

Course guide

310404 - 310404 - Introduction to the Rehabilitation of Existing Buildings

Last modified: 24/11/2023

Unit in charge:	Barcelona School of Building Construction		
Teaching unit:	753 - TA - Department of Architectural Technology. 756 - THATC - Department of History and Theory of Architecture and Communication Techniques. 751 - DECA - Department of Civil and Environmental Engineering.		
Degree:	MASTER'S DEGREE IN ADVANCED BUILDING CONSTRUCTION (Syllabus 2014). (Compulsory subject).		
Academic year:	2023	ECTS Credits: 5.0	Languages: Catalan, Spanish

LECTURER

Coordinating lecturer:	Hormias Laperal, Emilio
Others:	Rosselló Nicolau, Maribel Sanmartí Martínez, Claudia Olona Casas, Joan Buill Pozuelo, Felipe Bosch Prat, Mireia

PRIOR SKILLS

The student must have a basic knowledge of construction systems and materials used in traditional construction.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

- 6. Capacity of innovation: identify the reasons and the mechanisms of the technologic and technical changes.
- 8. Design and measure reinforcements of structural elements.

Generical:

- 9. Prepare to communicate with efficiency, orally but also in written.
- 10. Develop and/or apply ideas with originality in a context of investigation, identifying and formulating hypothesis or innovative ideas and submit them to a objectivity, coherence, and viability test.
- 17. Provide to the student the capacity to apply the knowledge acquired in the resolution of complex problems in any sector of the building construction.

Transversal:

- 12. 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.
- 13. 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.

Basic:

2. Possess and understand knowledge which provide a basis or opportunity to be original in the development and/or application of ideas, usually in a context of research.
3. The students must be able to apply the acquired knowledges and their ability of resolution of problems in new or little known environments inside more wide environments (or multidisciplinary) related with their study field.
4. The students must be able to integrate knowledges and front to the complexity to formulate opinions from an information which, being incomplete or limited, includes reflections about the social and ethical responsibilities linked to the application of their knowledges and opinions.
5. The students must be able to communicate their conclusions and the knowledges and ultimate reasons which support to specialised and non-specialised audiences in a clear mode and without ambiguities.
1. The students must possess the learning abilities which allow them to continue studying in a way which should be to a large extent self-directed and autonomous.

TEACHING METHODOLOGY

Master class, through expository and participatory classes.

- Cooperative learning
- Project-based learning
- Case studies.

LEARNING OBJECTIVES OF THE SUBJECT

The subject is structured in 4 modules. A first introductory module provides an overview of rehabilitation and specifies the scope of the subject. A second Module develops the approach to knowledge of the building, generating rigorous information that will represent the starting point of the next section. In the third Module and through the reflection of said information, an order of values and priorities of the study building will be established. In the last Module different methods will be proposed to face a rehabilitation evaluating the strong points and the weak points of each one of them. Adapting in each content a series of practical exercises based on case studies.

The learning objectives of the subject are summarized in knowing tools for the analysis and development of practical skills that allow the student to be able to:

- Develop the characterization of a building
- Learn to value a building
- Evaluate different procedures to establish basic guidelines for a rehabilitation project.

STUDY LOAD

Type	Hours	Percentage
Guided activities	7,5	6.00
Hours large group	17,5	14.00
Self study	90,0	72.00
Hours small group	5,0	4.00
Hours medium group	5,0	4.00

Total learning time: 125 h



CONTENTS

Module I. Foundations of rehabilitation

Description:

This first Module deals with the general vision of an intervention, which requires a first phase of knowledge, which is followed by a pre-project, a basic and execution project, then its execution and finally maintenance.

Specific objectives:

Know and understand the phases necessary to intervene correctly in a building.

Be aware of the magnitude of the different stages that are necessary to intervene in existing buildings

Related activities:

Activity 1. Values

Activity linked to Module I where students in groups of 2-3 people will develop a work regarding instrumental, significant and documentary values.

Related competencies :

CE11. Design and measure reinforcements of structural elements.

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: 6h

Theory classes: 2h

Practical classes: 2h

Self study : 2h

Module II. Building knowledge

Description:

Knowledge of the building

To start the intervention in an existing building, its characterization must be carried out, which consists of identifying the particular attributes from construction to the present and, consequently, being able to propose an appropriate intervention avoiding generalization. In order to individualize it.

Said characterization covers the history, the place, the uses, the material and constructive constitution, physical and spatial transformations, promotion and authorship, singularity and the performance character.

In this module the student will interpret the characteristics of the different historical stages. This knowledge constitutes the starting point that allows us to approach the next step: assessment.

Specific objectives:

Interpret the characteristics of the different historical stages.

Have the tools and practical skills to develop the characterization of an existing building.

