Eina Centre Universitari
Fundació Eina
Disseny Art Barcelona

Passeig Santa Eulàlia 25
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MATERIALS I TÈCNIQUES DE CONSTRUCCIÓ

Cristina Subias Soto, Sílvia Escursell Martínez

Supervising Teacher: Sílvia Escursell Martínez

Group: 1

Code: 200662

Credits: 6 ECTS

Course: 2

Semester: 2

Typology: Obligatory

Subject: Technology

Schedules:

Group	Schedules	Teacher

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Subject Presentation

Brief Description:

Understanding space through the materials that make it up and the construction techniques used to move from design to material execution.
Learn which material or group of materials to use, in relation to its properties, its use process, paying attention to aspects such as durability, efficiency and sustainability.
Understand what technology involves the use of certain materials or others.

Training Objectives:

The subject aims to transmit the necessary knowledge that technology can bring to interior design, to understand space and so that the designer can successfully carry out their project.
Construction systems and technological criteria will be discussed so that the student develops an understanding of general technology, an idea of the language of technology applied to construction.
The objective is to learn about the possibilities and limits of construction, so that the student can use their knowledge in any project or assignment.

Recommendations

Know, understand and master the fundamental quantities of length, surface area and volume of space.
Mastering minimal mathematical calculations.
Know how to graphically represent a space or element of a space, on a scale plan.
Mastery of scale drawing is essential.
Have passed the technical drawing subject of the previous year.

Contents and Methodology

Brief Description:

The course material will be structured into 3 thematic blocks:
- Block 1: Construction systems in architectural space: techniques and materials.
A wide selection of construction systems and materials is shown.
It starts from traditional construction technologies from which the student must be able to understand more complex high technologies that they will encounter in their professional life.
Weekly exercises will be carried out on given situations, applied to a space with uses such as housing, work or any other use.
Different topics will be discussed in order to understand how they are formed: enclosures, partitions, transposed walls and wall coverings, floors and ceilings. Carpentry and glass.
- Block 2: Materials, sustainability and regulations.
Sustainability concepts applied to construction materials and systems will be discussed: eco-labeling of materials and environmental certifications.
Materials and their impact on the environment and on the health of users.
Minimum concepts of CTE regulations will be explained in relation to the selection and proposal of materials in a space.
- Block 3: Design for comfort in the interior space (thermal comfort and acoustic comfort).
The criteria and techniques for good control of different types of comfort inside a space will be analyzed and explained: hygrothermal comfort and acoustic comfort, as a starting point for the design of healthy spaces.
Minimal calculation concepts will be taught.
The student must be able to make proposals to resolve the adaptation of an empty space to a specific use, through passive design techniques and the use of appropriate materials, to achieve a comfortable, efficient and healthy space.
Concepts such as thermal insulation, insulation and acoustic conditioning will be discussed.

Teaching methodology:

Theoretical classes will alternate with practical classes every week.
- In theoretical and master classes:
o Key concepts about materials and construction systems will be presented.
o Real examples and practical cases will be displayed with photographs of work to illustrate the theory.
o Construction materials from the materials library available at the school will be taught.
- Practical classes:
o They will be sessions aimed at connecting theory with constructive reality.
o Practical exercises on construction details and selection of materials that each student will have solved individually at home will be carried out in front of their classmates. In this way, doubts will be

resolved and students will be personally guided.

To follow the subject, it will be necessary to submit periodic practical assignments established at the beginning of the course and take written tests to verify the assimilation of the contents.

Training activities:

The activities will be conducted in person in the classroom and autonomous and supervised.

* In-person guided activities:
- Attendance and active participation in classes
- Development and practical resolution of construction details - blocks 1 and 3.
- Technical visit to a work site (subject to the availability of the calendar and progress of the work) and analysis of practical cases.

* Supervised autonomous activities:
- Theoretical follow-up controls at the end of each topic.
- Preparation and participation in joint corrections to generate a collective debate in the classroom to review the practical exercises worked on.

Evaluation

General evaluation regulations

A student will be considered "Not Assessable" (NA) if they have not submitted all the learning evidences or have not attended 80% of the classes without justifying their absences. In case of a justified absence, the student must contact the teacher at the time of rejoining to determine the recovery of the activities they missed.

If the student commits any irregularity that may lead to a significant variation in the grade of an evaluation act, that evaluation act will be graded with 0, regardless of the disciplinary process that may be initiated. If several irregularities occur in the evaluation acts of the same subject, the final grade for that subject will be 0.

Each subject will define the use of generative AI tools in assessed activities according to one of the following three levels: use not permitted; use restricted to specific tasks indicated by the teaching staff; or use permitted as part of the working process, provided that it is declared and justified.

When AI has played a significant role in an assessed activity, the student must declare which tool they used, for what purpose, at which stage of the work, and what subsequent review, selection or transformation they carried out.

