Universidad Zaragoza

Academic Year/course: 2021/22

28610 - Installations: the Basics

Syllabus Information

Academic Year: 2021/22
Subject: 28610 - Installations: the Basics
Faculty / School: 175 - Escuela Universitaria Politécnica de La Almunia
Degree: 422 - Bachelor's Degree in Building Engineering
ECTS: 6.0
Year: 2
Semester: First semester
Subject Type: Basic Education
Module:

1. General information

1.1. Aims of the course

Enabling students to acquire basic and practical knowledge about the calculation of the different fluid transport, electromechanical, electrical, thermodynamic and acoustic installations that are integrated in the building.

These approaches and objectives are in line with the following Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda (https://www.un.org/sustainabledevelopment/es/), in such a way that the acquisition of the course learning outcomes provides training and competence to contribute to their achievement to some degree.

4. Quality education.

> 4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship.

1.2. Context and importance of this course in the degree

This course is previous to the subjects of Installations I and Installations II, where the necessary skills are set up so that the student can plan and design the installations of a residential building.

It is supplemented with knowledge from the other subjects of the degree in Technical Architecture, with the aim that the student gets a global view of the elements that make up a building and how they are dealt with.

1.3. Recommendations to take this course

This course does not possess any normative prerequisite, although, for its adequate progress, knowledge and strategies coming from the subjects of Mathematics for Building I and Mathematics for Building II of the first year are an asset.

2. Learning goals

2.1. Competences

Upon passing the subject, the student will be more competent to ...

G01 Organize and plan their work.

G02 Solve problems concerning installations.

G03 Make decisions on their own.

G04 Produce oral and written communication in their native language.

G05 Carry out analysis and synthesis of complex problems.

G06 Manage information.

G07 Work in a team.

G08 Critical thinking.

G09 Work in an interdisciplinary team.

G10 Work in an international context.

G11 Improvise and adapt to new situations.

G12 Lead a team.

G13 Have a positive social attitude towards social and technological innovations.

G14 Reason, discuss and present their ideas.

G15 Communicate through words and images.

G16 Search, analyze and select information.

G17 Learn autonomously.

G18 Possess and understand knowledge in a study area that starts from the general secondary education base, and is usually found at a level, which, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of their field of study.

G19 Apply their knowledge to their job in a professional way and possess the competences that are usually shown through the production and defense of arguments and problem solving within their area of ??study.

G20 Be able to collect and interpret relevant data (usually within their study area) to make judgments that include thinking on relevant issues of a social, scientific or ethical nature.

G21 Transmit information, ideas, problems and solutions to a specialized and non-specialized audience.

G22 Develop those learning skills necessary to undertake further studies with a high degree of autonomy.

CB5 Know the theoretical foundations and basic principles applied to building, fluid mechanics, hydraulics, electricity and electromagnetism, calorimetry and hygrothermia, and acoustics.

2.2. Learning goals

The student, to pass this subject, must demonstrate the following results ...

1. Knowledge of the theoretical foundations and basic principles applied to building installations, fluid mechanics, hydraulics, electricity and electromagnetism, calorimetry and hygrometry, and acoustics.

2. Ability to size, calculate and apply simple building installation systems.

2.3. Importance of learning goals

This subject has a specific engineering nature, that is, it offers training with application content and immediate development in the labor and professional market. Through the achievement of the relevant learning outcomes, the necessary capacity is obtained to understand the operation of the installations in the buildings, which will be essential for the execution of any construction or refurbishment of those included within the scope of Technical Architecture.

3. Assessment (1st and 2nd call)

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

The assessment of the subject provides for a split assessment system and a global final assessment system.

1. Split assessment system.

The split assessment system will have the following group of grading activities:

- Exercises, theoretical questions and posed works:

The teacher will pose exercises, problems, practical cases, theoretical questions, etc. to be solved individually or in a group of maximum three students. A part of it will be done, discussed, solved, etc. in the seminars organized for that purpose. This activity will account for 15% of the final grade for the course. In order to take this mark into account, the papers must be handed in on the specified dates and all seminars must be attended. The active participation of the student will be taken into account, answering the questions posed by the teacher during the teaching period and the grading of the theoretical-practical exercises posed and handed in on site. All activities will account for the same proportion of the total grade of this block, being valued from 0 to 10 points.

At least 80% of the classroom activities (practice tasks, technical visits, classes, etc.) must be attended.

- Written assessment tests: These tests will include theoretical and / or practical questions from the different issues to be assessed. There will be a maximum of three, distributed throughout the entire semester with a duration of two hours. The final grade of this activity will be calculated with the average of the tests, as long as the minimum in any of them is 3 points. In this case the test will be failed. The three tests will consist of two applied theory questions, each of which will account for 10% of the grade and three problems that will account for 80% of the grade. This activity will account for 60% to the final grade of the course.

As a summary of the aforementioned, the following weight table of the grading process of the different activities, in which the split evaluation process of the course is based on, has been designed

Assessment activity. Weighting

Individual activities in class: 20%

Written assessment tests: 80%

Prior to the first call, the teacher of the subject will notify each student whether or not they have passed depending on the use of the split assessment system, based on the addition of the marks obtained in the different activities carried out, each accounting for a minimum of 50%. In case of not passing in this way, the student will have two additional calls to do so (global assessment test). On the other hand, the student who has passed the course, may also choose the final assessment, first call, to improve their grade, but never to lower it.

2. Global final assessment test.

The student must opt for this modality when, due to their personal situation, they cannot adapt to the rhythm of work required in the split assessment system, have failed or would like to increase their grade having participated in that assessment methodology. The global final assessment test will include a group of grading activities that have already been explained in detail above:

- Exercises, theoretical questions and posed works: they can be carried out integrated into the split assessment.

- Written exam: Only one test with representative exercises of the issues, accounting for 70% of the final grade for the course.

As a summary of the above mentioned, the following weighting table for the grading process of the different activities has been designed on which the final assessment process of the subject has been based.

Assessment activity Weighting

Exercises, theoretical questions and posed works: 20%

Written exam: 80%

The course will have been passed based on the sum of the marks obtained in the different activities carried out, each accounting for a minimum of 50%.

For those students who have failed the split assessment system, but some of their activities, with the exception of written assessment tests, have been carried out, are allowed to validate them for the global final assessment test, and it may be the

case that they only have to take the written exam.

All the activities included in the global final evaluation test, with the exception of the written exam, can be valid for the next official call, within the same academic year.

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 theory sessions, practice sessions, and autonomous work and study.

If classroom teaching were not posssible due to health reasons, it would be carried out on-line.

4.2. Learning tasks

This course is organized as follows:

- **Theory sessions.**
- **Practice sessions / laboratory**
- **Autonomous work and study**
    - Study and understanding of the theory taught in the lectures.
    - Understanding and assimilation of the problems and practical cases solved in the practical classes.
    - Preparation of seminars, solutions to proposed problems, etc.
    - Preparation of laboratory workshops, preparation of summaries and reports.
    - Preparation of the written tests for continuous assessment and final exams.
- **Exams**. Three different tests.

4.3. Syllabus

This course will address the following topics:

- **Topic 1:** Principles of Thermodynamics. Thermal expansions and heat transfer (conduction, convection and radiation).
  Hygrometry.
- **Topic 2:** Fluid dynamics.
- **Topic 3:** The electric field and direct current circuits. The magnetic field and alternating current circuits. Principles of the electromagnetic induction.

4.4. Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates (https://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://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=28610