Course guides
310740 - 310740 - Workshop 8: Projects

Unit in charge: Barcelona School of Building Construction
Teaching unit: 752 - RA - Departamento de Representación Arquitectónica.
753 - TA - Department of Architectural Technology.
732 - OE - Department of Management.
Degree: BACHELOR’S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2019).
(Compulsory subject).
Academic year: 2021  ECTS Credits: 9.0  Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Sarro Garcia, Pedro
Others: Baringo Sabater, Pedro
         Hernanz Hernanz, Justo
         Jiménez Rodríguez, Verónica

PRIOR SKILLS
Have successfully passed the subjects up to 3rd year, especially those related to Construction, facilities and structures, as well as knowledge of the processes of Planning, organization of works, Budgets and cost control

REQUIREMENTS
Consolidated knowledge of structures, construction, facilities, budgeting and planning.
Medium-high level in the use of computer tools, especially 2D or 3D drawing.
Not enrolling in other subjects that totally or partially coincide with the workshop schedule 8

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Specific:
FE-01. FE-1 Ability to understand and make the graphical documentation of a project, to do data gathering, surveying of plans and geometric control of construction units.
FE-05. FE-5 Ability to adapt the construction materials to the typology and use of the building, manage and run the receipt and quality control of the materials, its implementation in the construction, the control of execution of the construction units and the realization of trials and final tests.
FE-07. FE-7 Ability to identify the constructive elements and systems, define its function and compatibility, and its implementation to construction in the construction process. Plan and solve constructive details.
FE-13. FE-13 Ability to apply the technical regulation to the construction process, and generate documents of technical specification in the constructive procedures and methods of buildings.
FE-15. FE-15 Aptitude for the pre-measuring, design, calculation and verification of structures and manage its materials execution.
FE-16. FE-16 Ability to develop constructively the facilities of a building, control and plan its execution and verify the service and receipt trials, as well as its maintenance.
FE-28. FE-28 Aptitude to write technical projects of constructions, which don't require architectural projects, as well as projects of demolition and design.
FE-29. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form
Transversal:
04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
07 AAT N3. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

TEACHING METHODOLOGY

In the subject, the execution project of a real building will be developed, based on a basic project provided at the beginning of the semester.

The work will be carried out in groups of three students who, collaborating with each other, must manage to deliver at the end of the semester, a document comparable to a professional execution project.

During the semester there will be four partial deliveries (activities 1, 2, 3 and 4), each with a defined main aspect of the project. These deliveries will be presented and discussed in class.

In the program of the subject the contents of each week of class are specified, the dates of the partial deliveries will also be indicated. At the end of the semester, the last delivery (activity 5) will be formalized, consisting of the final document that will be the execution project of the building under study.

The evaluation of the subject will be continuous from the qualification of each of these activities. When evaluating the subject continuously, there will be no reevaluation exam.

It should be noted that as it is a 9 ECTS subject, each student is represented by a 90-hour directed learning in class and an autonomous learning of 135 hours, during the semester.

LEARNING OBJECTIVES OF THE SUBJECT

This workshop aims to put into practice, on a cross-cutting basis, many of the knowledge acquired during student training in one of the main professional attributions, such as development of technical projects.

The general objectives of the subject are two:

1.- Study, graphic analysis, and use of the most appropriate Construction Systems, for the resolution of each topic proposed in class. Consider The How? and what? of each issue, to carry out its execution.

2.- Integration of the student in a work team, to get involved in the analysis and resolution of problems in a coordinated and collaborative way with the rest of the group members.

At the end of the course the student must be able to:

Manage, analyze and represent, through graphics and the appropriate technical lexicon, the executive plans of three parts of a work corresponding to each of the blocks into which the subject is divided.

Work and interact with solvency with other agents in the world of construction.

Coordinate and optimize the resources available to him.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>135,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>90,0</td>
<td>40.00</td>
</tr>
</tbody>
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Total learning time: 225 h
BLOCK 1. STRUCTURAL INTERVENTION

Description:
In this first Block the student will study the structural typology of the building used in the course as a study case, calculating weight loads and assessing a possible structural intervention (preferably a shoring in a load bearing wall) that must be dimensioned, and adequately drawn including details. In addition the construction process must be represented through implementation plans (buildable and valuable).

Specific objectives:
- Analyze the structure of a building, quantifying its loads, to be able to replace a structural element.
- Recognize the types of intervention and their constructive process.
- Calculate, design and detail the construction elements to be used.
- Graphically represent the constructive process of the proposed intervention.
- Make use of the appropriate technical language to define the different components and materials.

Related activities:
Activity 0 Preparation of the group presentation document and the content of the project to be developed.
Activity 1 Graphic diagram of building weight loads, and pre-calculations of the elements that will part of the structural intervention.
Activity 2 Constructive process plans and first approach to the execution plans.
Activity 3 BLOCK 1 Teamwork delivery and presentation.

Related competencies:
FE-29. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form.
FE-07. FE-7 Ability to identify the constructive elements and systems, define its function and compatibility, and its implementation to construction in the construction process. Plan and solve constructive details.
FE-01. FE-1 Ability to understand and make the graphical documentation of a project, to do data gathering, surveying of plans and geometric control of construction units.
FE-15. FE-15 Aptitude for the pre-measuring, design, calculation and verification of structures and manage its materials execution.