Continuous evaluation system

The evaluation system of EINA and UAB is a continuous assessment system, the objective of which is for the student to know their academic progress throughout their educational process to allow them to improve it.
The continuous assessment process must include a minimum of three evaluative activities, of two different types, distributed throughout the course, none of which can represent more than 50% of the final grade.

Both practical exercises to resolve construction details will be required each week, as well as theoretical checks of the material taught once each topic has been completed.
In principle, 3 graded practical assignments and 3 graded theoretical tests are planned (any changes will be announced in advance), in order to evaluate the student.
The average of the practical exercises must be equal to or greater than 4 to be averaged with the rest of the grades for the subject.
Similarly, the average of the 3 theoretical tests that can be scored must be equal to or greater than 4 to be averaged with the rest of the grades for the subject.
If you do not reach a 4 in these parts, you will not be averaged between them, nor with the monitoring and participation grades to obtain the final grade, and you will have to go for a reassessment.
Dedication and continuous and constant work from the student is required, from the beginning of the

subject, as each week the knowledge acquired will have to be put into practice, solving an exercise arising from the theoretical class that will be corrected in the following practical class.

* Evaluation criteria:
45% of the grade in the evaluation will be given by the practical resolution and graphic representation on a detailed scale of 3 of the exercises proposed weekly in the different blocks (the average of the 3 will be this 45% of the final grade).
40% of the grade in the evaluation will be obtained from the different theoretical controls of the subject taught, at the end of each topic (3 theoretical controls will be carried out, the average of the 3 will be this 40% of the final grade).
15% of the grade in the evaluation will be obtained from class attendance, monitoring of the subject and participation in practical corrections.

In the event of not passing the subject, you may opt for re-evaluation.
The reassessment will consist of a single mainly practical exam with resolution of constructive details, where the theoretical knowledge acquired in the subject taught in the course must also be demonstrated.
The grade obtained in the reassessment will replace the rest of the grades obtained previously. The maximum grade that can be obtained in the reassessment will be 6.

Review process

At any time, the student can request the review of a completed assignment or test.

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Learning outcomes of the degree program

Knowledge

Catalogue materials, their properties and physical principles in relation to the conceptualisation and formalisation of design projects, taking into account environmental and sustainability criteria.

Categorise technologies and production processes, along with their respective costs, in relation to the conceptualisation and formalisation of design projects, while ensuring rigour and quality in finishes and details.

Reference essential knowledge of the sciences and auxiliary disciplines of design, such as anthropometry, ergonomics, visual communication, evaluation methods, marketing, and prospecting.

Skills

Apply plastic expression skills and knowledge of materials and production technologies in accordance with the objectives of a design project.

Propose design solutions (or solutions in related areas) clearly and precisely, using appropriate vocabulary and techniques of expression and representation.

Graphically represent spaces, volumes, planes, and surfaces using the characteristic techniques of design.

Synthesize knowledge from diverse sources—studies, fieldwork, literature, direct observation, or practical experience—in the field of design and related disciplines within the cultural industries.

Evaluate the social, economic, environmental, and technological feasibility of a design project, incorporating gender and diversity perspectives, and ensuring respect for sustainability, democratic values, and fundamental rights.

Competencies

Propose creative, socially and environmentally sustainable design solutions, aligned with the Sustainable Development Goals (SDGs).

Manage design-related tasks autonomously, planning and organising time and processes in professional and/or academic settings.

Apply acquired knowledge to the execution of design and art projects with professional standards, considering user and audience diversity.

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Bibliography and Resources

* Bibliography

Magazines:
Tectonics
Constructive
Details
Detail Praxis (monographic, wood, stone, concrete...)

Books:
"Manual of construction details of interior design". W. Nutsch. Ed. GG
"Thermal and acoustic insulation". Miguel Payà – Monographs Ceac de la Construcción.
"The construction of architecture". Ignacio Paricio. ITEC
- vol.1- The techniques
- vol.2- The elements
- vol.3 The composition
"Basic guide to sustainability". Brian Edwards. Ed. GG
"Architecture as a technique 1. Surfaces" R. Araujo. ATC Editions. Madrid 2007
"Ecological architecture". D. Gauzin-Müller. Ed. Gustavo Gili, Bcn 2002
"Bioclimatic architecture in a sustainable environment". F.Javier Neila González. Ed. Munillalería
"Constructive architectural techniques of environmental conditioning" Cesar Bedoya Frutos, Fco. Javier Neila González. Ed. Munillalería

* Regulations:

"Technical Building Code" (CTE)
https://www.codigotecnico.org/

* Resources:

"Visual Dictionary of Construction": from the website of the Department of Territory and Sustainability of the Generalitat.
https://territori.gencat.cat/ca/01_departament/documentacio/general/terminologia_tecnica/diccionari_visual_

Audiovisuals from the website SUSTAINABLE CONSTRUCTION AGENDA
https://www.csostenible.net/
https://www.cateb.cat/sostenibilitat-i-edificacio/

MATERFAD Materials Center of Barcelona
https://www.fad.cat/materfad/es