

69200 - Technique and Subject: Generation of the Project and Rehabilitation

Syllabus Information

Academic year: 2023/24

Subject: 69200 - Technique and Subject: Generation of the Project and Rehabilitation

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 519 - Master's in Architecture

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The objective of this subject is for students to learn how to design the integral restoration and extension of buildings based on environmental sustainability approaches, following a process of *evidence-based design* (EBD). In line with European objectives, restoration should contribute to a significant reduction in total energy, which will require the achievement of Nearly Zero Energy Buildings (NREBs) and circularity strategies. It is also necessary to conserve the building, resolve accessibility and guarantee the comfort and habitability of the spaces.

These approaches and objectives are aligned with some of the Sustainable Development Goals (SDGs) of the 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>) and certain specific targets. Specifically, they are aligned with Goal 11 and Objectives 11.1 and 11.6.

It is recommended that the student doesn't have a load of more than 30 ECTS during the semester while taking this subject.

2. Learning results

The learning results are:

1. Knowledge of traditional building techniques and new technologies and their application to the project.
2. Ability to understand and create constructive details.
3. Knowledge of the qualities of matter and its linkage in the building of space.
4. Knowledge of the implementation of building solutions.
5. Ability to write reports and expert opinions related to the constructive state of buildings.
6. Ability to produce the technical documentation of the architectural and restoration project.
7. Knowledge and application of methods related to the organization, control and management of construction works.

3. Syllabus

The subject's syllabus is structured as follows:

1. Great challenges of contemporary architecture and city: decarbonization of the building stock through building energy rehabilitation.
2. Diagnosis of buildings and intervention techniques
 - 2.1 General criteria for intervention, expert opinions, building evaluation report and existing building book
 - 2.2 Building pathology
 - 2.2.1 Introduction to building pathology
 - 2.2.2 Building defects
 - 2.2.3 Crack reading
 - 2.2.4 Structural reinforcements
 - 2.2.5 Shoring and opening of spaces
 - 2.3 Acoustic-energetic rehabilitation of the envelope
 - 2.4 Renovation compliance with safety in use and accessibility and fire safety standards.
 - 2.5 Upgrading facilities, renewable energy and electric mobility in building renovation
3. Energy assessment of existing buildings, renovations and extensions.
4. Strategies for intervening in the built environment
 - 4.1 Key principles for an energy and environmentally sensitive intervention
 - 4.2 Performance-based design and evidence-based design

5. Technical management of the project

4. Academic activities

- Lectures (sessions where the teacher will explain the subject's topics): 30 hours.
- Computer practical classes (critical review sessions on the work requested in the subject using drawing and simulation programs): 26 hours
- Special internships in facilities (visit to buildings and neighbourhood where the work of the subject is carried out): 4 hours
- Study, teaching and other activities: 84 hours
- Assessment tests: 6 hours.

5. Assessment system

Students are assessed through **practical exercise** carried out partly in groups and partly individually throughout the semester with pre-deliveries and final delivery, thus favouring continuous assessment.

The weighting of each part in the final grade will be:

- Pre-delivery of the practical exercise: 20 %, to be carried out in group.
- Final delivery of the practical exercise: 80 %, which will consist of a part of group work and a part of individual work of each member of the group. The group part will be worth 40% of the grade and the individual part will be worth 40%.

Requirements to pass the subject are:

- To meet all the deadlines for the pre-deliveries, delivery and public presentation of the practical exercises.
- To obtain at least a grade of 5 in the final delivery of the practical exercise.
- To obtain at least a grade of 5 overall grade in the subject. The grade will be calculated according to the following equation:

$$A = 0.2 \cdot P + 0.80 \cdot E$$

Where: **A** is the grade in minutes out of 10 (or overall grade in the subject)

P is the pre-delivery grade out of 10.

E is the grade of the final delivery of the practical exercise out of 10.

If the grade of or if the average value of the grades of and are below 5, students will be given the option to pass the subject by improving the delivery or by taking a **theoretical-practical test that will be worth 100% of the grade**, both in the January and July calls.

If a student does not complete all the deliveries, pre-deliveries and/or public presentations on the requested deadlines, they may pass the subject by taking a **theoretical-practical test** at the end of the semester or in the following call, which will be worth 100% of the grade.

Students who take the theoretical-practical test will pass the subject if they obtain more than a grade of 5 in this test.