Course guide

310187 - 310187 - Existing Building Intervention Techniques (2)

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: 2022   ECTS Credits: 3.0   Languages: Catalan, Spanish

LECTURER

Coordinating lecturer: Judith Ramírez-Casas
Others: Judith Ramírez-Casas
Antònia Navarro Ezquerra
Manel Iglesias Campos

PRIOR SKILLS

Have taken the Q1 Autumn subjects of the same master’s degree

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

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.

General:
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 interdisciplinar, 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.
CB10MUDITIE. For the students to obtain learning skills that allows them to continue studying on a mainly autonomous and self-taught way.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT
The subject of intervention techniques Y provides students with an approach to basic knowledge of building skin interventions. Understanding as skin, all those continuous or discontinuous coatings of diverse materials, either interior or exterior or of walls, floors or ceilings. In short, all the sub-systems that protect or simply beautify other elements, structural, dividing or closing.
To the subject we will give some brushstrokes of the different types of materials that we can find in these skins, especially referring to the traditional ones, we will describe their characteristics and taking into account that to the subject of the previous four-month period (Pathological processes and diagnosis) we will have already seen the injuries and dysfunctions of these elements, the student with all this information will have to be able to acquire the knowledge of the different methods and techniques of intervention.

The course has been divided into 5 different blocks:
The first block will be an introduction of general concepts, some of reminder and above all to understand how to face an intervention from the documentation, information and/or results of the diagnostic works.
The second block will refer to the materials and construction techniques of the construction sub-systems. In the third block, the cleaning and different techniques will be discussed, depending on the material in question. In the fourth block, restitutions and consolidations will be dealt with, and finally the last and fifth blocks will deal with protections.
In the last blocks, referring to the different types of interventions, the importance of defining the tests to verify the results of the actions will be highlighted. Not only is the intervention itself important, but also the verification of what the intervention has been adequate. Bearing in mind that each building and each construction sub-system will usually have different characteristics from other cases, these verification tests must always be carried out.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Self study</td>
<td>54,0</td>
<td>72.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>3,0</td>
<td>4.00</td>
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<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>8.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>9,0</td>
<td>12.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>3,0</td>
<td>4.00</td>
</tr>
</tbody>
</table>

Total learning time: 75 h
## CONTENTS

### Block 1.- Introduction, previous concepts and general intervention criteria

**Description:**
In this first part, and based on the documentation, information and/or results of the diagnostic work, it is intended to initiate the student in general concepts and criteria when intervening in all the elements that make up facades, pavements and ceilings, and in short, of the different epidermis, interiors and exteriors that are integrated into a building.

Interpretation and assessment of the diagnosis and diagnosis documentation. Assessment of whether there is a lack of information, whether the information we have is sufficient and whether it is necessary to carry out tests. The legends and interpretation.

Intervention criteria: Respect for and safeguarding construction elements, materials, execution techniques and aging. The reversibility of the actions. The false histories. Knowledge of values.

Methods, phases and types of interventions. The multidisciplinary work of this type of intervention.

**Full-or-part-time:** 3h

Theory classes: 3h

### Block 2.- Elements and materials to intervene

**Description:**
In this second block there will be a few brief brushstrokes of the materials and construction subsystems that may be the subject of some type of intervention. The lack of time to expand on this section and understanding that a priori the student has acquired knowledge about these aspects, this block will be supported fundamentally with the recommendation of abundant bibliography of a diverse nature.

**Materials:**
- Traditional: Stone, wood, ceramics, iron (forging, castings, etc.), glass, plaster, lime, natural cements, artificial stones, earth, mortars in general and paints.
- Non-traditional: The same as in the previous section but with properties and productions adapted to post-pre-industrial technologies. For example, monolayer mortars, tile coatings, etc.

**Construction subsystems:**
- Continuous coatings (coated, stuccoed, graffitous, papered, painted, glazed, etc.) and discontinuous (cladding, tiled)
- Ceramic floors, artificial stone, cement, plaster, mortars, etc.
- Coffered ceilings, encanyissats, wallpaper, etc...
- Decorative elements (natural or artificial stone cladding, terracotta, decorative elements (moldings, ornamentation), stained glass, etc...)

**Full-or-part-time:** 4h

Theory classes: 4h

### Block 3.- Cleaning

**Description:**
Cleaning techniques and types; Mechanical: sandblasting (pressure and controlled granulometries) with water (liquid, steam and controlled pressure), manual. Chemicals (pH s, surface actions, solutions, etc.), ultrasound and laser.

**Full-or-part-time:** 6h

Theory classes: 4h
Laboratory classes: 2h
Block 4.- Refunds and reintegrations

Description:
Internal consolidations (Injections and casts). Shape restitutions (volumetric). Specific or partial substitutions
Verification systems for this type of intervention.

Full-or-part-time: 10h
Theory classes: 8h
Laboratory classes: 2h

Block 5.- Of the protections

Description:
Knowledge of the products (technical sheets, user manuals). Suitability of protective products; colors, brightness, textures, etc.
The execution of preliminary tests.
Type of protections; Superficial consolidations. Waterproofing. Anti-graffiti.
Final treatment control tests.

Full-or-part-time: 4h
Theory classes: 4h

Visit to a practical case

Description:
Adapting to the possibility of accessing a building where the intervention is being carried out, a monograph of the different actions will be carried out and the building will be visited.

Full-or-part-time: 3h
Practical classes: 3h

GRADING SYSTEM

The qualification system will be through continuous evaluation work in which partial evaluations will be carried out throughout the course. (Value 70%).
The remaining 30% will correspond to active participation in the three complementary activities, the two laboratories and the visit to the building, distributed in 10% each.

BIBLIOGRAPHY

Basic: