Universidad Zaragoza

Academic Year/course: 2023/24

26401 - Biology

Syllabus Information

Academic year: 2023/24
Subject: 26401 - Biology
Faculty / School: 100 - Facultad de Ciencias
Degree: 296 - Degree in Geology
588 - Degree in Geology
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Basic Education
Module:

1. General information

The main objective of the subject is that the student understands and assimilates the most important and general concepts, theories and models of Biology, mainly on Ontogeny-Development-Biomorphology, Ecology and Evolution as well as the biodiversity (Botany and Zoology), with the aim that the student has a basic biological training that will allow them to apply this knowledge to the theoretical and practical problems of Palaeontology and Geology.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the United Nations Agenda 2030 (https://www.un.org/sustainabledevelopment/es/), so that the acquisition of the learning results of the subject provides training and competence to contribute to some extent to their achievement:

Goal 14: Underwater life

Goal 15: Life of terrestrial ecosyste

2. Learning results

The student must acquire the following competencies:

1. Understand and apply basic concepts, principles and methods of biology.

2. Understand the factors that influence the form and morphological evolution of living beings.

3. Identify biological forms and designs, and apply basic principles in the morphological characterization of an organism and functional morphology to identify adaptations in living beings.

4. Apply basic methods to characterize the morphological variability of populations.

5. Understand the relationship of living beings with the environment, and the process of adaptation.

6. Apply basic methods for characterizing community structure and interpreting biodiversity.

7. Understand the concept of change in communities and ecosystems, and the factors that influence the geographic distribution of living beings.

8. Understand the basic principles that govern the evolution of living beings.

9. Know, identify and classify the main microbiological, botanical and zoological groups.

10. Design and develop programs of activities in secondary education in Earth Sciences, Natural Sciences and Environmental Sciences.

11. Present and defend works in public.

The student, in order to pass this subject, must demonstrate the following

1. Clearly explains and relates the fundamental concepts, models and theories of biology.

2. Is able to analyse and synthesize information on topics related to the structure and functioning of the Biosphere, and to present and defend works in public.

3. Is able to recognize, describe and analyse biological forms and designs, adaptations, morphological variability of populations, structure and biodiversity of communities and ecosystems, and the main microbiological, botanical and zoological groups, and to identify objectives and methods for the design and development of activities in natural and environmental sciences.

3. Syllabus

The subject develops the following thematic blocks and units:

Block I. Fundamentals of Biology:

Unit 1. Basic biology: Genetics. Reproduction. Development. Biomorphology.

Unit 2. Ecology: Ecology and the Physical Environment. Population ecology. Community ecology. Structure and dynamics of ecosystems.

Unit 3. Evolution: Evidence and theory of evolution. Determinants of evolution. Natural selection.

Speciation.

Block II. Biodiversity:

Unit 4. Botany: Prokaryotes. Fungi and algae. Mosses. Ferns. Gymnosperms. Angiosperms.

Unit 5. Zoology: Protozoa. Metazoa. Diversity of metazoans. Cnidarians. Flatworms and Nematodes. Mollusks.

Annelids. Arthropods. Echinoderms. Chordates.

4. Academic activities

1. Master class. 30 hours.

2. Laboratory practices: 24 hours.

3. Preparation of a seminar-type practical work: 6 hours.

4. Assessment tests. 6 hours.

5. Assessment system

The student must demonstrate that they has achieved the expected learning results through the following activities: - Theoretical exam (will account for 60% of the grade): questions on fundamentals of biology and biodiversity will be posed (botany and zoology).

- Continuous evaluation of the laboratory practices (20% of the grade): exercises of recognition of biological forms and patterns, biometric analysis, morphological variability and biodiversity indexes, and observation of anatomical parts of different botanical and zoological groups.

- Elaboration of a report of a practical work, and its public defence in a seminar type activity (it will represent 20% of the grade): the work will deal with a topic related to the structure and functioning of the Biosphere.

The parts passed will be considered eliminated for the purposes of the academic year exams to which the student is entitled. In the case of laboratory practices, global evaluation tests will be scheduled for students who have not opted for continuous evaluation or who have to sit for exams in further calls. In all the evaluation activities, the adequacy between the exercises proposed and the results presented, the capacity of analysis, and the clarity and order of the reasoned answers will be evaluated.