

## Course guide

# 310187 - 310187 - Existing Building Intervention Techniques (2)

Last modified: 24/11/2023

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

**Degree:** MASTER'S DEGREE IN DIAGNOSIS AND INTERVENTION TECHNIQUES IN BUILDING CONSTRUCTION  
(Syllabus 2020). (Compulsory subject).

**Academic year:** 2023    **ECTS Credits:** 3.0    **Languages:** Spanish

### LECTURER

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**Coordinating lecturer:** Mireia Barnadas i Ribas

**Others:** Mireia Barnadas i Ribas  
Antònia Navarro Ezquerro  
Manuel Agustíño Otero

### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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#### Specific:

CE1MUDITIE. To recognize the materials and the construction techniques of each historic period and to value its influence on architecture.

CE3MUDITIE. To identify the keys of the historical building's documentation processes.

CE10MUDITI. To acquire an evaluation methodology starting from observed or measured data and from the results of the analysis processes with numerical support.

CE12MUDITI. To make decisions based on the analysis of the results.

CE13MUDITI. To acquire knowledge about the specific techniques for the correction of injuries and improvements of the existing buildings.

CE15MUDITI. To carry out an original exercise individually to be presented and defended before a University tribunal. It should consist of work in the field of diagnosis and intervention techniques in the building of a professional nature. The fact is, to synthesize and integrate the skills acquired into the teaching.

#### Generical:

CG1MUDITIE. To apply the knowledge acquired in the complex problem's resolution in any sector of the existing building.

CG2MUDITIE. To use the tools for the research activities, as can be the data analysis and processing, as well as research techniques and methodology.

CG4MUDITIE. To identify, choose and apply the intervention techniques on existing buildings for its rehabilitation or restoration.

#### Transversal:

CT3MUDITIE. (ENG) Treball en equip. Ser capaç de treballar com a membre d'un equip interdisciplinari, ja sigui com un membre més o realitzant tasques de direcció, amb la finalitat de contribuir a desenvolupar projectes amb pragmatisme i sentit de la responsabilitat, assumint compromisos, tenint en compte els recursos disponibles.

CT4MUDITIE. (ENG) Ús solvent dels recursos de la informació. Gestionar l'adquisició, l'estructuració, l'anàlisi i la visualització de dades i informació en l'àmbit de la seva especialitat i valorar de forma crítica els resultats d'aquesta gestió.

CT5MUDITIE. Third language. To know a third language, preferably English, with an oral and written adequate level and in agreement with the necessities that the graduates will have.

#### Basic:

CB6MUDITIE. To possess and comprehend the knowledge that provides a basis or opportunity of being original on the development and/or implementation of ideas, often in an investigation context.

CB7MUDITIE. For the students to know how to apply the knowledge acquired and their problem-solving capacity in new environments or slightly familiar, within wider contexts (or multidisciplinary) related to their area of study.

CB8MUDITIE. For the students to be able to integrate knowledge and face the complexity of making judgements based on some information which, being incomplete or limited, includes considerations about the social and ethical responsibilities linked to the application of their knowledge and judgement.

CB9MUDITIE. For the students to know how to communicate their conclusions and the knowledge and underlying reasons to a specialised and a non-specialised public on a clear and concise way.

CB10MUDITI. For the students to obtain learning skills that allows them to continue studying on a mainly autonomous and self-taught way.

## TEACHING METHODOLOGY

The course is developed through two-hour theoretical sessions, mostly taught by the faculty, but complemented by various interventions of external professionals invited to present real cases of intervention directly related to the syllabus.

## LEARNING OBJECTIVES OF THE SUBJECT

This course enables students to acquire the basic knowledge necessary to intervene in the skin of buildings, both in the exterior envelope (basically, facades and roofs) and in the interior cladding (flooring, vertical surfaces and the underside of roofs).

The content has been divided into four main blocks. The first introduces general concepts on intervention in existing buildings, such as the values of buildings, intervention criteria and working methods; it also identifies and details the differences in general approach between actions carried out in buildings with special heritage value (architectural restoration) and those carried out in buildings that either do not have it or have it to a lesser extent (rehabilitation). The following three blocks focus on how to intervene in each of the three defined areas (facades, roofs and interior finishes), offering a broad reminder of typologies and materials, a summary of the most common lesions in each of them and a detailed exposition of the most common intervention techniques.

## STUDY LOAD

Type	Hours	Percentage
Hours medium group	3,0	4.00
Guided activities	6,0	8.00
Self study	54,0	72.00
Hours small group	3,0	4.00
Hours large group	9,0	12.00

**Total learning time:** 75 h

## CONTENTS

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#### Description:

Intervention criteria. Rehabilitation versus architectural restoration. Respect and safeguarding of the recognized values of the buildings to be restored. Authenticity, compatibility, durability, reversibility, minimal intervention, legibility and false history. The transdisciplinary team. Methods, phases and types of intervention.

#### Full-or-part-time: 2h

Theory classes: 2h

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**Description:**

Presentation, pathology and roof therapeutics: introduction. General reflections on how to intervene: specific casuistry, specific conditioning factors, auxiliary means, analysis of possible problems, application of the CTE, design exercises, execution process. Concepts and strategies for both design and construction. Pitched roofs and flat roofs. Presentation of real cases of intervention in different types of roofs.

**Full-or-part-time:** 8h

Theory classes: 6h

Guided activities: 2h

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**Description:**

Presentation, pathology and therapy of facades: introduction. General reflections on how to intervene: specific casuistry, specific conditioning factors, auxiliary means, analysis of possible problems, application of the CTE, design exercises, execution process. Concepts and strategies for both project and construction. Historic façades: exposed masonry (stone ashlars, masonry, solid brick, etc.), continuous cladding (massive grouting, plastering, rendering, stucco, sgraffito, monolayers, etc.), discontinuous cladding (alkyd rendering, plastering, stucco, sgraffito, monolayers, etc.), discontinuous cladding (alkyd rendering, sgraffito, etc.), discontinuous coatings (tiling, cladding, wainscoting, baseboards, etc.), closing elements (carpentry, glazing, stained glass, stained glass, etc.) and singular decorative elements (stone, artificial stone, terracotta, wrought iron, cast iron, etc.). Water-based chemical cleaning (water curtain, low pressure water, vaporized water, atomized water, salt-free absorbent material dressings, gels, biocides), solvent-based chemical cleaning (solution, dispersion, emulsion, salt-free absorbent material dressings, gels), mechanical cleaning (manual or mechanical brushing, abrasive projection, ultrasound, microwaves) and laser cleaning. Forms of alteration (disjunctions, disaggregations, gaps, cracks, fractures, etc.), intervention systems (screeds, replacements, consolidations, patinas and glazes, waterproofing, anti-graffiti protection), verification systems of the executed interventions and maintenance strategies. Protections: knowledge of products (technical data sheets, user manuals), suitability of protective products (colors, gloss, textures), execution of preliminary tests, types of products, surface consolidations, waterproofing, anti-graffiti and final treatment control tests. Contemporary facades. Presentation of real interventions on different types of facades.

**Full-or-part-time:** 10h

Theory classes: 9h

Laboratory classes: 1h

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**Description:**

Presentation, pathology and therapy of historic interior finishes: introduction. General reflections on how to intervene: specific casuistry, specific conditioning factors, auxiliary means, analysis of possible problems, design exercises, execution process. Concepts and strategies for both design and construction. Stone pavements, wood, ceramic tile, tesserae mosaic, continuous terrazzo, ceramic stoneware mosaic (Nolla mosaic), hydraulic mosaic, fire inlaid mosaic (encaustic tiles), terrazzo tiles, etc. Fabric ceilings, plastered ceilings, vaulted ceilings, etc. Ceilings with the structure visible: vaults, coffered ceilings, panelled ceilings, joists with different beams, etc. Continuous vertical coverings: plastered, plastered, stuccoed, sgraffitoed, fire-plastered, plastered, painted, wallpapered, etc. Discontinuous vertical coverings: tiling, cladding, baseboards, wainscoting, etc.

**Full-or-part-time:** 8h

Theory classes: 6h

Laboratory classes: 2h

## GRADING SYSTEM

The course will be evaluated continuously, through the development of a group work; the four partial expositions foreseen throughout the four-month period will allow the students' learning process to be evaluated and improved as the course progresses.