05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
04 COE N3. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
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Full-or-part-time: 75h
Theory classes: 2h
Practical classes: 28h
Self study: 45h
BLOCK 2. INFLUENCE OF THE FACILITIES IN BUILDINGS

Description:
Based on prior knowledge of the building acquired in the previous block, it is proposed to solve the constructive influence that facilities have on a building (preferably housing building). Students will work with the hypothesis that the building is the result of a comprehensive rehabilitation (or change of use), and the student must adapt the spaces for the new facilities according to current regulations. They will have to define the necessary elements, voids, conduits, frames for access, without creating easements and avoiding patios and facades.

It is not a matter of calculating facilities, but of remembering the basic components for each type of facilities and solving them through the building.

Specific objectives:
• Remember the essential elements that make up each of the facilities of a building.
• Define the most appropriate layout of each of the facilities, according to current regulations, so that easements are not created.
• Coordinate the layout of different facilities and know their incompatibilities
• Design and describe the construction elements that must be used in its implementation

Related activities:
Activity 4: Graphic diagram of the different centralizations of the building, technical conduits and other elements in the communal areas of the building.
Activity 5: Graphic diagram of the interior facilities layout.
Activity 6 BLOCK 2 teamwork delivery and presentation

Related competencies:
FE-29. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form
FE-28. FE-28 Aptitude to write technical projects of constructions, which don't require architectural projects, as well as projects of demolition and design.
FE-16. FE-16 Ability to develop constructively the facilities of a building, control and plan its execution and verify the service and receipt trials, as well as its maintenance.
05 TEQ N3. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.

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Full-or-part-time: 75h
Theory classes: 2h
Practical classes: 28h
Self study: 45h
Block 3. Building External Enclosures

Description:
In this block, students will apply, in a practical way again, the knowledge acquired during their previous training. They will be dealt with the rehabilitation of the facade/s and roof/s of the course building. They will required to solve, from a constructive, energetic and economic point of view, the encounters between different elements and with the street and neighboring buildings. The influence of the facilities designed in the previous block must be taken into account, especially on the roof, and the student must step in the design, materials and construction system used in each case.

Specific objectives:
- Recognize, from a constructive point of view, the different types of facades and roofs of a building
- Distinguish the characteristics and behaviour of the facades and roofs of a building, according to the construction system used. (Advantages and disadvantages)
- Represent and solve the component connections considering thermal and acoustic, requirements to the chosen typologies.
- Search, use and apply, from different commercial houses, the most suitable materials for each case.

Related activities:
Activity 7 Graphic diagram of the solution chosen for the different types of facades, indicating the details to be developed. Exploded parts, auxiliary elements, etc ...
Activity 8 Graphic diagram of the solution chosen for the different types of roof, indicating the details to be developed. Exploded parts, auxiliary elements, etc ...
Activity 9 Block 3 teamwork delivery and presentation

Related competencies:
FE-13. Ability to apply the technical regulation to the construction process, and generate documents of technical specification in the constructive procedures and methods of buildings.
FE-29. Aptitude to write documents which are part of execution projects made in a multidisciplinary form
FE-28. Aptitude to write technical projects of constructions, which don’t require architectural projects, as well as projects of demolition and design.
FE-07. Ability to identify the constructive elements and systems, define its function and compatibility, and its implementation to construction in the construction process. Plan and solve constructive details.
FE-01. Ability to understand and make the graphical documentation of a project, to do data gathering, surveying of plans and geometric control of construction units.
FE-05. Ability to adapt the construction materials to the typology and use of the building, manage and run the receipt and quality control of the materials, its implementation in the construction, the control of execution of the construction units and the realization of trials and final tests.
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Full-or-part-time: 75h
Theory classes: 2h
Practical classes: 28h
Self study: 45h

Grading system
Continuous evaluation with 5 evaluable activities, each of them with the following weight in the final grade:
Activity 1: 15%
Activity 2: 15%
Activity 3: 15%
Activity 4: 20%
Activity 5: 35%
There are no midterms or reevaluation exams.
EXAMINATION RULES.

Each activity will be evaluated by the teachers of the workshop and the grade will be obtained from the evaluations of each teacher. At the beginning of each activity, the content of the activity and the value of the different aspects of it will be published in Athena. The mark obtained in each activity will be the mark of each of the components of the working group.

BIBLIOGRAPHY

Basic:
- Código Técnico de la Edificación (CTE). 2006 Documento Básico de Ahorro de energia. (DB-HE0, HE1).
- Reglamento de Instalaciones Térmicas en los Edificios (RITE) y modificaciones.
- Instrucción de Hormigón Estructural (EHE-08).
- Código Técnico de la Edificación (CTE). 2006 Documento Básico de Salubridad (DB-HS1, HS2, HS3, HS4, HS5).
- Código Técnico de la Edificación (CTE). 2006 Documento Básico de Seguridad de utilizacion y accesibilidad. (DB-SUA1, SUA2, SUA3, SUA 9).
- Código Técnico de la Edificación (CTE). 2006 Documento Básico de Seguridad de utilizacion y accesibilidad. (DB-SUA1, SUA2, SUA3, SUA 9).

RESOURCES

Hyperlink:
- www.tectonica.es. TECTONICA. Construction details Magazine. nº6,7,8,36
- http://detallesconstructivos.cype.es/. Constructive details library CYPE ingenieros, SA
- www.detail-online.com. DETAIL. Construction Details Magazine