310069 - Construction and Legislation

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 753 - TA - Department of Architectural Technology
Academic year: 2018
Degree:
- BACHELOR’S DEGREE IN BUILDING CONSTRUCTION SCIENCE AND TECHNOLOGY (Syllabus 2009). (Teaching unit Optional)
- BACHELOR’S DEGREE IN ARCHITECTURAL TECHNOLOGY AND BUILDING CONSTRUCTION (Syllabus 2015). (Teaching unit Optional)
ECTS credits: 3
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: ALEJANDRO FALCONES DE SIERRA
Others: JUSTO HERNANZ HERNANZ

Degree competences to which the subject contributes

Specific:
1. FB-5 Knowledge of the theoretical basis and the basic principles applied to the construction, of the fluid mechanics, the hydraulics, the electricity and electromagnetism, the calorimetry and thermal comfort, and the acoustics.
2. 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.
3. FE-4 Knowledge of the materials and traditional or prefabricated construction systems used in construction, their varieties and physical and mechanical features which define them.
4. 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.
5. 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.
6. FE-8 Knowledge of specific procedures for the material execution control of the construction.
7. FE-17 Ability to schedule and organise the constructive processes, the construction teams, the technical and human means for its execution and maintenance.
8. FE-18 Knowledge of the law of the construction and the contractual relations which occur in the different phases of the construction process, as well as the specific legislation, rules and regulations of the prevention and coordination in matters of safety and occupational health in construction.
9. FE-20 Ability for the management of the quality control in the building constructions, the writing, application, implementation and updating of manuals and quality plans, realisation of audits of management of the quality in the companies, as well as for the writing of the Building Log Book.
10. FE-21 Aptitude to analyse, design and execute solutions which facilitate the universal accessibility to the buildings and their environment.
11. FE-25 Ability to analyse and fulfil projects of evacuation in buildings.
12. FE-26 Knowledge of the framework of regulation of the management and the urban discipline.
13. FE-29 Aptitude to write documents which are part of execution projects made in a multidisciplinary form
14. FE-30 Ability of analysis of the execution projects and their transfer to the execution in constructions.
15. FE-31 Knowledge of the functions and responsibilities of the agents which intervene in the construction and their
The subject expects to provide a general view related with the writing of a facilities project to the students, by means of the necessary development methodology. "Transversal:

16. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.

17. ENTREPRENEURSHIP AND INNOVATION: Knowing about and understanding how businesses are run and the sciences that govern their activity. Having the ability to understand labor laws and how planning, industrial and marketing strategies, quality and profits relate to each other.

18. 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.

Teaching methodology

The directed learning hours consist on the one hand in teaching theoretical classes (big group) where the faculty 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. It is used support material in detailed teaching plan, by ATENEA: learning objectives by contents, concepts, examples, evaluation and directed learning activities schedules and bibliography. On the other hand, these hours also consist on doing problem classes (medium group) where the students work, generally, in groups of 3 or 4 members, by the resolution of exercises related with the specific learning objectives of each one of the subject contents. Therefore cooperative learning techniques are developed at class. Generally, after each session out of class tasks are proposed, which must be worked individually or in groups and which are the base of the directed activities. There also have to be considered the other autonomous learning hours like the ones dedicated to the oriented readings, the resolution of the proposed problems or the self-learning questionnaires of the different contents by virtual campus ATENEA.

Learning objectives of the subject

The subject expects to provide a general view related with the writing of a facilities project to the students, by means of the necessary development methodology.

In the same way it will be worked the study of its definition and execution, valuing the necessities and determinants which the buildings impose to the facilities networks.

To conclude, it will be collected the necessary information for the trials making, controls and final documentation of the construction done, negotiation of connections and integration of the future manteinance plan of the building.

Study load

<table>
<thead>
<tr>
<th>Total learning time: 75h</th>
<th>Hours large group: 12h</th>
<th>16.00%</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Hours medium group: 9h</td>
<td>12.00%</td>
</tr>
<tr>
<td></td>
<td>Hours small group: 9h</td>
<td>12.00%</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 0h</td>
<td>0.00%</td>
</tr>
<tr>
<td></td>
<td>Self study: 45h</td>
<td>60.00%</td>
</tr>
</tbody>
</table>
### Content

#### C1 METHODOLOGY

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td>Self study: 15h</td>
</tr>
</tbody>
</table>

**Description:**
In this content the students work:
From the existing regulations and the specific use of the different type of buildings, there will be developed the required contents of a project.

1.1 Intervention criteria.
01/02 Intervention methodology.
03/01 Basic procedures.

**Related activities:**
Theoretical explanation class.
Activity 1. Basic concepts questionnaire.

#### C2 ENERGETIC ADAPTATION OF THE BUILDING

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td>Self study: 15h</td>
</tr>
</tbody>
</table>

**Description:**
In this content the students work:
There will be done a tour in the different techniques used habitually in the design and answer of the buildings for intervene in the different energy application systems which form them.

01/02 Psychromentrics in the construction.
2.2 General systems of contribution of heat and cold.
03/02 Energy saving and efficiency.
02/04 Solar sector and its applications.
05/02 Domotics applied to the construction.

**Related activities:**
Theoretical explanation class.
Activity 2. Search a current construction with non-residential use and analyze the tipology of the energy facilities.
### C3 URBANIZATIONS

<table>
<thead>
<tr>
<th>Learning time: 25h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theory classes: 6h</td>
</tr>
<tr>
<td>Practical classes: 2h</td>
</tr>
<tr>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td>Self study: 15h</td>
</tr>
</tbody>
</table>

#### Description:

In this content the students work:

There will be studied the different type of urbanisation projects where there must be applied viability criteria as well as their facilities network.

3.1 Urbanisation introduction and concepts.
03/02 Infrastructures, services and collective equipments.
3.3 Definition of general constructions.
03/04 Implementation of basic facilities networks.

#### Related activities:

Theoretical explanation class.
Activity 3. From the plans given by the faculty, design the urban facilities networks and define the components.
### Planning of activities

<table>
<thead>
<tr>
<th>A1 INDIVIDUAL PROJECT OF AUTONOMOUS LEARNING IN ATENEA: TEST (CONTENT 1)</th>
<th>Hours: 12h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description: Realisation of a questionnaire of energy concepts.</td>
<td>Guided activities: 2h</td>
</tr>
<tr>
<td>Support materials: Questionnaire with fixed answers, by ATENEA. Series of self-learning questionnaires with multiple choice and notes of the contents available in ATENEA. Bibliography.</td>
<td>Self study: 10h</td>
</tr>
<tr>
<td>Descriptions of the assignments due and their relation to the assessment: Questionnaire in ATENEA. It represents a part of the Continuous Evaluation (10%).</td>
<td></td>
</tr>
<tr>
<td>Specific objectives: At the end of the practice, the students should be able to:</td>
<td></td>
</tr>
<tr>
<td>. Evaluate the different type of facilities depending on the building use.</td>
<td></td>
</tr>
<tr>
<td>. Organise all the networks and their compatibilities.</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A2 GROUP PROJECT OF AUTONOMOUS LEARNING (CONTENT 2)</th>
<th>Hours: 15h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Description: In groups of 2 members, the students will search a building of NON-residential use to analyze the typology of the energy facilities and its influence in the general whole building.</td>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td>Support materials: Notes of the topic available (PowerPoint) in ATENEA. Bibliography. Paper, pencil, photographic camera.</td>
<td>Self study: 12h</td>
</tr>
<tr>
<td>Descriptions of the assignments due and their relation to the assessment: The students must do the practical work in PowerPoint format (6-8 slides). They must present and explain the PowerPoint made at class. Random Nº of presentations. The rest of students at class must do questions to the presentating team. Registration by the faculty of the verification of the Directed Learning of the students. There will be given to the professor a document with the work. It represents a part of the continous evaluation (15%).</td>
<td></td>
</tr>
<tr>
<td>Specific objectives: At the end of the practice the students should be able to:</td>
<td></td>
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<tr>
<td>. Understand the methodology of the energy facilities.</td>
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<tr>
<td>. Determine how the construction is executed.</td>
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<tr>
<td>. Analyze the influence in the final construction distribution.</td>
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</table>
### A3 GROUP PROJECT OF AUTONOMOUS LEARNING (CONTINGUT 3)

**Description:**
In groups of 2 members, the students will do an exercise from the plans given by the professor. There will be designed the facilities networks and its components.

**Support materials:**
- Notes of the topic available (PowerPoint) in ATENEA
- Bibliography.
- Regulations.

**Descriptions of the assignments due and their relation to the assessment:**
- A document with the work.
- It represents a part of the continuous evaluation (10%).

**Specific objectives:**
At the end of the activity, the students should be able to:
- Know the elements and the urban facilities networks.
- Recognize the compatibility or incompatibility in the urban networks distribution and its paths.

<table>
<thead>
<tr>
<th>Hours: 14h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities: 3h</td>
</tr>
<tr>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td>Self study: 8h</td>
</tr>
</tbody>
</table>

### A4 FINAL EXAM

**Description:**
Final exam about the contents given in the subject.

**Support materials:**
- Bibliography.
- Theoretical classes.

**Descriptions of the assignments due and their relation to the assessment:**
- Resolution of the exam. It represents the 50% of the final mark of the subject.

**Specific objectives:**
At the end of the exam, the students should be able to:
- The subject pretends to provide the students with a general view related with the facilities in constructions, as well as in the urbanisation design, the behaviour and the processes of intervention on them, comprising the aspects of requirements of the different construction types and their uses, as starting tools for developing a definitive intervention project.
- Corresponding to the writing process of a facilities project, it is pretended that the student acquires a methodology to develop efficiently the specific technical documentation for its development, which must incorporate apart from the technical criteria, organisation criteria of the works and economic aspects.

<table>
<thead>
<tr>
<th>Hours: 16h</th>
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<tbody>
<tr>
<td>Self study: 16h</td>
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</tbody>
</table>
The final mark is the addition of these partial marks:
Activity-1 10%
Activity-2 20%
Activity 3 20%
Activity 4 50%

The continuous evaluation consists on doing different activities, both individually or in groups, with summative and educational nature, done during the course (in and out of class).

Regulations for carrying out activities

- It is a necessary requirement to pass the final exam to do the average with the rest of marks.
- If some of the continuous evaluation or lab activities is not done, it will be considered as non-marked.
- In any case it is possible to bring any formulary to the learning tests or exams.
### Bibliography

#### Basic:


#### Complementary:

- *Cuadernos de gas*. Editorial técnica del Instalador.

#### Others resources:

- *Normativa*
  - *REBT*
  - *RITE*
  - *NORMATIVA TÉCNICA D’URBANITZACIÓ* (Publicacions Oficials)

**GENERAL**

**VIIALITAT**

**XARXES DE DISTRIBUCIÓ DE GAS CANALITZAT**

**XARXES DE DISTRIBUCIÓ D’ENERGIA ELÈCTRICA**

**XARXES DE TELECOMUNICACIONS**

-Norma UNE-60670-2005 sobre instalaciones de gas
-Norma UNE- de evacuación según el material de las tuberías