310408 - New Industrialized Techniques Applied to Building Construction

Coordinating unit: 310 - EPSEB - Barcelona School of Building Construction
Teaching unit: 753 - TA - Department of Architectural Technology
Academic year: 2019
Degree: MASTER'S DEGREE IN ADVANCED BUILDING CONSTRUCTION (Syllabus 2014). (Teaching unit Optional)
ECTS credits: 5
Teaching languages: Catalan, Spanish

Teaching staff
Coordinator: Agustí Portales Pons

Opening hours
Timetable: The day of class two hours before the session.

Prior skills
Grade in aspects related with the architecture, the construction or the civil engineering.

Degree competences to which the subject contributes

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.

Specific:
9. Design climatization objects, lifts, security systems and surveillance, domotic installations and network of communication and information.
10. Define the characteristics of the sismic action and apply the present regulations to the sismic calculation of structures in building construction.
CE1. Capacity of innovation: identify the reasons and the mechanisms of the technologic and technical changes.

Genercal:
6. Provide to the student the capacity to apply the knowledge acquired in the resolution of complex problems in any sector of the building construction.
7. Analyse, evaluate and synthesise critically, new and difficult ideas of promotion, in academic and professional contexts, scientific advances, technologics, socials or culturals in the society of knowledge.

Transversal:
8. 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.
11. SUSTAINABILITY AND SOCIAL COMMITMENT. Being aware of and understanding the complexity of social and...
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- Knowledge of the scope of the technologic progresses in the construction field and ability of their application.
- Qualification to make audits of projects and master plans.
- Ability to transmit knowledges and experiences to the coworkers. Ability in leadership.
- Consciousness of the responsibility which fall on the building engineers about aspects of sustainability and respect for the environment.
- 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.

**Teaching methodology**

There will be combined the in-person, directed and autonomous methods. With the combination of the three methods there must be achieved the levels of knowledge, comprehension, analytical and critical ability and its application on specific cases.

In the in-person method there will be special attention in the aspects of clarity, accuracy and exposition order, by the faculty. There will be done with the totality of the group. The professor will develop the topics of the course at class. The students will be given the necessary documentation in ATENEA so that they can follow better the class. The students can participate and argue, in scheduled temporary spaces, about aspects of the developed topic.

There will be done a guided individual work where there will be applied methods and concepts of work typical os a thesis.

**Learning objectives of the subject**

Knowledge of the scope of the technologic progresses in the construction field and ability of their application.

Qualification to make audits of projects and master plans.

Ability to transmit knowledges and experiences to the coworkers. Ability in leadership.

Consciousness of the responsibility which fall on the building engineers about aspects of sustainability and respect for the environment.

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 125h</th>
<th>Hours large group: 15h</th>
<th>12.00%</th>
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</thead>
<tbody>
<tr>
<td>Hours medium group:</td>
<td>5h</td>
<td>4.00%</td>
</tr>
<tr>
<td>Hours small group:</td>
<td>5h</td>
<td>4.00%</td>
</tr>
<tr>
<td>Guided activities:</td>
<td>10h</td>
<td>8.00%</td>
</tr>
<tr>
<td>Self study:</td>
<td>90h</td>
<td>72.00%</td>
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</tbody>
</table>
### Content

<table>
<thead>
<tr>
<th><strong>C-1 INTRODUCCIÓN</strong></th>
<th><strong>Learning time:</strong> 31h 25m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 9h 40m</td>
</tr>
<tr>
<td></td>
<td>Guided activities: 3h</td>
</tr>
<tr>
<td></td>
<td>Self study: 18h 45m</td>
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</table>

**Related activities:**
- Introduction to the individual work.

**Specific objectives:**
- Promote and increase the basic knowledges as a tool to use in future interventions.
- Introduce work ways with analytical and critical basis.
- Increase the syntesis and extension abilities.

<table>
<thead>
<tr>
<th><strong>C-2 LOS MATERIALES HIerro-ACERO, TUBOS CABLES Y MEMBRANAS, HORMIGÓN ARMADO, MADERA LAMINADA ENCLOlADA.</strong></th>
<th><strong>Learning time:</strong> 31h 25m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description:</strong></td>
<td>Theory classes: 9h 40m</td>
</tr>
<tr>
<td>There will be analyzed the evolution and the abilities of the main construction materials and the applications on</td>
<td>Guided activities: 3h</td>
</tr>
<tr>
<td>the constructions which, in their moment, constituted technologic avant-garde; the reasons of their abandonment</td>
<td>Self study: 18h 45m</td>
</tr>
<tr>
<td>and the possibilities which currently can offer.</td>
<td></td>
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</tbody>
</table>

**Related activities:**
- Debate about concepts and ideas expressed by the professor. Beginning of the oriented work.
- Fulfilment of the first midterm test.

**Specific objectives:**
- Ability to know and apply a wide range of constructive resources for the developing of real projects.
## C-3 MODELOS EDIFICATORIOS. EDIFICIOS EN ALTURA Y VIVIENDA COLECTIVA.

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<td><strong>Guided activities:</strong> 3h</td>
</tr>
<tr>
<td><strong>Self study:</strong> 18h 45m</td>
</tr>
</tbody>
</table>

### Description:
The analysis of the construction models with major influence in the construction field facilitates the comprehension of the multiple interactions which are produced during the design-execution process. It is essential the knowledge of the possibilities of the materials seen in the previous content.

### Related activities:
Debate at class about the explained concepts and development of the oriented work.

### Specific objectives:
Provide the students with a basic information to develop, efficiently and technically correct, their professional tasks.

## C-4 INTERVENCIONES ESTRUCTURALES BAJO Y SOBRE RASANTE. VASOS DE EDIFICACION PROFUNDOS.

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<td><strong>Guided activities:</strong> 3h</td>
</tr>
<tr>
<td><strong>Self study:</strong> 18h 45m</td>
</tr>
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### Description:
There will be exposed the most advanced and safe techniques to carry out complex structural interventions. In the same way there will be put attention on the difficulties and procedures to do deep construction cups. The knowledge of the possibilities of the techniques explained is essential for the professionals, who in a lot of cases, need to build over the built.

### Related activities:
Delivery of the oriented work at the end of the sessions. Realization of the second midterm test.

### Specific objectives:
Offer a wide range of constructive solutions to complex structural situations from their analysis and application of solutions of proven efficiency.
Planning of activities

<table>
<thead>
<tr>
<th>A-1 DEBATES</th>
<th>Hours: 2h</th>
</tr>
</thead>
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<tr>
<td>Theory classes: 2h</td>
<td></td>
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</tbody>
</table>

**Description:**
During the session, if necessary, the professor will question the students about prominence aspects appeared during the class with the purpose of facilitate the debate and the involvement of the class group.

**Support materials:**
The debate deals with, essentially, the graphical and photographic content of the sessions.

**Descriptions of the assignments due and their relation to the assessment:**
There are no deliveries in this activity.

**Specific objectives:**
- Facilitate the comprehension of the aspects explained during the session.
- Improve the public expression ability of the students.

<table>
<thead>
<tr>
<th>A-2 TRABAJO DE LIBRE ELECCIÓN SOBRE ASPECTOS TRATADOS EN EL CURSO.</th>
<th>Hours: 20h</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study: 20h</td>
<td></td>
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</table>

**Description:**
Each student will reach an agreement individually with the professor, choosing a topic and a development scheme during the first three weeks of the course. There are important the formal aspects, structure, quotes, graphical and photographic documentation, bibliography and conclusions.

**Support materials:**
The work will be presented, for its evaluation, in paper format with simple binding. Once corrected the works will be returned at the request of the students.

**Descriptions of the assignments due and their relation to the assessment:**
At the end of the school calendar, in the date previously agreed.

**Specific objectives:**
- Consolidate the knowledges acquired.
- Increase the knowledge of the students on specific topics of their interest.
- Help to structurate the expositions to deal with works of major magnitude.

Qualification system

CONTINOUS EVALUATION. During the scheduled periods for exams of the school calendar there will be done two midterm exams with 5 questions each one of theoretical and practical nature. Each question has a maximum worth of 2 points and will be evaluated by fractions of 0,5 points. Mark over a maximum of 10 points.
The first exam supposes the 30% of the totality, the second the 30% and the individual directed work the 40%.

FINAL MARK = Exam 1 30% + Exam 2 30% + TID 40%. Pass with 5.

Regulations for carrying out activities

If some of the continous evaluation activities is not done, it will be considered with a mark of 0.
The problems deticated form the evaluations or the justified impossibility of attendande to a test will be solved, firstly, between the professor and the student.
Bibliography

Basic:


Complementary:


