Course guide
250557 - BIOMEDIMAR - Marine Environment Biology

Unit in charge: Barcelona School of Civil Engineering
Teaching unit: 745 - DEAB - Department of Agri-Food Engineering and Biotechnology.
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: MARTA BALSELLS FERNÀNDEZ-PEDRERA
Others: MARTA BALSELLS FERNÀNDEZ-PEDRERA, EDUARDO DE NEIRA ARIAS

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.
13395. To set, evaluate and propose solutions to the different conflicts of use and exploitation in the marine and coastal environment resources based on scientific and technical criteria.

General:
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.
13385. Apply knowledge and academic experience to the biotic and abiotic resources of the marine environment, explaining their interactions with the socio-economic activities that take place in it.

TEACHING METHODOLOGY

The course consists of 2,3 hours per week of classroom activity (large size group) and 1,2 hours weekly with half the students (medium size group).

The 2,3 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 1,2 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.

The rest of weekly hours devoted to laboratory practice.

In addition, it is proposed a visit to the Institut de Ciències del Mara, which will be in a large group. During the course other interesting opportunities for visits or conferences may arise that will be adjusted to the schedule of the subject.

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

This course reviews the fundamentals of the main natural processes that take place in marine aquatic ecosystems and that affect their dynamics, their interrelations and biodiversity.

1.- Learn and understand the functional and taxonomic diversity of marine organisms.
2.- Understand the relationship between marine biodiversity, the different habitats and environmental conditions, as well as understand the interaction between different populations, communities and ecosystems.
3.- Learn how to apply different basic methodologies for the collection, pre-processing and analysis of biological data.

STUDY LOAD

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

Total learning time: 150 h

CONTENTS

Introduction to marine biology

Description:
Marine biodiversity: general concept. Genetic, species biodiversity and ecosystems

Specific objectives:
The objective of this subject is to understand the concept of marine biodiversity, the main groups of species that contribute and the importance for the marine environment
Understand the basic principles of operation of marine organisms (plants and animals) and their adaptation mechanisms (ecophysiology) to environmental conditions
Understand the relationships of marine organisms between them and the environment in which they live. Learn about the main marine environments, their general characteristics and those of the communities that inhabit them

Full-or-part-time: 33h 36m
Theory classes: 14h
Self study : 19h 36m
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Theory classes: 14h
Self study: 19h 36m

Marine environments

Description:
Plankton and necton communities. Factors that condition pelagic life
Primary or autotrophic producers. The phytoplankton. Photosynthesis and chemosynthesis. Distribution and diversity. Main groups of phytoplankton organisms
Primary consumers: zooplankton. Distribution and diversity. Main groups of zooplankton organisms
Secondary and tertiary consumers: large invertebrates and vertebrates. Main groups of organisms
Factors that condition benthic life. Primary producers: bacteria, algae. Consumers and decomposers. Main groups of organisms
Algae: characteristics, distribution, diversity. Main groups of algae.
Life in coastal areas with tides: intertidal zone, beaches, mangroves and estuaries
Life on the coast without tides: rocky coastlines, beaches, wetlands, deltas

Specific objectives:
Learn the main groups that make up the communities of plankton and necton, as well as their characteristics and the factors of the environment that determine their life.

Full-or-part-time: 38h 24m
Theory classes: 16h
Self study: 22h 24m
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**Practical activities**

**Description:**
The student will have to carry out a work of identification of species from the instructions that will be provided in the classroom
The student will have to carry out a necropsy to understand the principles of the physiology of fish and other marine species
The student will have to build a simplified model of a marine ecosystem, based on a specific choice of species and environmental conditions
The research facilities of the Institute of Sciences of the Sea of Barcelona (CSIC) will be visited where there will also be a lecture on the latest advances in research in marine biology

**Full-or-part-time:** 72h
Practical classes: 14h
Laboratory classes: 16h
Self study : 42h
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 and in the lab activities).

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.

Criteria for qualification and admission to the re-evaluation: Students suspended to the ordinary evaluation, that have attended regularly to the evaluation tests of the failed subject, will have the option to perform a re-evaluation test during the period set in the academic calendar. Students who have already passed the qualification as those that have not attended won’t be able to attend to the re-evaluation test. The maximum qualification in the case of attending to the re-evaluation exam will be five (5.0). The non-attendance of a student summoned to the test of re-evaluation, celebrated in the fixed period, will not give access to another test at a later date. Extraordinary assessments will be made for students who have not been able to carry out any of the continuous assessment tests due to an accredited force majeure.

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: