UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

Course guides
310415 - 310415 - Historical-Architectural-Constructive Analysis of Existing Buildings

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Unit in charge: Barcelona School of Building Construction
Teaching unit: 756 - THATC - Department of History and Theory of Architecture and Communication Techniques.
751 - DECA - Department of Civil and Environmental Engineering.

Degree: **Academic year:** 2020 **ECTS Credits:** 5.0
Languages: Spanish

LECTURER

Coordinating lecturer: Maribel Rosselló Nicolau

Others: Felipe Buil Pozuelo

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
6. Capacity of innovation: identify the reasons and the mechanisms of the technologic and technical changes.
7. Evaluate the performance of a ground according to its characteristics and the kind of foundation.
8. Make a model of structures of buildings and evaluate the load they can support.

Generical:
10. Provide to the student the capacity to apply the knowledge acquired in the resolution of complex problems in any sector of the building construction.
11. Prepare to communicate with efficiency, orally but also in written.

Transversal:
9. 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:
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.
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 responsabilities 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.

TEACHING METHODOLOGY

The subject is organised, in first place, by masterful classes, where the faculty will present the basic guidelines which define each one of the contents of the subject. Secondly, in some of the sessions one part of them will be dedicated to individual expositions of the participants of the class. Concurrently, we will analyze a common study case as a guide and a practice.
There will also be done some isolated exercises linked to the graphical elevations.

LEARNING OBJECTIVES OF THE SUBJECT

Recognise the materials, the techniques and the spatial structures of the quotidian built heritage.
Recognise the technical changes produced in the construction process in the transition from the pre-industrial world to the industrial world.
Value the application of the materials, the techniques and the spatial structures in the architecture of each historical moment.
Value the interrelations between the monumental architecture and the quotidian residential architecture.
Determine the period of construction of a building.
Use the existing tools and resources for the documentation of a building.
Use and apply the advanced techniques of graphical elevation (terrain photogrammetry, laser scanner, etc.) of the building.

STUDY LOAD

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

Total learning time: 125 h

CONTENTS

title english

Description:
Knowledge and analysis of the own residential architecture of a pre-industrial context taking into account its configuration, materials, techniques and spatial structures which make it possible.
Study the architectural and constructive features of the masia, the urban buildings and the buildings linked to determined geographical and physical contexts.

Full-or-part-time: 2h
Theory classes: 2h

title english

Description:
XVIII Century and beginnigs of the XIX century.
Historical-architectural contextualisation. Study of the residential architecture ("la casa d'escaleta", palaces and big homes, la Barceloneta as example).
Study of the manufacturing architecture. Masonry and catalan vault.

Changes in the middle of XIX century.
Historical-architectural contextualisation. The configuration of the neighbour buildings. Urban refurbishment for the creation of housing. Palaces and unique homes. Functional architecture and equipments (establishments, factories). Systematization of the load-bearing walls. Molten iron. Interior and exterior finishes.

Changes in the last third of the XIX century.
Historical-architectural contextualisation. Universal Exposition of Barcelona. The splendour of the Eixample of Barcelona. Palaces inside residential buildings. Functional architecture and equipments: factories (units), markets, hospitals, big schools, exposition pavilions. Structural iron and load-bearing walls. Appearence of artificial stone. Interior and exterior finishes.

Beginnings of the XX century (from 1914 to 1936).
Historical-architectural contextualisation. Residential heritage: the outlying Eixample; the contribution of the modern movement, the evolution of the hygiene space. Functional architecture and equipments: office buildings (Via Laietana), factories, schhols (Grup escolar Baixeres), institutions of the Mancomunitat, sanatoriums (Torrebonica), International Exposition pavilions. Cement and reinforced concrete. Appearence of the reticulated structures. Beginnings of the steel. Interior and exterior finishes.

Post-war years.
Contextualisation. Residential architecture: first initiatives of social housing, residential housing in wealthy neighbourhoods. Functional architecture and equipments: factories. Constructive recession: autarchy systems.

Recovery years.
Contextualisation. Residential housing: residential zones, modernisation of the kitchen space. Functional architecture and equipments: pavilions, neighbourhood churches, factories, universities. Gradual generalization of the reinforced concrete. Prestressed joists. Load-bearing walls.

The boom of the construction.
Contextualisation. Residential architecture: constructive permissiveness, rise of the suitability for building. Functional architecture and equipments: Industrial housing buildings. Reinforced concrete and load-bearing walls.

Full-or-part-time: 15h
Theory classes: 12h
Guided activities: 3h

title english

Description:
Know and use the different documentary sources suitable for the study and documentation of a building. Secondary documentary sources: bibliography and articles (database). Primary documentary sources: written documents, photographic documents, oral documents.

Full-or-part-time: 6h
Theory classes: 2h
Guided activities: 4h

title english

Description:
Introduction. Architectural elevations. Graphical representation.
Know and use the existing tools and resources for the graphical documentation of a building.
Know and use the advanced techniques of graphical elevation of buildings in the inspection of the existing buildings.

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

title english

Description:
Tools. Direct and indirect methods. Geometrical basis.
Photogrammetry. 3D digitizers. Laser scanner.
Know and use the tools and the topographic and photogrammetrical methods suitable for the fulfilment of non-cartographic elevations.
Know and use the advanced tools of the graphical elevations (terrain photogrammetry, laser scanner, etc.) of the building.
Practical case.

Full-or-part-time: 9h
Theory classes: 6h
Guided activities: 3h

ACTIVITIES

name english

Description:
Visit an archive of the architecture field to know by first hand the features of the documentary collection.

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

name english

Description:
Do a practical exercise. Validate some of the contents of the sessions.

Full-or-part-time: 3h
Guided activities: 3h

GRADING SYSTEM

The competences of the subject define two areas: the ones regarding to the historical, architectural and constructive knowledge of the heritage, on the one hand from the knowledge of the documentary sources and the contextualisation of the same heritage (70%) and, by the other hand, from the graphical representation by means of the application of advanced techniques (30%).

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