Course guide
2500030 - GECCOBRMAR - Maritime Constructions

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

Degree: BACHELOR'S DEGREE IN CIVIL ENGINEERING (Syllabus 2020). (Compulsory subject).
Academic year: 2022  ECTS Credits: 4.5  Languages: Catalan

LECTURER

Coordinating lecturer: VICENTE GRACIA GARCIA
Others: FRANCESC XAVIER GIRONELLA I COBOS, VICENTE GRACIA GARCIA, OCTAVIO CESAR MÓSSEO ARANDA

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
14412. Capacity for construction and conservation of maritime works. (Specific technology module: Civil Construction)

General:
14380. Scientific-technical training for the exercise of the profession of Technical Engineer of Public Works and knowledge of the functions of advice, analysis, design, calculation, project, construction, maintenance, conservation and exploitation.
14383. Ability to project, inspect and direct works, in their field.

TEACHING METHODOLOGY

The course consists of 1.5 hours per week of classroom activity (large size group) and 1.5 hours weekly with half the students (medium size group).

The 1.5 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.

The 1.5 hours in the medium size groups is devoted to solving practical problems with greater interaction with the students. The objective of these practical exercises is to consolidate the general and specific learning objectives.

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


1 Ability to conduct a wave analysis.
2 Ability to carry out the project of a port including basic elements.
3 Ability to conduct a study of coastal dynamics that includes the port-coast interaction.


STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guided activities</td>
<td>4,5</td>
<td>4.00</td>
</tr>
<tr>
<td>Self study</td>
<td>63,0</td>
<td>56.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>22,5</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours large group</td>
<td>22,5</td>
<td>20.00</td>
</tr>
</tbody>
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Total learning time: 112.5 h

CONTENTS

Introduction

Description:
Basic concepts

Full-or-part-time: 4h 48m
Theory classes: 2h
Self study : 2h 48m

Tidal waves and currents

Description:
Regular waves
Random waves
Wave climate
Wave propagation
Wave breaking and currents
Tides and other long waves
Exercises

Full-or-part-time: 19h 12m
Theory classes: 5h
Practical classes: 2h
Laboratory classes: 1h
Self study : 11h 12m
### Port facilities

**Description:**
Port design and operation  
Interior works

**Full-or-part-time:** 7h 11m  
Theory classes: 3h  
Self study : 4h 11m

### Rubble mound breakwaters

**Description:**
Basic concepts and design parameters  
Wave-structure interaction  
Construction procedures  
Maintenance and monitoring  
Exercises

**Full-or-part-time:** 14h 23m  
Theory classes: 5h  
Laboratory classes: 1h  
Self study : 8h 23m

### Vertical dikes

**Description:**
Basic concepts and design parameters  
Construction procedures  
Maintenance and monitoring  
Exercises

**Full-or-part-time:** 12h  
Theory classes: 4h  
Laboratory classes: 1h  
Self study : 7h

### Coastal dynamics and coastal zone management

**Description:**
Sediment transport  
Evolution in plan and profile of a beach  
Cost management  
Erosion in the coastal zone  
Exercises

**Full-or-part-time:** 12h  
Theory classes: 3h  
Practical classes: 1h  
Laboratory classes: 1h  
Self study : 7h
Coastal protection structures

Description:
Perpendicular works. Breakwaters
Parallel works. Parallel dikes
Works parallel to the ground. Walls and coatings
Stability of protection works on the Catalan coast
Exercises

Full-or-part-time: 16h 48m
Theory classes: 3h
Practical classes: 3h
Laboratory classes: 1h
Self study: 9h 48m

Baech nourishment and sediment management

Description:
Basic concepts and design parameters
Design and execution of beach feeding works
Design and execution of a by-pass
Beach food on the Catalan coast
Exercises

Full-or-part-time: 14h 23m
Theory classes: 3h
Practical classes: 2h
Laboratory classes: 1h
Self study: 8h 23m

Submarine outfalls

Description:
Basic concepts and design parameters
Submarine outfalls

Full-or-part-time: 7h 11m
Theory classes: 1h
Practical classes: 2h
Self study: 4h 11m

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.
EXAMINATION RULES.

If any of the laboratory or continuous assessment activities are not performed in the scheduled period, it will be considered a zero score.

BIBLIOGRAPHY

Basic: