Universidad Zaragoza

Academic Year/course: 2023/24

27204 - Biology

Syllabus Information

Academic year: 2023/24
Subject: 27204 - Biology
Faculty / School: 100 - Facultad de Ciencias
Degree: 452 - Degree in Chemistry
ECTS: 6.0
Year: 1
Semester: First semester
Subject type: Basic Education
Module:

1. General information

This subject provides the student with the basic knowledge about the fundamentals of Cell Biology, the chemical composition of cells, their diversity, their structure and their functionality.

These approaches and objectives are aligned with the following Sustainable Development Goals (SDGs) of the Agenda 2030 of the United Nations (https://www.un.org/sustainabledevelopment/es/):

- Goal 3: Health and wellness
- Goal 4: Quality education
- Goal 12: Responsible Production and Consumption
- Goal 17: Alliances to Achieve Objectives.

2. Learning results

- To know, identify and formulate generically the main types of biomolecules.
- To know the structure and functions of these biomolecules and to establish in a justified way the relationship between structure and function and the physiological consequences of their alteration.
- To know the basic concept of enzyme, its chemical nature, form of action and its biological importance.
- To know and describe the characteristics of the main cell types (prokaryotic, eukaryotic animals and plants).
- To identify and know structurally and functionally the different cellular organelles.
- To know how to relate the activities of the different cellular compartments and the mechanisms that make them possible.
- To know the importance and how the processes of intra- and extracellular transport, muscle contraction and cell division are carried out at the molecular level.
- To know the general characteristics of intermediary metabolism as a source of energy and biosynthetic precursors identify the main precursor and fuel molecules and energy production pathways.
- To know the basic mechanisms of gene expression (replication, transcription and translation).
- To know the cell cycle, its regulation and the basic types and mechanisms of cell death.
- Correct use of the optical microscope.
- Perform simple preparations for microscopic observation.
- Prepare reports related to the subject.

3. Syllabus

THEORY:

I. INTRODUCTION AND MOLECULAR ORGANIZATION OF CELLS: Organization of living beings. Structure and function of the main biomolecules.

II. CELLULAR ORGANIZATION AND DYNAMICS: Origin of cells. Prokaryotes and eukaryotes. Intracellular organization and associated functions (transport, shape, movement, metabolism, gene expression, replication, cell cycle and apoptosis).

PRACTICES:

Sessions 1 and 2.- Seminar on basic techniques in Molecular and Cellular Biology.

Sessions 3 to 8.- Laboratory: measurement of the size of a microscopic object and observation of different cell types and processes.

The detailed program will be presented in class and will be available in the corresponding ADD (Anillo Digital Docente)

4. Academic activities

- **Theoretical classes** (45 hours). Lectures and/or theoretical-practical classes, where the resolution of questions previously posed by the teacher related to the subject will be addressed.
- **Practical classes** (15 hours). 2 theoretical seminars (1-2 hours each) and 6 laboratory sessions (2 hours each one)

5. Assessment system

Theoretical contents **(T**) and practical classes **(P**) will be evaluated independently.

The overall grade will be: **0.9 x T + 0.1 x P**, provided that the **T** and **P** grades are equal to or higher than 5 points (out of 10).

- The theoretical contents **(T**) will be evaluated by means of a written test that will assess the knowledge of the specific contents of the program, their interrelation and their application to the resolution of specific questions and problems.

The test may contain different types of questions (development of topics, resolution of more or less extensive questions or problems in a justified manner and single-answer multiple choice questions). All grades will be indicated on the exam. In the evaluation of the multiple-choice questions (between 0-X points), individual incorrect answers will not be subtracted , but a fixed grade.

- The practical classes **(P**) will be evaluated continuously through compulsory attendance, experimental work and the presentation and evaluation of the practical notebook.

Students who do not pass the continuous evaluation of the practices must take a practical test on the dates of the global evaluation.