310150 - Historical Study and Graphic Representation for Rehabilitation

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 756 - THATC - Department of History and Theory of Architecture and Communication Techniques
753 - TA - Department of Architectural Technology

Academic year: 2017
Degree: BACHELOR’S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2015). (Teaching unit Optional)
BACHELOR’S DEGREE IN BUILDING CONSTRUCTION SCIENCE AND TECHNOLOGY (Syllabus 2009). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: English

Teaching staff
Coordinator: M. ISABEL ROSSELLO NICOLAU
Others: Emilio Hormias Laperal, Ruben Navarro González

Degree competences to which the subject contributes

Specific:
1. FB-1 Aptitude to use the applied knowledges related with the numerical and infinitesimal calculus, linear algebra, analytic and differential geometry, and the probabilistic and statistical analysis techniques and methods.
2. FB-2 Applied knowledge of the general mechanics principles, the statics of structural systems, the mass geometry, the principles and methods of analysis of the elasticity of solids.
3. FB-3 Ability to apply the systems of spatial representation, the development of the sketch, the proportionality, the language and the techniques of the graphical representation of the constructive elements and processes.
4. FE-3 Ability to work with the topographic tools and proceed to the graphical survey of plots and buildings, and its setting in the plot.
5. FE-6 Knowledge of the historical evolution of the constructive techniques and elements and the structural systems which have led to stylistic forms.
6. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form

Transversal:
7. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
8. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
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.
At the time of facing any restoration project it is essential the thorough knowledge of the existing building, a knowledge which must base on, necessarily, the graphic representation and the historic and documentary study of the building.

The ability to represent graphically the building allows to look over and recognize each one of the elements and parts of the building, only with this close and precise relation which the drawing requires, it is possible to achieve the identical approximation of the building to restore, and therefore, the essential basis where we must do the restoration project.

The historic and documentary study of the construction of a building is planned as an essential and necessary tool facing any restoration intervention. For the students, the reflection on the architecture in the contemporany Catalunya represents the knowledge of the reasons which have took to a determined way of buildings, in other periods genuine; and also to the use of some materials, some specific techniques. It allows the approximation by the students to the constructions which will be the object of intervention during their professional practice.

At the end of the subject, the students should be able to:
- Know and apply the different methodologies of surveys which take to the graphic definition of the whole building.
- Represent the elements and constructive details of existing buildings.
- Represent graphically damages in materials and construction systems.
- Define the constructive features of each period of the contemporary Catalan architecture.
- Identify the techniques and the materials used during the contemporary period.
- Determine the period of construction of a building.
- Explain the meaning of the different technical innovations appeared during the XIX and XX centuries.
- Connect the construction of the contemporary architecture with the terms and pre-existences of the traditional techniques.
- Identify the values of a determined architecture so that the student can value any intervention from a cultured planning.
- Use the existing tools and resources for the documentation of a building.

## Learning objectives of the subject

### Study load

<table>
<thead>
<tr>
<th>Total learning time: 45h</th>
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</thead>
<tbody>
<tr>
<td>Hours large group:</td>
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<tr>
<td>Hours medium group:</td>
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<tr>
<td>Hours small group:</td>
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<tr>
<td>Guided activities:</td>
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<tr>
<td>Self study:</td>
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</tbody>
</table>

The in-person learning hours consist on the one hand in teaching theoretical classes where the professor does a brief exposition to introduce the general learning objectives related with the basic concepts of the subject. Subsequently and by practical exercises the professor tries to motivate and involve the students so that they can participate actively in their own learning.

The lab learning is planned from the monitoring of an activity during all the course so that the students can put into practice the different objectives of the subject.

It exists specific teaching material which allows the student to acquire the necessary knowledge of each one of the contents of the subject.

Teaching methodology

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### Content

<table>
<thead>
<tr>
<th>C1 Graphic surveying</th>
<th>Learning time: 16h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 5h</td>
</tr>
<tr>
<td></td>
<td>Laboratory classes: 1h</td>
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<tr>
<td></td>
<td>Self study: 10h</td>
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</tbody>
</table>

**Description:**
- Definition and purpose of the graphic surveys.
- Stages of the graphic surveys.
- Realisation of sketches.
- Systems of measurement taking.
- Scale drawing.

**Related activities:**
- Activity 1: Graphic representation of a building. Study case.

<table>
<thead>
<tr>
<th>C2 Rectification of drawing and pictures. Graphic representation of constructive elements and injuries. Advanced systems of graphic surveying.</th>
<th>Learning time: 9h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 3h</td>
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<tr>
<td></td>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Self study: 5h</td>
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</tbody>
</table>

**Description:**
- Correction of drawings and pictures. Procedures for the obtaining of elevations from pictures.
- Graphic representation of constructive elements and damages. Representation criteria and graphic convention.
- Advanced systems of graphic survey.

**Related activities:**
- Activity 1: Graphic representation of a building. Study case.

<table>
<thead>
<tr>
<th>C3 Documental founds and historic study for the knowledge of the building</th>
<th>Learning time: 6h</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Theory classes: 1h</td>
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<tr>
<td></td>
<td>Laboratory classes: 1h</td>
</tr>
<tr>
<td></td>
<td>Self study: 4h</td>
</tr>
</tbody>
</table>

**Description:**
- Know and use the different documentary sources appropiated for the study and documentation of a building.
- Documentalist session.

**Related activities:**
- Activity 1: Study case.
- Activity 4: Inherited value of a building.
### C4 Components, constructive analysis and architecture of the building. The values of the building and his components

**Description:**
Value a building from its historic, cultural and architectural context. There will be done an initial explanation of the importance of the contextualisation of the building for its comprehension, analysis and intervention. From the different study cases we will establish the importance of the valuation of buildings. This content will be worked during all the course sessions.

**Related activities:**
- Activity 1: Study case.
- Activity 4: Inherited value of the building.
- Activity 5: Individual written exam.

<table>
<thead>
<tr>
<th>Learning time</th>
<th>Theory classes: 1h</th>
<th>Laboratory classes: 1h</th>
<th>Self study: 2h</th>
</tr>
</thead>
</table>

### C5 Materials and constructive systems of the preindustrial construction

**Description:**
In this content the students work:
- The construction in the pre-industrial Catalunya.
- Construction with stone: materials and techniques.
- Construction with wood: materials and techniques.
- Adobe, brick and ceramics.
- Coat of plaster techniques.
- Documentary tools and resources.

**Related activities:**
- Theoretical explanation in class:
  - Activity 1: Case of study.
  - Activity 4: Heritage value of the building
  - Activity 5: Individual test written

<table>
<thead>
<tr>
<th>Learning time</th>
<th>Theory classes: 3h</th>
<th>Self study: 8h</th>
</tr>
</thead>
</table>
### C6 the transformations of the XVIII century in the materials and constructive systems

**Description:**
In this content the students work:
- Rationality and fortifications.
- The origin of the modern Catalan construction.
- Documentary tools and resources.

**Related activities:**
- Theoretical explanation at class.
- Activity 1: Study case.
- Activity 4: Inherited value of the building.
- Activity 5: Individual written exam.

**Learning time:** 7h  
- Theory classes: 2h  
- Self study: 5h

### C7 Materials and constructive systems of the first industrialization

**Learning time:** 8h  
- Theory classes: 3h  
- Laboratory classes: 1h  
- Self study: 4h

**Description:**
In this content the students work:
- The road to the industrialization (1808-1875).
- Systematization of the Catalan construction.
- The arrival of the iron.
- Treating of the surfaces in the architecture.
- Infrastructures and equipments.
- Documentary tools and resources.

**Related activities:**
- Theoretical explanation at class.
- Activity 1: Study case.
- Activity 4: Inherited value of the building.
- Activity 5: Individual written exam.
## C8 Effects of the modernization in the materials and constructive systems

**Description:**
In this content the students work:
- Bases for the modernity (1875-1936).
- The splendour of the brick construction.
- The iron, symbol of the industrial progress.
- Techniques of the surfaces treating.
- The beginnings of the reinforced concrete.
- The construction between the tradition and the renovation.
- Documentary tools and resources.

**Related activities:**
- Theoretical explanation at class.
- Activity 1: Study case.
- Activity 4: Inherited value of a building.
- Activity 5: Individual written exam.

**Learning time:** 9h
- Theory classes: 3h
- Laboratory classes: 1h
- Self study: 5h

## C9 Evolution of materials and constructive systems from autarchy to globalization

**Description:**
In this content the students work:
- From the autarchy to the construction boom.
- From the oil crisis to the LOE.
- Documentary tools and resources.

**Related activities:**
- Theoretical explanation at class.
- Activity 1: Study case.
- Activity 4: Inherited value of a building.
- Activity 5: Individual written exam.

**Learning time:** 6h
- Theory classes: 3h
- Self study: 3h
### A1 GRAPHIC REPRESENTATION, ANALYSIS AND DOCUMENTATION OF A BUILDING. STUDY CASE.

**Hours:** 22h  
Guided activities: 1h  
Self study: 21h

**Description:**  
Fulfilment of a course exercise. Work in groups of three students. Each group will develop a study case from an existing building.

In this subject the activity of the work focus on the graphic survey and the historic study of the building studied. Surveying of the general plans of the buildings. Elevations, sections and façades. In the work documentation the students will have the help of the library staff.

**Support materials:**  
Works available in the departmental section as models.  
Tools and resources for the research made by the Servei de Biblioteques.  
Specific and supplementary bibliography.

**Descriptions of the assignments due and their relation to the assessment:**  
At the end of the four-month term the work is delivered and evaluated. It represents the 50% of the final evaluation (the graphic representation has a worth of 20% and the historic and documentary study a 30%).

**Specific objectives:**  
At the end of the practice, the students should be able to:  
Represent graphically the general plans of a building from sketches and pictures.  
Obtaining of the dimensions of the building by means of direct and indirect methods.  
Correction of drawings and pictures as a previous step for the obtaining of elevations.  
Use the specific documentary tools and resources.  
Manage the documentary and bibliographic models.  
Plan a research in the surroundings of the contemporany Catalan architecture from a scientific method.  
Analyze the most important constructive and/or technical characteristics of a construction or element.

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### A2 PRACTICE. GRAPHIC REPRESENTATION OF SYSTEMS AND CONSTRUCTIVE DETAILS

**Hours:** 4h 30m  
Laboratory classes: 1h  
Self study: 3h 30m

**Description:**  
Graphic representation of constructive systems and details of the building object of study.

**Support materials:**  
Works available in the departmental section as models.  
Tools and resources for the research made by the Servei de Biblioteques.  
Specific and supplementary bibliography.

**Descriptions of the assignments due and their relation to the assessment:**  
It represents a 10% of the final evaluation.

**Specific objectives:**  
At the end of the practice the students should be able to:  
Represent appropriately the construction systems by means of structural plans and constructive details.  
Use of the diedric and axonometric system in the study of details.
### A3 PRACTICE. GRAPHIC REPRESENTATION OF INJURIES.

**Description:**
Graphic representation of the damages detected in the building object of study.

**Support materials:**
- Works available in the departmental section as models.
- Tools and resources for the research made by the Servei de Biblioteques.
- Specific and supplementary bibliography.

**Descriptions of the assignments due and their relation to the assessment:**
It represents a 10% of the final evaluation.

**Specific objectives:**
- At the end of the practice the students should be able:
  - Represent suitably the damages detected in the building object of study. Representation on elevations, sections and surveys.
  - Correction of drawings and pictures as a previous step in the representation of damages.

**Hours:**
- Laboratory classes: 1h
- Self study: 3h 30m

### A4 PRACTICE. PATRIMONIAL VALUE OF A BUILDING

**Description:**
Understand and use the different documentary sources suitable for the study and documentation of the building to study (Study Case). Use the secondary documentary sources: bibliography and articles (data bases) and the primary documentary sources: written files, photographic files, oral files.

**Support materials:**
- Fullana, Miquel. Diccionari de les arts i oficis de la construcció.
- Diccionari Visual de la Construcció.
- Web: CORPUS.
- Bibliographic sources contemporary to the studied building.

**Descriptions of the assignments due and their relation to the assessment:**
It represents a 10% of the final evaluation.

**Specific objectives:**
- To have a global view of the building to study in its historic, cultural and architectural context.
- To use the informational resources suitably.

**Hours:**
- Laboratory classes: 1h
- Self study: 3h 30m

### A5 INDIVIDUAL TEST OF EVALUATION

**Hours:**
- Theory classes: 2h
- Self study: 10h 30m
Description:
Individual realisation in Atenea of an exercise of the corresponding topics which will cover all the specific learning objectives of the contents. Correction by the faculty.

Support materials:

Descriptions of the assignments due and their relation to the assessment:
I represents a 20% of the final evaluation.

Specific objectives:
At the end of the activity the students should be able to
- Write correctly.
- Express their knowledge in a clear and effective way.
- Identify the characteristics of the beginning of the modernist Catalan construction.
- Describe the role which the engineers play in the modernist Catalan construction.

Qualification system
The final mark is the addition of these partial marks:
\[ N_{\text{final}} = 0.50 \times A_1 + 0.10 \times A_2 + 0.10 \times A_3 + 0.10 \times A_4 + 0.20 \times A_5 \]

An = Activities

The continuous evaluation consist on doing different activities, individually or in groups, with summative and educational nature. This activities are done during the course (in and out of class).
The different activities contain the theory, practice and lab hours.

Regulations for carrying out activities
If some of the continuous evaluation or lab activities is not done, it will be considered as non-marked.
All the activities contain all the variety of the teaching methodology used and the objectives to achieve of the subject.
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Bibliography

Basic:


Complementary:


