Course guides

250711 - 250711 - Advanced Course of Bridges

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.

Degree: MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2015). (Optional subject).

Academic year: 2020 ECTS Credits: 5.0 Languages: English, Spanish

LECTURER

Coordinating lecturer: JOSE TURMO CODERQUE

Others: JUAN RAMON CASAS RIUS, GONZALO RAMOS SCHNEIDER, JOSE TURMO CODERQUE

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
13364. To conceive and design civil and building structures that are safe, durable, functional and integrated into its surroundings.
13365. Designing and building using traditional materials (reinforced concrete, prestressed concrete, structural steel, masonry, wood) and new materials (composites, stainless steel, aluminum, shape memory alloys?).
13366. To evaluate, maintain, repair and strengthen existing structures, including the historic and artistic heritage.
13369. To apply methods and advanced design software and structural calculations, based on knowledge and understanding of forces and their application to the structural types of civil engineering.

General:
13360. To conceive, design, analyze and manage structures or structural elements of civil engineering or building, encouraging innovation and the advance of knowledge.
13361. To develop, improve and use conventional materials and new construction techniques to ensure the safety requirements, functionality, durability and sustainability.
13362. To define construction processes and methods of organization and management of projects and works.

TEACHING METHODOLOGY

The course consists of 1,7 hours per week of classroom activity (large size group).

The 1,7 hours in the large size groups are devoted to theoretical lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.
LEARNING OBJECTIVES OF THE SUBJECT

Subject to introduce students to the conception and design of special or long span bridges

Capability to design, calculate and build long span bridges: arches, cable stayed bridges, progressive cantilever bridges


STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours small group</td>
<td>9,8</td>
<td>7.83</td>
</tr>
<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>4.80</td>
</tr>
<tr>
<td>Self study</td>
<td>80,0</td>
<td>63.95</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>9,8</td>
<td>7.83</td>
</tr>
<tr>
<td>Hours large group</td>
<td>19,5</td>
<td>15.59</td>
</tr>
</tbody>
</table>

Total learning time: 125.1 h

CONTENTS

Bridge decks built by the cantelivering method

Description:
Bridges built by cantilever construction method
Practical work

Full-or-part-time: 61h 12m
Theory classes: 6h
Practical classes: 9h 45m
Laboratory classes: 9h 45m
Self study : 35h 42m

Design and Construction of Arch Bridges

Description:
Design and construction of Arch Bridges

Full-or-part-time: 7h 11m
Theory classes: 3h
Self study : 4h 11m
**Design and construction of cable-stayed Bridges**

**Description:**
Design and Construction of Cable-Stayed Bridges

**Full-or-part-time:** 14h 23m
- Theory classes: 6h
- Self study: 8h 23m

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**Presentation of project data to develop**

**Description:**
Presentation of project data to develop

**Full-or-part-time:** 10h 48m
- Theory classes: 4h 30m
- Self study: 6h 18m

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**GRADING SYSTEM**

The mark of the course is obtained from the ratings of continuous assessment and their corresponding laboratories and/or classroom computers.

Continuous assessment consist in several activities, both individually and in group, of additive and training characteristics, carried out during the year (both in and out of the classroom).

The teachings of the laboratory grade is the average in such activities.

The evaluation tests consist of a part with questions about concepts associated with the learning objectives of the course with regard to knowledge or understanding, and a part with a set of application exercises.

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**EXAMINATION RULES.**

Failure to perform a laboratory or continuous assessment activity in the scheduled period will result in a mark of zero in that activity.

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**BIBLIOGRAPHY**

**Basic:**

**Complementary:**