

## 27104 - Physiology

### Syllabus Information

**Academic year:** 2024/25

**Subject:** 27104 - Physiology

**Faculty / School:** 100 - Facultad de Ciencias

**Degree:** 446 - Degree in Biotechnology

**ECTS:** 6.0

**Year:**

**Semester:** Second semester

**Subject type:** Basic Education

**Module:**

### 1. General information

Physiology studies the normal function of different animal organisms, including humans. Their knowledge allows to interpret alterations in function as a cause of disease. It also provides a framework for many of the applications of Biotechnology. This a 6 ECTS basic subject.

Previous knowledge of Anatomy, Histology, Biology or Biochemistry is recommended.

The approaches and objectives of the course 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 learning results provides training and competence to contribute to some extent to the achievement of goal 3 (Health and Well-being), goal 5 (Gender Equality).

### 2. Learning results

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

- Is able to describe the general principles of functioning of the most common tissues and processes: intercompartmental exchange, nervous and endocrine communication.
- Is able to explain the basic mechanisms of the functioning of organs, apparatus and systems (nervous, locomotor, cardio-vascular, blood, respiratory, digestive, endocrine, renal, homeostasis and reproductive).
- Is able to describe the basic mechanisms regulating the functioning of organs, apparatus and systems.
- Distinguishes variations in function throughout the stages of life.
- Understands the physiological differences between different animal species of interest for Biotechnology.
- Knows the range of normal values of the main functional parameters.
- Is able to describe and use different methods and techniques to measure function in humans and experimental animals.
- Applies physiological knowledge to interpret and analyse the integrated responses of the organism necessary for its adaptation to internal or external changes.
- Applies physiological knowledge to understand the origin of the disease.

### 3. Syllabus

#### **PARTICIPATORY LECTURES (40 h):**

I. Introduction to Physiology

II. Nervous system physiology

III. Internal medium: blood

IV. Physiology of muscle contraction

V. Renal physiology

VI. Cardiovascular physiology

VII. Respiratory physiology

VIII. Digestive and nutritional physiology

IX. Physiology of the endocrine system

X. Physiology of reproduction

#### **PRACTICES (20 h):**

1. Study of nervous system function

2. Erythrocyte and leukocyte count. Leukocyte formula. Hemoglobin and hematocrit determination
3. Urinalysis. Determination of blood glucose after ingestion of different carbohydrates
4. Electrocardiography. Pulse and blood pressure measurement
5. Spirometry. Microscopic study of rat vaginal smears
6. Integration: Exercise physiology

#### 4. Academic activities

- **Participative master classes (40 h)**: The basic theoretical knowledge of the subject will be presented, directing it towards the acquisition of competencies and learning results. They will be held in the classroom of the Science Faculty designated by the Centre.

- **Practical classes (20 h)** including functional tests, determinations of different parameters of physiological interest in the laboratory and computer simulations. They will be held at the facilities of the Faculty of Veterinary.

- Group or personalized **tutoring** at the student's request.

- Gradual and structured **self-study** to acquire the competencies.

- **Assessment tests** on dates to be determined by the Centre.

#### 5. Assessment system

A) Written test (80%), with two parts:

- Test of 40 four-choice questions, with a single answer. A 5 on this part will be achieved with 24 correct questions.
- Short questions (explain a graph, solve a problem, relate concepts, brief explanation of a concept): 12

B) Practical classes (20%): At the end of the practical classes, performance and level of knowledge will be evaluated by means of multiple choice questions. To be eligible for this evaluation, it will be necessary to have attended at least 4 of the practices. In case of not reaching the required attendance or failing this continuous assessment, an exam will be held.

Parts A and B must be passed separately to pass the subject.

#### 6. Sustainable Development Goals

- 3 - Good Health & Well-Being
- 4 - Quality Education