# COURSE DATA

## DATA SUBJECT

**Code:** 34070
**Name:** Physiology I
**Cycle:** Undergraduate Studies
**ECTS Credits:** 6
**Academic year:** 2025-26

## STUDY (S)

| Degree | Center | Acad. year | Period |
|---|---|---|---|
| 1201 - Degree in Pharmacy | Facultat de Farmàcia i Ciències de l'alimentació | 2 | First quarter |
| 1211 - Double Degree in Pharmacy and Human Nutrition and Dietetics | Facultat de Farmàcia i Ciències de l'alimentació | 2 | First quarter |

## SUBJECT-MATTER

| Degree | Subject-matter | Character |
|---|---|---|
| 1201 - Degree in Pharmacy | Physiology | BASIC |
| 1211 - Double Degree in Pharmacy and Human Nutrition and Dietetics | Asignaturas obligatorias del PDG Farmacia-Nutrición Humana y Dietética | COMPULSORY |

## COORDINATION

MENA MOLLA SALVADOR

# SUMMARY

Physiology I is a four-month core-subject course in the Pharmacy Degree Program. It is taught in the first four-month period of the second year of study. It consists of 6 ECTS credits and has both theoretical and experimental components.
The overall objectives of this course are:

- To gain an understanding of normal human body functions which will provide a basis for the comprehension of other subjects (Pathophysiology, Biological and Diagnostic Laboratory Analysis, Pharmacology, etc.) Also to understand the effect of medications at the cellular, organ and organ-system levels.
- To train students in basic laboratory techniques and instrument skills, especially those that allow them to explore organ functions and interpret experimental data.

# PREVIOUS KNOWLEDGE

## RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

There are no specified enrollment restrictions with other subjects of the curriculum.

## OTHER REQUIREMENTS

Knowledge of Biology and Anatomy.

# COMPETENCES / LEARNING OUTCOMES

## 1201 - Degree in Pharmacy

Act with autonomy in learning, making informed decisions in different contexts, issuing judgements based on experimentation and analysis, and transferring knowledge to new situations.

Apply such knowledge to the professional world, contributing to the development of human rights, democratic principles, principles of equality between women and men, solidarity, environmental protection and promotion of a culture of peace with a gender pe

Collaborate effectively in work teams, assuming responsibilities and leadership roles and contributing to collective improvement and development.

Contribute to the design, development and implementation of solutions that respond to social demands, taking into account the Sustainable Development Goals as a reference.

Demonstrate critical and self-critical thinking in the field of the degree programme, considering aspects such as professional ethics, moral values and the social implications of the different activities carried out.

Develop habits of excellence and quality in professional practice.

Develop skills to update knowledge and undertake further studies, including pharmaceutical specialisation, scientific research, technological development and teaching.

Know and interpret how each organ contributes to maintaining the constancy of the internal environment.

Know and understand, within the field of the degree programme, gender inequalities in society; integrate different needs and preferences based on sex and gender into the design of solutions and problem solving.

Know and understand the basic physiology of the human body, from the molecular level to the whole organism, at different stages of life.

Know and understand the basic principles and laws governing the functioning of our cells, organs, systems and apparatuses.

Know how to communicate effectively, both orally and in writing, adapting to the characteristics of the situation and the audience.

Know how to interpret, evaluate and communicate relevant data in the different areas of pharmaceutical activity, using information and communication technologies.

Know the regulatory mechanisms controlling different functions and mutual interactions of the body¿s

systems.

Learn to understand the organism as a whole.

Possess and understand knowledge in the different areas of study included in pharmacist training.

Propose creative and innovative solutions to complex situations or problems within the field of knowledge, to respond to diverse professional and social needs.

Recognise one's own limitations and the need to maintain and update professional competence, placing particular emphasis on self-learning of new knowledge based on available scientific evidence.

Show skills in presenting oral or written work.

Transmit ideas, analyse problems and solve them with critical spirit, acquiring teamwork skills and assuming leadership when appropriate.

Use of the scientific bibliography specific to the subject.

## DESCRIPTION OF CONTENTS

### 1. General and cellular Physiology

Introduction to the study of Physiology. General and cellular Physiology. Functional organization of the human body. Internal environment. Homeostasis. Body fluid compartments. Functions of cell membranes. Excitability. Action potential. Nerve impulse conduction. Synaptic transmission. Effectors. Excitation and contraction of skeletal, smooth and cardiac muscles. Functional organization of the nervous system. Autonomic nervous system.

### 2. Blood Physiology

Properties and functions of the blood. Erythrocytes. Regulation of erythropoiesis. Iron metabolism. Leukocytes. Blood group system. Hemostasis and blood coagulation.

### 3. Cardiovascular physiology

Functions of the cardiovascular system. Electrical and mechanical activity of the heart. Cardiac output. Regulation of cardiac function. Hemodynamics. Systemic circulation. Blood pressure. Capillary, venous and lymphatic circulation. Integration of cardiovascular function. Regulation of blood pressure. Pulmonary circulation. Circulation Through Special Regions.

### 4. Respiratory Physiology

Functions of the respiratory system. Mechanics of pulmonary ventilation. Pulmonary ventilation and alveolar ventilation. Gas exchange. Transport of gases in blood. Regulation of ventilation.

