280803 - Oceanography

Coordinating unit: 280 - FNB - Barcelona School of Nautical Studies
Teaching unit: 751 - DECA - Department of Civil and Environmental Engineering
Academic year: 2019
Degree: MASTER'S DEGREE IN NAVAL AND OCEAN ENGINEERING (Syllabus 2017). (Teaching unit Compulsory)
ECTS credits: 5  Teaching languages: Catalan, Spanish

Teaching staff

Coordinator: MANEL ESPINO INFANTES
Others: Primer quadrimestre:
        MANEL ESPINO INFANTES - 1
        Gironella I Cobos, Francesc Xavier

Degree competences to which the subject contributes

Basic:
CB9. That students can communicate their conclusions and the knowledge and
      Latest rationale underpinning to specialists and non
      Specialty clearly and unambiguously
CB8. Students should be able to integrate knowledge and handle
      the complexity of making judgments based on information that, being
      incomplete or limited, includes reflections on the responsibilities
      social and ethical linked to the application of their knowledge and judgments.

CB6. Possess knowledge and understanding that provide a basis or opportunity
      be original in the development and / or application of ideas, often in a
      research context.
CB7. That the students can apply their knowledge and
      ability to solve problems in new or unfamiliar environments
      within broader (or multidisciplinary) contexts related to their
      study area.
CB10. Students must possess the learning skills that enable them
To familiarize the student with the concepts of physical, chemical, geological and biological oceanography necessary for the performance of his future activity in the field of Naval and Oceanic engineering in a manner that respects the marine environment and sustainable from a technical, economic and environmental point of view.

**Specific:**

CE8. Conocimiento de los elementos de oceanografía física (olas, corrientes, mareas, etc.) necesarios para el análisis del comportamiento de las estructuras océánicas, y de los elementos de las oceanografías química y biológica que deben ser tenidos en cuenta para la seguridad marítima y para el tratamiento de la contaminación, y del impacto ambiental producido por los buques y artefactos marinos.

**Transversal:**

CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Know and understand the complexity of economic and social phenomena typical of the welfare society, being able to relate welfare to globalization and sustainability; acquire skills to use in a balanced manner compatible technology, technology, economics and sustainability.

CT4. EFFECTIVE USE OF INFORMATION RESOURCES: Manage the acquisition, structuring, analysis and visualization of data and information in the field of specialty, and critically evaluate the results of this management.

CT3. TEAMWORK: Ability to work as a member of an interdisciplinary team, either as a member or performing management tasks, with the aim of contributing to projects pragmatically and sense of responsibility, assuming commitments considering the resources available.

CT1. ENTREPRENEURSHIP AND INNOVATION: Knowing and understanding the organization of a company and the sciences that govern the activity; be able to understand the business rules and relationships between planning, industrial and commercial strategies, quality and profit.

Know and understand the mechanisms that scientific research is based, as well as the mechanisms and instruments of transfer of results between different socio-economic actors involved in the processes of R + D + i.

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**Learning objectives of the subject**

**Study load**

<table>
<thead>
<tr>
<th>Total learning time: 45h</th>
<th>Hours large group:</th>
<th>45h</th>
<th>100.00%</th>
</tr>
</thead>
</table>
## Content

<table>
<thead>
<tr>
<th>Subject</th>
<th>Learning time:</th>
<th>Description:</th>
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</thead>
</table>
| **Introduction to Oceanography**             | 6h             | **Description:**
|                                              | Theory classes: 3h | Presentation of the subject. Introduction to the concepts of physical oceanography, chemical oceanography, geological oceanography and biological scenography. History of the Oceanography. |
|                                              | Self study: 3h  |                                                                                               |
| **Marine Geology**                           | 8h             | **Description:**
|                                              | Theory classes: 2h | The bathymetry of the ocean: continental margins and ocean basins. Geophysical techniques for prospecting the ocean floor. Sedimentation in the ocean. Techniques for sampling sediment in the background. |
|                                              | Practical classes: 1h |                                                                                               |
|                                              | Guided activities: 2h |                                                                                               |
|                                              | Self study: 3h  |                                                                                               |
| **Physical and chemical properties of sea water** | 15h            | **Description:**
|                                              | Practical classes: 1h |                                                                                               |
|                                              | Guided activities: 5h |                                                                                               |
|                                              | Self study: 5h  |                                                                                               |
| **Meteorology and ocean circulation**        | 26h            | **Description:**
|                                              | Practical classes: 2h |                                                                                               |
|                                              | Guided activities: 10h |                                                                                               |
|                                              | Self study: 7h  |                                                                                               |
# Waves, Tsunamis and Seiches

**Learning time:** 19h  
Theory classes: 6h  
Practical classes: 3h  
Guided activities: 5h  
Self study: 5h

**Description:**  

# Tides and currents

**Learning time:** 16h  
Theory classes: 4h  
Practical classes: 2h  
Guided activities: 5h  
Self study: 5h

**Description:**  

# Marine Ecology

**Learning time:** 9h  
Theory classes: 2h  
Practical classes: 1h  
Guided activities: 3h  
Self study: 3h

**Description:**  
Habitats in the Ocean. Classification of marine organisms. Functioning of marine ecosystems. Trophic chains and types of ecosystems. Coastal outcrops and productivity in the ocean.
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**Marine pollution**

<table>
<thead>
<tr>
<th>Learning time: 26h</th>
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</thead>
<tbody>
<tr>
<td>Theory classes: 3h</td>
</tr>
<tr>
<td>Practical classes: 3h</td>
</tr>
<tr>
<td>Guided activities: 11h</td>
</tr>
<tr>
<td>Self study: 9h</td>
</tr>
</tbody>
</table>

**Description:**

**Qualification system**

The final grade is the sum of the following partial grades:
Final qualification = (0.6 x Final test qualification) + (0.4 x Qualification of the course exercises)

**Bibliography**

**Basic:**

**Complementary:**