goals****2.2.Importance of learning goals****3.Aims of the course and competences****3.1.Aims of the course****3.2.Competences****4.Assessment (1st and 2nd call)****4.1.Assessment tasks (description of tasks, marking system and assessment criteria)****5.Methodology, learning tasks, syllabus and resources****5.1.Methodological overview**

The learning process that has been designed for this subject is based on the following:

- **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

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with graphic examples that will make it easier for students to understand the facilities being designed.

- **Practical lessons in the computer room** : They will be used to carry out a complete practical case of a building. There will be 7 sessions of 2 hours of practice Revit-MEP plus four sessions for the production of the report, calculations and plans of the facilities in the suggested building.
- **Individual tutorials** : Carried out through personalized attention, individually, of the teacher in the department. These tutorials can be held in the classroom or virtually.

5.2.Learning tasks

The program offered to the student to help achieve the expected results includes the following activities outlined above:

- Lectures
- Practical lessons in the computer room
- Individual tutorials

The global distribution of the subject will be as follows:

- 34 classroom hours to solve practical cases.
- 22 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.

5.3.Syllabus

Contents of the subject.

The contents will be studied through practical cases applied to different types of buildings:

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 electro technical 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.

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Practice tasks of the subject

The first four units discussed in the previous section have associated practices. 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 air conditioning of a house.

5.4.Course planning and calendar

The dates of the final exams will be those published officially in <http://www.eupla.es/secretaria/academica/examenes.html>.

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 carried out virtual delivery at the end of each topic, during the course of the signature will be specified the dates.

5.5.Bibliography and recommended resources

THE UPDATED BIBLIOGRAPHY OF THE SUBJECT IS CONSULTED VIA THE LIBRARY'S WEB PAGE:
<http://psfunizar7.unizar.es/br13/egAsignaturas.php?codigo=28622&Identificador=14257>

BB	España. Ministerio de Industria y Energía. Reglamento de instalaciones de protección contra incendios / Ministerio de Industria y Energía Madrid : Ministerio de Industria y Energía, Centro de Publicaciones, D.L. 1994
BB	España. Ministerio de la Presidencia. RITE : Reglamento de instalaciones térmicas en los edificios [Madrid] : Creaciones Copyright, D. L. 2007
BB	España. Ministerio de la Vivienda. Código Técnico de la Edificación / edición preparada por Departamento de Redacción Aranzadi. - 2ª ed. Cizur Menor (Navarra) : Aranzadi, 2008
BB	Manual de aire acondicionado = Handbook of air conditioning system design / por Carrier Air conditioning Company . - [1a. ed., 4a. reimp.] Barcelona : Marcombo Boixareu, 1978

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- BB** Reglamento de infraestructuras comunes de telecomunicaciones : Real Decreto 401/2003, de 4 de abril, Orden CTE/1296/2003, de 14 de mayo . - 2ª ed. Barcelona : Ceysa, D.L. 2003
- BB** Reglamento electrotécnico de baja tensión Barcelona : CEYSA, D.L.1998
- BC** Abecé de las instalaciones / coordinador, Roberto Alonso González Lezcano ; autores, Roberto Alonso Gonzalez Lezcano ... [et al.] Madrid : Munilla-Lería, 2012-2013
- BC** Arizmendi Barnes, Luis Jesús. Cálculo y normativa básica de las instalaciones en los edificios. Tomo 2, Instalaciones energéticas / Luis Jesús Arizmendi . - 6ª. ed. renovada Pamplona : EUNSA, 2003
- BC** Arizmendi Barnes, Luis Jesús. Cálculo y normativa básica de las instalaciones en los edificios. Tomo 1, Instalaciones hidráulicas, gases combustibles y de ventilación / Luis Jesús Arizmendi. - 7ª ed. renovada Pamplona : EUNSA, 2005
- BC** Los transportes en la ingeniería industrial : (Teoría) / A. Miravete...[et al.] . - 1a ed. Zaragoza : Antonio Miravete, 1998
- BC** Miranda Barreras, Ángel Luis. Aire acondicionado / Ángel L. Miranda Barreras . - 5ª ed., rev. y act. Barcelona : CEAC, cop. 2004
- BC** Ramírez, Juan Antonio. Refrigeración / Juan Antonio Ramírez. - 1ª edc Barcelona : Ceac, 2000
- BC** Tobajas García, Alberto. Infraestructuras comunes de telecomunicación en viviendas y edificios / Alberto Tobajas García. - 1ª edc Barcelona : Cano Pina, Ceysa, 2011

LISTADO DE URLs:

Documento Básico HE. Ahorro de Energía.

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[http://www.codigotecnico.org/cte/export/sites/default/web/galerias/archivos/DB_H

Documento Básico HS.Salubridad -

[http://www.codigotecnico.org/cte/export/sites/default/web/galerias/archivos/DB_H

Documento Básico SI. Seguridad en caso de incendio -

[http://www.codigotecnico.org/web/galerias/archivos/DBSI_19feb2010_comentarios

Documento Básico SUA. Seguridad de utilización y accesibilidad. -

[http://www.codigotecnico.org/web/galerias/archivos/DB_SUA_19feb2010_comentarios

Guía técnica de aplicación del reglamento electrotécnico de baja tensión. -

[http://www.f2i2.net/legislacionseguridadindustrial/rebt_guia.aspx]

Guía técnica instalaciones de climatización con equipos autónomos. -

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[http://www.idae.es/uploads/documentos/documentos_17_Guia_tecnica_instalacion_seguridad_y_proteccion_completa_frente_al_fuego_con_hormigon.pdf]
Seguridad y protección completa frente al
fuego con hormigón. -
[http://www.inti.gob.ar/cirsoc/pdf/fuego/SEGURIDAD_FRENTE_FUEGO.pdf]

Resources

Materials

Material	Support
Theory notes of the syllabus Syllabus slides Case Studies	Paper/Digital
Technical manuals, rules and regulations.	Paper / Repository Digital/Moodle