Course guide
250552 - BIOAMB - Environmental 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: Catalan

LECTURER

Coordinating lecturer: ARIADNA GINÉ BLASCO
Others: ARIADNA GINÉ BLASCO

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.

Generic:
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 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.

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 will address the fundamental aspects of biological systems and their relationship with the natural environment. Emphasis will be placed on aspects related to the responses of living organisms, the populations of the natural environment, as well as the capacity for transformation (analysis of spatial and temporal variability of biological systems).

1.- Provide basic academic formation regarding the relationship of biological systems, focusing in their complexity and diversity, with the natural environment, especially the marine environment.
2.- Analyze the spacial variability and temporal dynamics of biological systems, often referred to the species.
3.- Academic formation in the application of this knowledge to the problems of conservation and management.

At the end of the subject Environmental Biology, the student must be able to: - Recognize the characteristics of living things, their complexity and their interrelations with their surroundings - Understand the molecular bases of life and the mechanisms that make possible the existence of biological diversity.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Hours large group</td>
<td>30,0</td>
<td>20.00</td>
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<tr>
<td>Hours medium group</td>
<td>15,0</td>
<td>10.00</td>
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<tr>
<td>Hours small group</td>
<td>15,0</td>
<td>10.00</td>
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<tr>
<td>Guided activities</td>
<td>6,0</td>
<td>4.00</td>
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<tr>
<td>Self study</td>
<td>84,0</td>
<td>56.00</td>
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Total learning time: 150 h

CONTENTS

- **Biochemistry and Cytology**
  
  **Description:**
  Macromolecules that characterize organisms
  
  **Full-or-part-time:** 7h 11m
  Theory classes: 3h
  Self study : 4h 11m

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  **Description:**
  Macromolecules that characterize organisms
  
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Cytology

Description:
The structure and the cellular operation. Organs and metabolic pathways. Prokaryotic cell and eukaryotic cell.

CELLULAR ORGANIZATION

Full-or-part-time: 12h
Theory classes: 3h
Laboratory classes: 2h
Self study: 7h

Cytology

Description:
The structure and the cellular operation. Organs and metabolic pathways. Prokaryotic cell and eukaryotic cell.

CELLULAR ORGANIZATION

Full-or-part-time: 12h
Theory classes: 3h
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Self study: 7h

Cytology, Histology, Organography

Description:
Eukaryotic cells, animals, plants (algae and plants) and fungal ones. Teats and organs in vegetables and animals.

DIVERSITY OF FORMS AND FUNCTIONS IN EUCAROIOTE ORGANIZATIONS

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

Cytology, Histology, Organography

Description:
Eukaryotic cells, animals, plants (algae and plants) and fungal ones. Teats and organs in vegetables and animals.

DIVERSITY OF FORMS AND FUNCTIONS IN EUCAROIOTE ORGANIZATIONS

Full-or-part-time: 19h 12m
Theory classes: 6h
Laboratory classes: 2h
Self study: 11h 12m
<table>
<thead>
<tr>
<th><strong>Genetics and Evolution</strong></th>
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<tbody>
<tr>
<td><strong>Description:</strong> Cell division in eukaryotes: mitosis and meiosis Multiplication versus reproduction Gene expression Inheritance and mechanisms for generating variability Natural selection, adaptation and evolution</td>
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<td><strong>Evolutionary mechanisms:</strong></td>
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<tr>
<td><strong>Full-or-part-time:</strong> 19h 12m</td>
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<tr>
<td>Theory classes: 6h</td>
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</tr>
<tr>
<td>Laboratory classes: 2h</td>
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<tr>
<td>Self study: 11h 12m</td>
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<tr>
<th><strong>Biodiversity</strong></th>
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<tbody>
<tr>
<td><strong>Description:</strong> The procarions domains: bacteria and archaea Non-tissue eukaryotats: algae, protozoa Fungi, plants and animals</td>
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<td><strong>Biodiversity</strong></td>
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<tr>
<td><strong>Full-or-part-time:</strong> 86h 24m</td>
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<tr>
<td>Theory classes: 22h</td>
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<td>Laboratory classes: 14h</td>
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<tr>
<td>Self study: 50h 24m</td>
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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.

**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:**