

## 26702 - Biology

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 26702 - Biology

**Faculty / School:** 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

**Degree:** 304 - Degree in Medicine

305 - Degree in Medicine

649 - Degree in Medicine

650 - Degree in Medicine

**ECTS:** 6.0

**Year:** 1

**Semester:** First semester

**Subject type:** Basic Education

**Module:**

### 1. General information

Biology aims to provide the student with the most important concepts of cell biology. It is focused on transmitting a deep knowledge of the cell on which the contents of other subjects of the Degree will be based. The purpose is that the student acquires, through the integration of all of them, a complete knowledge of the morphology, structure and function of the human body in the different stages of life.

The aim is to convey to the student the need and interest in acquiring this knowledge due to the importance of biomedical research in the development of today's medicine.

The syllabus is in the phase of extinction. During the academic years 2024-25 and 2025-26, this subject has no teaching, it will be governed by the guide published in the academic year 2023-24 (old plan) except for the evaluation system (see point 5 of this guide).

### 2. Learning results

In order to pass this subject, the students shall demonstrate they are able to:

- CON-3. Recognize one's own limitations and the need to maintain and update one's professional competence, paying special importance to autonomous learning of new knowledge and techniques and motivation for quality.
- CON-4. Understand and recognize the normal structure and function of the human body, at the molecular, cellular, tissue, organ and system level, in the different stages of life, and in both sexes.
- CE-01. Know the cell structure and function.

And they have acquired the following results:

- CE-03. Cellular communication. Excitable membranes. Cell cycle. Cell differentiation and proliferation.
- CE-05. Handle basic laboratory materials and techniques.

And the following skills:

- CT-02. Teamwork. Actively collaborate with a group of people to achieve a common goal by adding different talents.
- CT-05. Innovation and creativity. Design and carry out a new task or project in a different way using creativity and curiosity to add value with an entrepreneurial attitude.
- CT-06. Permanent self-learning. Use learning continuously and develop autonomous and flexible learning strategies throughout life to be part of an active, motivated and integrated citizenry, promoting job improvement or personal development.

### 3. Syllabus

- Plasma membrane: Chemical composition and structure.

- Membrane specializations. Adhesion proteins and extracellular matrix.
- Membrane permeability.
- Transport across the membrane. Endocytosis and exocytosis.
- Cellular communication. Signal transduction.
- Cytosol.
- Cytoskeleton: Microfilaments. Intermediate filaments. Microtubules.
- Endomembrane system: Endoplasmic reticulum. Golgi apparatus.
- Ribosomes.
- Lysosomes.
- Peroxisomes.
- Mitochondria.
- Interphase nucleus.
- Cell Cycle.
- Cellular death. Apoptosis.
- Cell differentiation.
- Stem cells.
- Molecular basis of cancer.

#### 4. Academic activities

- Theoretical classes
- Interpretation of electron microscopy images: It relates cellular ultrastructure and function.
- Laboratory practices: The objective is to become proficient in the use of the optical microscope and to be initiated in methods of study the cell.
- Biomedical seminars: To motivate scientific research by addressing current issues related to the subject.

The student will be informed about the possible risks during the practices and will sign a commitment to comply with the safety rules (<http://uprl.unizar.es/estudiantes.html>)

#### 5. Assessment system

1. **Theory:** There will be two written tests with multiple-choice questions and/or short development questions, evaluating the capacity of expression, synthesis and relation of concepts (80% of the final grade). It is passed with a minimum grade of 5 / 10.
2. **Laboratory practices:** Students with more than two absences will be required to take an exam. Passing it is mandatory.
3. **Cell ultrastructure practices (Electron Microscopy):** They will be evaluated by means of a written test of identification of different cellular structures (10% of the final grade). It is passed with a minimum grade of 5 / 10.
4. **Biomedical seminars:** They will be evaluated by teamwork and exposition in class, as well as acquired knowledge about all presented seminars (10% of the final grade).
5. **Complementary research task (autonomous work):** Their preparation will be valued as well as the expository capacity of each student (it adds up to 1 point to the final grade).

**FINAL EXAM:** Students who do not eliminate topics through the exams or cannot follow continuous evaluation must take a final exam of the whole subject (minimum grade of 5 / 10). In each of the tests, both theoretical (80%) and practical (10% + 10%), a minimum of 4 / 10 is required for averaging. Tests not performed will be scored with zero points.

#### Plan to extinguish:

1. *Theory: There will be two written tests with multiple-choice questions and/or short development questions, evaluating the capacity of expression, synthesis and relation of concepts (80% of the final grade).*
2. *Laboratory practices: Passing it is mandatory.*
3. *Cell ultrastructure practices (Electron Microscopy): They will be evaluated by means of a written test of identification of different cellular structures, complementing (20%) the grade of the midterm exam of theory. It is passed with a minimum grade*

of 5 / 10.

4. *Genetics problem solving practices: They will be evaluated by means of a test in which students will solve different problems and practical cases, complementing (20%) the grade of the partial exam of theory. It is passed with a minimum grade of 5 / 10.*

*FINAL EXAM: Students who do not eliminate topics through the exams or cannot follow continuous evaluation must take a final exam of the whole subject (minimum grade of 5 / 10). In each of the tests, both theoretical (80%) and practical (10% + 10%), a minimum of 4 / 10 is required for averaging. Tests not performed will be scored with zero points.*

## **6. Sustainable Development Goals**

3 - Good Health & Well-Being