

27103 - General Biology

Syllabus Information

Academic year: 2023/24

Subject: 27103 - General Biology

Faculty / School: 100 - Facultad de Ciencias

Degree: 446 - Degree in Biotechnology

ECTS: 12.0

Year: 1

Semester: Annual

Subject type: Basic Education

Module:

1. General information

It is a core content subject. Its general objectives are:

- That the student knows the structure of the cell and the different cellular organelles and relates them to their function.
- That the student knows and relates the structure of the main types of cells that make up the human organism.
- That the student knows the evolutionary relationships of living beings, as well as their relationship with the environment.

These goals are aligned with all the Sustainable Development Goals (SDGs) of the UN Agenda 2030 (<https://www.un.org/sustainabledevelopment/es/>).

This subject is part of the basic knowledge core of the degree and serves as the basis for the other biological subjects of the following years. Active attendance to theory classes, seminars and problems is recommended.

2. Learning results

Upon completion of the subject, the student will be able to:

- Identify levels of biological complexity, from molecules to organisms.
- Identify the structure of the different cell organelles observed under the electron microscope.
- Understand the functional significance of cell organelles.
- Understand the significance of the cell cycle and its regulation.
- Distinguish the different animal tissues and associate them to their functional specialization.
- Relate organisms to each other and to the environment.
- Relate evolutionarily at a basic level the different trunks of living beings through biological systematics.
- Analyse the impact of human population on biosphere cycles and apply this knowledge to the biology of sustainable development.
- Understanding evolutionary mechanisms.
- Understands the biology of populations and their interaction with the environment.
- Acquire basic digital competence.

In addition to these specific competencies, the student will improve their:

- Observation capacity.
- Ability to solve problems.
- Critical analysis of information.

3. Syllabus

Part 1: CELL BIOLOGY

1. Origin of cells
2. Cells as experimental models.
3. Chemical composition of the cell.
4. Cell membranes.
5. Membrane transport.
6. Endocytosis.
7. Internal membrane systems.
8. Golgi apparatus and lysosomes.

9. Core.
10. Mitochondria and peroxisomes.
11. Cytoskeleton.
12. Cell cycle.

Part 2: HISTOLOGY

13. Introduction to animal histology.
14. Epithelial tissue.
15. Connective tissue.
16. Cartilaginous tissue.
17. Adipose tissue.
18. Blood.
19. Bone tissue.
20. Muscle tissue.
21. Nervous tissue.

3rd part: EVOLUTION AND ECOLOGY

22. Evolution of populations.
23. Speciation and macroevolution.
24. Reconstruction of phylogenies.
25. Taxonomy and phylogeny.
26. Community ecology.
27. Ecosystem ecology.
28. Conservation biology.

4. Academic activities

The subject will be developed through the following activities:

1. Theory classes (participative lectures, with iconographic and bibliographic support material, accessible from the ADD- Anillo Digital Docente) 9 ECTS
2. Problem-based learning and participatory seminars. 1 ECTS
3. Laboratory practices, with preparation of a practice report 2 ECTS
4. Personalized tutoring
5. Acquisition of basic digital competences (on-line course)

The students will be informed about the potential risks involved in carrying out the practices of this subject, instructions in case of an accident and must sign a commitment to comply with the work and safety rules in order to be able to perform them.

5. Assessment system

- Assessment of the theoretical knowledge acquired through written tests (test and essay). It will account for 90% of the grade.
- Three written tests will be given throughout the term. Cell Biology will be evaluated at the end of the first four-month period; Histology, once the two credits of this subject have been taught and Evolutionary Biology and Ecology at the end of the term. If passed, these midterm exams will serve to eliminate subject matter and will contribute to the final grade proportionally to the credits assigned to each part. In case of failing any of the midterm exams or if students wish to improve their grade, they may take the final exam where they must pass all three parts of the subject.

The student may take the final exam without having taken the midterm exams.

Laboratory practices and seminars will account for 10% of the final grade.

The student will also have the possibility of being evaluated in a single global test. The test will cover contents of the theoretical and practical programs of the subject. The theoretical content test will be the same as the one taken by the students who take the continuous assessment. The assessment of the practical contents will consist in a laboratory exercise related to the program of practices of the subject.