Related activities:

Activity 2. Characterization

Activity linked to Module II where students in groups of 2-3 people will carry out a work regarding the characterization of a complete building.

Related competencies :

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.

CE1. Capacity of innovation: identify the reasons and the mechanisms of the technologic and technical changes.

CB8. The students must be able to integrate knowledges and front to the complexity to formulate opinions from an information which, being incomplete or limited, includes reflections about the social and ethical responsibilities linked to the application of their knowledges and opinions.

Full-or-part-time: 25h

Theory classes: 5h

Practical classes: 5h

Self study : 15h

Module III. Building reflection

Description:

Once we have perfectly identified the building, the next step will be to discern the values it contains to conserve and transmit to future generations, establishing a system of values for the buildings and / or their parts.

Specific objectives:

Know and understand the values that an existing building transmits to us.

Assess the intervention and / or conservation actions in order to transmit the building's values to future generations.

Related activities:

Activity 3. Reflection

Activity linked to Module III where students in groups of 2-3 people will develop a reflective work on the values of the building.

Related competencies :

CG4. Develop and/or apply ideas with originality in a context of investigation, identifying and formulating hypothesis or innovative ideas and submit them to a objectivity, coherence, and viability test.

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.

CB8. The students must be able to integrate knowledges and front to the complexity to formulate opinions from an information which, being incomplete or limited, includes reflections about the social and ethical responsibilities linked to the application of their knowledges and opinions.

Full-or-part-time: 25h

Theory classes: 5h

Practical classes: 5h

Self study : 15h

Module IV. Methods

Description:

In this Module, different methods to face rehabilitation in an orderly and rational way are presented.

Rehabimed Method

Systemic method of intervention in existing buildings.

Objective Restoration Method (SCCM)

Specific objectives:

Evaluate the three methods that are developed in module IV.

Establish a comparison between the three evaluated methods, in order to reflect the weak points and strong points in each of the cases.

Related activities:

Activity 4. Comparison and debate of the different methodologies

Activity linked to Module IV where students in groups of 2-3 people will carry out a work regarding the advantages and disadvantages of the chosen Method and a debate will be established between the different groups that will draw general conclusions from the analytical methods.

Related competencies :

CB6. Possess and understand knowledge which provide a basis or opportunity to be original in the development and/or application of ideas, usually in a context of research.

CB8. The students must be able to integrate knowledges and front to the complexity to formulate opinions from an information which, being incomplete or limited, includes reflections about the social and ethical responsibilities linked to the application of their knowledges and opinions.

CB9. The students must be able to communicate their conclusions and the knowledges and ultimate reasons which support to specialised and non-specialised audiences in a clear mode and without ambiguities.

Full-or-part-time: 14h

Theory classes: 3h

Practical classes: 3h

Self study : 8h

GRADING SYSTEM

The subject is divided in four sections. Each part is evaluated from the works done during the course. The final mark is unique and comes from the combined evaluation of the four parts.

BIBLIOGRAPHY

Complementary:

- Arriaga Martitegui, Francisco. Manual de diagnosi, patologia i intervenció en estructures de fusta. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1995. ISBN 84-87104-22-3.
- Lozano Apolo, Gerónimo; Lozano Martínez-Luengas, Alfonso.. Curso informes, dictámenes y periciales (adaptado a la L.E.C.). Gijón: Alvizoras libros, 2001. ISBN 9788486889838.
- Casanovas i Boixereu, Xavier; Graus, Ramon; Rossell i Amigó, Joan Ramon. Manual de diagnosi i intervenció en sostres unidireccionals de formigó i ceràmics. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1993. ISBN 84-87104-17-7.
- Graus, Ramon. Manual per a la diagnosi i el tractament de l'amiant a la construcció. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1998. ISBN 84-87104-37-1.
- Casanovas i Boixereu, Xavier; Castro Villalba, Antonio; González Moreno-Navarro, José Luis. Manual de diagnosi i intervenció en sistemes estructurals de parets de càrrega. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1995. ISBN 84-87104-23-1.
- Esbert Alemany, Rosa M. Manual de diagnosis y tratamiento de materiales pétreos y cerámicos. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1996. ISBN 84-87104-29-0.
- Bellmunt i Ribas, Rafael. Manual de diagnosis e intervención en estructuras de hormigón armado. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 2000. ISBN 84-87104-43-6.
- Casanovas i Boixereu, Xavier; Graus, Ramon; Rossell i Amigó, Joan Ramon. Manual de diagnosi i intervenció en sostres unidireccionals de formigó i ceràmics. Barcelona: Col·legi d'Aparelladors i Arquitectes Tècnics de Barcelona, 1993. ISBN 84-87104-17-7.