

## 30711 - Construction 1

### Syllabus Information

**Academic year:** 2023/24

**Subject:** 30711 - Construction 1

**Faculty / School:** 110 - Escuela de Ingeniería y Arquitectura

**Degree:** 470 - Bachelor's Degree in Architecture Studies

**ECTS:** 6.0

**Year:** 2

**Semester:** First semester

**Subject type:** Compulsory

**Module:**

### 1. General information

Construction 1 is the introductory subject to the constructive processes with which we humans provide ourselves with a habitat. While many living beings build, we make buildings with transformed materials and considerable use of energy both in their use and in their construction. Currently, the complexity of the processes is such that it requires a prior reflection on the **concept of building**.

Every building is at least a material construction made by human beings to inhabit a certain environment, the Earth, which it affects and is affected by. In addition to the energy required for any construction, buildings exchange information, matter and energy with the environment to maintain their functions. To this end, buildings are made up with systems and subsystems that interrelate in a complex way with each other and with the environment. Architectural construction studies these interactions, the problems they must raise and the responsible questions to which any responsible architectural design must respond.

The course develops **systematic, contextual and problematic thinking**, whose main objective is that the student think critically to reflect with knowledge before acting. The construction and maintenance of buildings is directly responsible for major transformations on the planet and its living beings.

The specific objective of the course is to make students **aware of the complexity inherent in the organization and interrelationships of the systems and subsystems that make up the building, structural, energetic and envelope systems**, as well as their deep relationships and theories.

These approaches and objectives are aligned with some of the Sustainable Development Goals, such as 11 (11.6), 7 (7.2 and 7.3) and 15 (15.1) (7.2 and 7.3) and 15 (15.1).

### 2. Learning results

- Knowledge of the conventional structural construction systems, and aptitude for their representation, installation, conservation, and methods of measurement and valuation.
- Know and use the technical vocabulary of construction.
- Knowledge and application of basic construction regulations.
- Acquisition of criteria for the correct choice of materials for the construction of structural elements in architecture.
- Ability to understand the tectonic logic of architectural constructions.
- Ability to recognize the architectural repercussions of each construction system and of each material of the structural elements in the structural elements in the architectural project and in the construction site.
- Know how to elaborate construction details and technical prescriptions of the structural elements, which express the architectural fact and its construction.

### 3. Syllabus

#### 1. INTRODUCTION TO CONSTRUCTIVE THINKING

- Architectural construction as problematic thinking: what is building?
- Architectural construction as an energy system: responsibility in the face of climate change
- Systems and Complexity

#### 2. ARCHITECTURE AS A STRUCTURAL SYSTEM

what is a structural system?

- 2.1- Load transmission systems and mechanical strength
- 2.2- Foundations. Definition. Structural and constructive characteristics.
- 2.3- VERTICAL elements
- 2.4- HORIZONTAL elements

### **3. ARCHITECTURE AS AN ENERGY SYSTEM**

what is an energy system?

3.1- Energy Exchange System.

3.2 Buildings as thermodynamic exchangers

3.2- Buildings as a system capable of processing energy and adapting to the environment

3.4 Energy balances, energy demand, thermal comfort.

### **4. ARCHITECTURE AS AN ENVELOPE SYSTEM**

**what is an envelope system?**

4.1- Roofs and exterior enclosures. Transmittance.

4.3 Noise transmission and protection systems - What is building with noise?

4.4 Interior distribution systems.

### **4. Academic activities**

Theoretical classes by means of participative lectures, 20 hours. Theory sessions of development of the subject Problems and cases: 10 h, critical comments on readings from the bibliography on problems posed.

Workshop practices: 30 h, development of the practice of the subject.

Teaching assignments, 30 hours, preparation of work related to the Learning Portfolio and final project

Personal study and reading, 56 h

Evaluation test, 4 h

### **5. Assessment system**

The student is evaluated through a written/graphic theoretical test, with theory and problems at the end of the semester and a practical exercise carried out throughout the subject. The assessment of the practical exercise will be continuous and all the deliveries of the semester, both partial and final, will be graded. The assessment of each part in the final grade will be:

Theoretical written/graphic test: 50 % (a score of > 5 must be obtained in the exam to pass the subject) Set of deliveries of the practical exercise: 50 %, (a score of > 4 must be obtained in the practices to pass subject)

If the exam grade is lower than 5, the practical grades will be kept as long as their assessment is higher than 5 only for the exams of the same academic year. They are not saved for successive courses.

The faculty may consider the possibility of passing part of the theoretical test in a voluntary partial exam at to be held during the semester. If a grade equal to or higher than 7 points is obtained in this partial test , the subjects examined will be considered as passed.

During the course there are a series of required readings. The completion of a summary and class participation will be evaluated. If this assessment is higher than 6 points, the exam can be graded with a grade > 4 points.

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.

The students must communicate by e-mail that they are going to present themselves for the organization of this test.