Course guide
250558 - GEOLGEOMCO - Geology and Coastal Geomorphology

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering.
Degree: BACHELOR'S DEGREE IN MARINE SCIENCE AND TECHNOLOGY (Syllabus 2018). (Compulsory subject).
Academic year: 2022  ECTS Credits: 6.0  Languages: Spanish

LECTURER
Coordinating lecturer: VICENTE GRACIA GARCIA
Others: CARLOS SALVADOR ASTUDILLO GUTIERREZ, VICENTE GRACIA GARCIA, OCTAVIO CESAR MÓSSO ARANDA

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
13388. To know and apply the lexicon and concepts of the Marine Sciences and Technologies and other related fields.
13390. Establish a good practice in the integration of common numerical, laboratory and field techniques in the analysis of any problem related to the marine environment.
13401. Apply spatial and cartographic representation techniques for different environments and scales.

Generical:
13380. Develop a professional activity in the field of Marine Sciences and Technologies.
13381. Address in a comprehensive manner the analysis and preservation of the marine environment with sustainability criteria.

TEACHING METHODOLOGY

The course consists of 4 hours a week of face-to-face classes in the classroom.
The methodology is based on:
* Theoretical lectures where the fundamental concepts are explained.
* Laboratory classes aimed at using techniques and tools for use in the professional field.
* Classes of problems intended to apply the knowledge acquired in the theoretical classes.
* Field visits to different locations to make on-site observations of coastal geomorphology concepts.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

LEARNING OBJECTIVES OF THE SUBJECT

In this course, the different geomorphological environments of the littoral zone are described, starting from the tectonic settings that broadly determines its characteristics at a geological scale, and the processes and factors that determine its recent morphological evolution, centered on erosion and accretion. The objective is to understand the morphological behaviour of coastal environments at different scales of time and space.

1. Define the main elements of the coast, and classify the different littoral environments according to geological, hydrodynamic or geomorphological criteria.
2. Show the existing differences between rocky, sedimentary coasts, intertidal flats, estuaries and coastal lagoons and Deltas. General relation the coastal typologies and the general tectonic settings.
3. Understand the processes related to relative changes in sea level in a geological climate change context.
**STUDY LOAD**

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>15,0</td>
<td>10.00</td>
</tr>
<tr>
<td>Hours small group</td>
<td>15,0</td>
<td>10.00</td>
</tr>
<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>4.00</td>
</tr>
<tr>
<td>Self study</td>
<td>84,0</td>
<td>56.00</td>
</tr>
</tbody>
</table>

**Total learning time:** 150 h

**CONTENTS**

**Introduction**

**Description:**
Temporal and Spatial scales
Practice evolution of the coastline

**Full-or-part-time:** 9h 36m
Theory classes: 2h
Laboratory classes: 2h
Self study: 5h 36m

**Properties of materials**

**Description:**
Cohesive materials and rocks
Non-cohesive materials
Practice of granulometric analysis

**Full-or-part-time:** 14h 23m
Theory classes: 4h
Practical classes: 2h
Self study: 8h 23m

**Coastal processes**

**Description:**
Wind
Waves
The average level of the sea
The sea currents

**Full-or-part-time:** 19h 12m
Theory classes: 8h
Self study: 11h 12m
<table>
<thead>
<tr>
<th>Topic</th>
<th>Description</th>
<th>Full-or-part-time</th>
<th>Theory classes</th>
<th>Laboratory classes</th>
<th>Self study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rocky coastlines</td>
<td>Cliffs and platforms</td>
<td>9h 36m</td>
<td>2h</td>
<td>2h</td>
<td>5h 36m</td>
</tr>
<tr>
<td>Reefs</td>
<td>Characteristics and morphodynamic processes</td>
<td>9h 36m</td>
<td>4h</td>
<td></td>
<td>5h 36m</td>
</tr>
<tr>
<td>Beaches</td>
<td>Morphology and typology</td>
<td>19h 12m</td>
<td>8h</td>
<td></td>
<td>11h 12m</td>
</tr>
<tr>
<td>Deltas</td>
<td>Genesis, morphology and classification</td>
<td>19h 12m</td>
<td>6h</td>
<td>2h</td>
<td>11h 12m</td>
</tr>
</tbody>
</table>
**Dunar systems**

**Description:**
Genesis and morphology
Dune-beach interaction
Models of behavior
The Dune rule

**Full-or-part-time:** 19h 12m
Theory classes: 6h
Laboratory classes: 2h
Self study: 11h 12m

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**Wetlands and lagoons**

**Description:**
Typology and characteristics
Sedimentary dynamics

**Full-or-part-time:** 9h 36m
Theory classes: 4h
Self study: 5h 36m

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**Estuaries**

**Description:**
Characteristics and classification
Influence on coastal dynamics

**Full-or-part-time:** 9h 36m
Theory classes: 4h
Self study: 5h 36m

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**Anthropic environments**

**Description:**
They show the impacts induced by man on the coast

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

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**GRADING SYSTEM**

The ordinary evaluation of the course consists of: (a) The delivery of different assignemets (30%); (b) the delivery of a report of the field visit (10%) and (c) of theoretical-practical exams (60%). All activities are compulsory. In case of not being carried out, they will be assigned a value equal to zero.

In case of failing the ordinary evaluation the students that have submitted the assignements and the report and have taken the theoretical exam have the option of taking a reevaluation test. The maximum grade in case of taking the reevaluation exam is five.
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.

BIBLIOGRAPHY

Basic:

Complementary: