Universidad Zaragoza

Academic Year/course: 2023/24

25211 - Ecology I

Syllabus Information

Academic year: 2023/24
Subject: 25211 - Ecology I
Faculty / School: 201 - Escuela Politécnica Superior
Degree: 571 - Degree in Environmental Sciences
ECTS: 6.0
Year: 2
Semester: First Four-month period
Subject type: Compulsory
Module:

1. General information

The objectives of this subject are to provide knowledge about the abiotic and biotic factors and interactions that explain the abundance and distribution of organisms, as well as the dynamics of biological populations. It is a core subject in the environmental sciences and is linked to numerous subjects, which provide it with basic knowledge and to which it gives conceptual support. It plays a key role in module 1 of the curriculum.

The objective of the subject is aligned with some Sustainable Development Goals, specifically SDG 4 (Objective 4.7), SDG 14 (Objectives 14.1, 14.2, 14.3) and SDG 15 (Objective 15.1).

In order to make the most of the subject, it is recommended to have passed the subjects of Botany and Zoology, Biology, Fundamentals of Geology and Edaphology, as well as those related to basic sciences.

2. Learning results

In order to pass this subject, the students shall demonstrate they has acquired the following results:

1. -Evaluate and interpret the role of abiotic factors in the structure and functioning of ecological systems at different levels of organization.
2. -Differentiate and apply the different models of biological population growth.
3. -Recognize in the field the cycle of organic matter in terrestrial ecosystems.
4. -Identify the main environmental services of ecosystems.
5. -Incorporate and manage the contingent view of nature in their analysis of ecological processes.
6. -Analyse ecological information critically.
7. -Identify and map environmental units.
8. -Perform information searches, selection of documentation in databases and academic search engines related to Ecology
9. -Communicate Ecology ideas and concepts correctly orally and in writing.

10. Acquire the capacity for autonomous learning and teamwork, in a responsible and committed manner, distributing tasks and sharing responsibilities.

All of these learning results are part of SDGs 4, 14 and 15

3. Syllabus

The subject's program includes the following topics:

INTRODUCTION TO ECOLOGY MODULE

1. Concept of ecology. Object of study. History.
2. The non-equilibrium perspective. The social context.
3. The scientific method. Systems Theory. Ecosystem concept. Gaia.
4. Ecology and Environment

ORGANISMS AND THE PHYSICAL ENVIRONMENT MODULE

1. Resources and conditions. Limiting factors.
2. The astronomical and geological context of Life.

3. The atmospheric-oceanic circulation system.

4. Climates and microclimates.

5. Organisms and radiation.

6. Organisms and temperature.

7. Organisms and water availability. Ecohydrology.

8. Abiotic factors in the aquatic environment and in the terrestrial environment.

9. Terrestrial environment: geomorphology and soils.

10. Synthesis on the importance of abiotic factors. Concept of ecological niche.

11. Response in evolutionary time

12. Historical biogeography.

POPULATION MODULE

1. Population and metapopulation. Conceptual basis

2. Primary and secondary parameters. Tabulation

3. Life Cycles

4. Intraspecific competition

5. Population dynamics.

6. Growth regulation

4. Academic activities

Master classes: 30 hours

Theoretical sessions in which the contents of the subject will be explained

Practical classes:

- Field practices: 20 hours

Day trips (two of 6 hours and one of 8 hours) in which work material and scripts are provided to be completed through direct observations in the field

- Cabinet practices: 10 hours

A practice script is provided with the face-to-face and non-face-to face activities to be carried out.

Preparation of a report.

Student's autonomous work (84h) and evaluation (6h)

All the activities proposed in the subject help to achieve the learning results related to the SDGs, in both theoretical and practical sessions.

5. Assessment system

This subject offers the possibility of continuous evaluation, for which it is recommended to attend at least 80% of the face-to-face activities. In this case, the following evaluation activities will be essential:

- Two face-to-face written tests on the theory part of the program of the subject (50% of the grade), it will be necessary to obtain a minimum grade of 5 out of 10 in each one of them to average. Each test may include questions such as multiple choice, short answer questions, essay questions and problems. Each of the tests will evaluate approximately half of the program of the subject.

- The practices will be evaluated by means of an oral exam (30% of the subject grade) and a report (20%). These two blocks must be passed with a grade of 5 to be averaged with the theory block.

In order to pass the subject by means of the continuous evaluation, it will be necessary to have passed with a 5 out of 10, both the theory part and the practical part.

The global evaluation test will consist of the following activities:

- Writing of a general practice report (25%) that will include the following sections: introduction and objectives; methodology; results; discussion and conclusions.

- Written and face-to-face test at the end of the term according to the Polytechnic School exam schedule (75% of the grade). The test may include multiple-choice, short-answer and essay questions on the theory and practical parts.

The success rate in the subject for the last three years is 100% (2019-20), 96.55% (2020-21) and 96.00% (2021-22).