Universidad Zaragoza

Academic Year/course: 2024/25

30738 - Conditioning and Services 3

Syllabus Information

Academic year: 2024/25
Subject: 30738 - Conditioning and Services 3
Faculty / School: 110 - Escuela de Ingeniería y Arquitectura
Degree: 470 - Bachelor's Degree in Architecture Studies
ECTS: 6.0
Year: 5
Semester: First semester
Subject type: Compulsory
Module:

1. General information

Heating systems and services 3 deals with heating installations applicable to buildings in general.

The student through the study of this subject should learn to:

- Recognize the different heating systems and choose the appropriate system in each case.
- To know the behavior of humid air and its application in cimate controllers.
- Calculate the energy demand of a building.
- Predimensioning of heating and DHW systems.
- Pre-dimensioning of renewable energy systems applied to DHW production.
- To know the different air diffusion systems.
- Provide the necessary space reserve for the installation of climate control.
- To know the current regulations in the field of climate control.
- Comply with the regulations in force in each case.

These approaches and objectives are aligned with the SDGs of the 2030 Agenda: Objective7

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

- Knowledge of the specific regulations on heating installations and their application in buildings.
- Knowledge of the basic fundamentals, equipment and materials of heating installations.
- Ability to choose the most appropriate type of heating installation and integrate it correctly into the project.
- Knowledge of the behavior of humid air and its diffusion.
- Ability to calculate the energy needs (heating, DHW) of the building.
- Ability to provide for the reservation of space for heating installations.
- Ability to resolve schematics, layout and registrability.
- Ability to design, calculate or pre-dimension heating and DHW installations, and draw up the corresponding project plans drawings.
- Suitability for the commissioning of heating installations.

3. Syllabus

0.- Climate control projects

1.- Climate control systems

2.- Climate controllers Air Handling Units (AHU)

3.- Energy demand in buildings

4.- Heating projects

5.- Calculation and selection of terminal elements

6.- Domestic hot water

7.- Contribution of Renewable Energies to the ACS.

8.- Air diffusion systems

4. Academic activities

The learning process is based on the following:

- **Theory sessions**: basic concepts are explained and related to the technical characteristics of heating systems. The methodology is based on lectures.
- **Practical sessions**: presentations of unique buildings are combined with computer sessions where more complex practical cases are studied than those presented on the blackboard. Computer applications will be used for the calculation of climate control installations.
- **Visits to companies and unique buildings** in the area could also be made.

5. Assessment system

The student is evaluated by means of a theoretical and practical exam at the end of the semester and the assessment of the installation practices carried out during the subject. The valuation of each part in the final gradewill be:

- Theoretical-practical written exam: 50 %
- Practical classes: 50%

Requirements to pass the subject are:

- Make all pre-deliveries, delivery and public exhibition of the practical exercises on the announced dates.
- Obtain at least a 5 in the practice.
- Obtain at least a 5 in the theoretical-practical test.
- To obtain at least a grade of 5 overall grade in the subject.

If the grade is lower than 5, the grade for the Project and the practice will be kept for the exams of the same academic year.

If a student does not pass the final delivery of the practical exercise or does not complete all deliveries, pre-deliveries and/or public presentations on the agreed dates, they must take a practical test, in addition to the theoretical-practical test at the end of the subject.

In this case, the requirements to pass the subject are:

- Obtain at least a 5 in the practical test.
- Obtain at least a 5 in the theoretical-practical test.
- To obtain at least a grade of 5 overall grade in the subject.

6. Sustainable Development Goals

7 - Affordable and Clean Energy
9 - Industry, Innovation and Infrastructure
11 - Sustainable Cities and Communities