

## Course guide

# 310412 - 310412 - Low Environmental Impact Building and Material Technologies

**Last modified:** 09/05/2025

**Unit in charge:** Barcelona School of Building Construction  
**Teaching unit:** 753 - TA - Department of Architectural Technology.

**Degree:** MASTER'S DEGREE IN ADVANCED BUILDING CONSTRUCTION (Syllabus 2014). (Optional subject).

**Academic year:** 2025    **ECTS Credits:** 5.0    **Languages:** Spanish

## LECTURER

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**Coordinating lecturer:** Montserrat Bosch

**Others:** Paris Viviana, Oriol

## DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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### Specific:

CE8. Elaborate and manage installation projects.

### Generical:

CG5. Analyse, evaluate and synthesise critically, new and difficult ideas of promotion, in academic and professional contexts, scientific advances, technologies, social or cultural in the society of knowledge.

CG2. Prepare to communicate with efficiency, orally but also in written.

CG3. Prepare the student in the using of tools that are common in the investigation activities, like the analysis and treatment of data, just like methodology and investigation techniques.

CG1. Provide to the student the capacity to apply the knowledge acquired in the resolution of complex problems in any sector of the building construction.

CG6. Obtain results that can be transferred to the building construction sector, through the applied investigation, the technological development and the innovation.

### Transversal:

06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

02 SCS. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.

05 TEQ. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.

## TEACHING METHODOLOGY

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MD1 Participatory expositive class.

MD2 Masterful class.

MD4 Tutorials and questions.

MD6 Tests.

MD7 Integrated methodologies (Learning based on problems, teaching portfolio).

## LEARNING OBJECTIVES OF THE SUBJECT

Students learn to value traditional construction techniques from different aspects related to technological sovereignty, environmental impact, revaluation of the cultural heritage, social aspects, etc.

They are also introduced to research and the search for scientific documentation to validate technological proposals.

They acquire criteria to validate and propose technological improvements in construction systems with low environmental impact that must comply with current habitability requirements, complying with the regulations of the different places where they are implemented.

Validate and assess architectural projects based on construction techniques that seem simple but require technical and conceptual rigor for their application in different situations: climate, seismic, health, availability of raw materials, etc.

## STUDY LOAD

Type	Hours	Percentage
Hours small group	5,0	4.00
Hours medium group	5,0	4.00
Self study	90,0	72.00
Hours large group	15,0	12.00
Guided activities	10,0	8.00

**Total learning time:** 125 h

## CONTENTS

### General concepts

#### Description:

Environmental criteria in the construction; acknowledgement of the territory and the climate; impact of the construction in the territory; the constructed heritage as technological basis; culture, tradition and technology; soak energy and associated emissions; availability of resources.

#### Specific objectives:

Learn to search information related with the contents; know the environmental parameters which will be used during the course; understand the diverse construction techniques according to the climatic, geographical and cultural determinants.

#### Related activities:

Activity 1. Architecture without architects.

Activity 2. Environmental parameters of the traditional architecture. Techniques and materials.

Activity 3. Passive strategies of environmental comfort.

#### Related competencies :

02 SCS. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and economic phenomena that characterize the welfare society. Having the ability to relate welfare to globalization and sustainability. Being able to make a balanced use of techniques, technology, the economy and sustainability.

06 URI. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

#### Full-or-part-time: 11h

Theory classes: 3h

Guided activities: 3h 30m

Self study : 4h 30m

### Low environmental impact technologies

**Description:**

Constructive technologies of low-environmental impact. Acknowledgement and understanding of native construction systems. Structural, safety and stability requirements in diverse contexts. Compliance of the requirements: habitability, health standards, hygiene, thermal comfort. Proximity materials, environmental evaluation and alternatives. Construction with soil; construction by vegetal frameworks; proximity constructions. Modulate home, assisted self-construction, emergency construction and cooperation projects.

**Specific objectives:**

Learn to quantify by means of evaluation tools of the environmental impact of the construction techniques.

Identify habitability requirements and validate its compliance.

Relate construction techniques with local requirements and conditions.

Incorporate new possibilities of the materials and alternative constructive solutions.

Recognize the built cultural heritage.

**Related activities:**

Activity 4. Stone technology.

Activity 5. Soils technology.

Activity 6. Ceramics technology.

Activity 7. Wood and vegetal frameworks.

**Full-or-part-time:** 15h

Theory classes: 10h

Guided activities: 2h

Self study : 3h

### Introduction to project research and development

**Description:**

Execution projects in building construction. Characterization of the properties of materials; adaptation of traditional materials to new demands and regulatory requirements; development of new materials. Project requirements: structural, habitability and comfort. Reinterpretation of technologies and alternatives.

**Related activities:**

Activity 8. Introduction to the project.

Activity 9. Project.

Activity 10. Summary.

**Full-or-part-time:** 19h

Theory classes: 14h

Guided activities: 2h

Self study : 3h

## GRADING SYSTEM

Continuous assessment

## EXAMINATION RULES.

Activities related to the contents of the subject are carried out (70% of the mark) and a final synthesis document / object (30% of the mark)