## WORKLOAD

## PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Tutorials | 2,00 |
| Theory | 42,00 |
| Seminar | 2,00 |
| Laboratory | 14,00 |
| **Total hours** | **60,00** |

## NON PRESENCIAL ACTIVITIES

| Activity | Hours |
|---|---|
| Attendance at other activities | 0,00 |
| Individual or group project | 12,00 |
| Independent study and work | 18,00 |
| Preparation of lessons | 35,00 |
| Preparation for assessment activities | 25,00 |
| Resolution of case studies | 0,00 |
| **Total hours** | **90,00** |

# TEACHING METHODOLOGY

Development of the course:
- 38 Lectures of theoretical contents, 1 hour / lecture.

- Lesson 1, General and cellular Physiology: 17 lectures.
- Lesson 2, Blood Physiology: 6 lectures
- Lesson 3, Cardiovascular physiology: 10 lectures.
- Lesson 4, Respiratory Physiology: 5 lectures

- 4 practical classes of laboratory experiments:

- 1: Osmotic phenomena in living organisms, 4 hours.
- 2: Haematology, 4 hours.
- 3: Blood pressure, electrocardiogram and auscultation, 4 hours.
- 4: Spirometry, 2 hours.

- 2 in-class tutorial sessions throughout the course (1 hour/session).
- 2 seminars throughout the course (1 hour).
- Teamwork: a written report submitted in an electronic file.

The activities of continuous assessment, which in this subject are practices, tutorials and seminars, are of MANDATORY ATTENDANCE and, therefore, NOT RECOVERABLE, in accordance with the provisions of Article 6.5 of the Regulation of Evaluation and Qualification of the UV for Bachelor and Master degrees. If it is not possible to attend any of these activities for justified reasons, it must be communicated in advance. In this way, the person in charge of the subject may assign the student a session in another group.

# EVALUATION

**Continuous evaluation (25% of final score).**

- Multiple choice test (10% of final score), according to the official calendar, and including the theoretical content of the Unit 1.
- Seminars (Teamwork) (10% of final score). An evaluation of the personal involvement of each student and the quality of the presentation.
- Practical classes (5% of the final score) will be evaluated for their achievement (personal and team work of each student) and activities from Virtual Classroom. Attendance at practices is mandatory.
**- Important note: the unjustified unattendance at the practical sessions implies the failure of the course.**

**Final evaluation, 1st call (75% of final score)**

- **Theoretical Exam** (60% of the final score): multiple-choice test to be held on a date according to the official school calendar, which includes theoretical contents of the entire course.
- **Practical Exam** (15% of the final grade). Multiple-choice test to be held in the same session as the theoretical exam, that will include the contents of the practice sessions.

It will be necessary to obtain at least 45% of the maximum score in the theorical exam and in the practical exam. In addition, the complete qualification (including all parts) needs to be at least 5 points.

In this 1st call, students who do not attend the final exam will appear on the records as 'no presentado'.

**Final evaluation, 2nd call.**

Those students who do not pass the course in the 1st call, having suspended the theoretical and/or practical exam, must attend to the 2nd call of the corresponding part.

It will be necessary to obtain at least 45% of the maximum score in the theorical exam and in the practical exam.

In 2nd call, the final score will be calculated as follows: **70% theoretical exam, 15% practical exam, 10% team seminar, and 5% continuous evaluation of practical classes**.

It will be necessary to obtain at least 5 points.

**When they do not pass the course**, realization of the practical sessions and the seminar teamwork will be optionally validated in the next academic year, only if they reached at least 45% of the maximum score in the practical exam, the seminar work, and the continuous evaluation of practical classes.

Evidence of copying or plagiarism in any of the assessable tasks will result in failure to pass the subject and in appropriate disciplinary action being taken. Please note that, in accordance with article 13. d) of the Statute of the University Student (RD 1791/2010, of 30 December), it is the duty of students to refrain from using or participating in dishonest means in assessment tests, assignments or university official documents.

In the event of fraudulent practices, the "**Action Protocol for fraudulent practices at the University of Valencia**" will be applied (ACGUV 123/2020): https://www.uv.es/sgeneral/Protocols/C83sp.pdf

## REFERENCES


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- Conti. Fisiología Médica. Ed Mc Graw Hill.
- Costanzo. Fisiología. Ed. Elsevier.
- Fox. Fisiología Humana. Ed. McGraw-Hill Interamericana.
- Ganong. Fisiología Médica. Ed Mc Graw Hill.
- Guyton. Tratado de Fisiología Médica. Ed. Elsevier.
- Mulroney y Myers. Netter. Fundamentos de Fisiología. Ed Elsevier.
- Pocock y Richards. Fisiología Humana. La base de la Medicina. Ed. Masson.
- Rhoades y Tanner. Fisiología Médica. Ed. Masson.
- Silverthon. Fisiología Humana. Un enfoque integrado. Ed. Panamerica.
- Thibodeau y Patton. Estructura y función del cuerpo humano. Ed. Elsevier.
- Tortora y Derrickson. Principios de Anatomía y Fisiología. Ed. Panamericana.
- Putz y Pabst. Atlas de Anatomía Humana Sobbota. Ed Panamericana

- Yong y Heath. Wheaters Histología Funcional. Ed Harcourt
- Berg, Tymoczko y Stryer. Bioquímica. Ed. Reverté