General Physiology

Code: 106730
ECTS Credits: 3

2024/2025

Degree	Type	Year
2502442 Medicine	FB	1

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Teachers

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Teaching groups languages

You can view this information at the end of this document.

Prerequisites

No official prerequisites are defined for this subject. However, it is recommended that the student has acquired the basic knowledge and competences of the subjects corresponding to *Cell Biology*, *Biochemistry and Molecular Biology*, and *Biophysics*.

Objectives and Contextualisation

The General Physiology subject is programmed during the second semester of the first course of the Degree of Medicine and develops the knowledge of the basic principles of the function of cells and tissues of the human organism. The acquisition of the competences of this subject will allow the student to be well prepared to confront the study of the physiology of the different systems of the human body during the second course.

The general training objectives of the subject are:

- To know the basic mechanisms of the functioning of the body tissues.
- To integrate the Physiology knowledge with concepts learned in other basic subjects that deal with the structure and the cellular and molecular aspects of the organism.
- To train the student to apply the physiological knowledge in deducting the consequences of the diseases.

- To acquire practical skills for performing the most frequent functional tests in the biomedical field.
- To acquire attitudes aimed at the promotion of health and the prevention of disease, oriented towards health medicine, and appropriate for a medical practice based on scientific evidence.

Competences

- Communicate clearly, orally and in writing, with other professionals and the media.
- Critically assess and use clinical and biomedical information sources to obtain, organise, interpret and present information on science and health.
- Demonstrate basic research skills.
- Demonstrate knowledge of the principles and physical, biochemical and biological processes that help to understand the functioning of the organism and its disorders.
- Demonstrate understanding of the basic sciences and the principles underpinning them.
- Demonstrate understanding of the functions and interrelationships of body systems at different levels of organisation, homeostatic and regulatory mechanisms, and how these can vary through interaction with the environment.
- Demonstrate understanding of the structure and function of the body systems of the normal human organism at different stages in life and in both sexes.
- Organise and plan time and workload in professional activity.

Learning Outcomes

1. Apply knowledge of physiology to the production of structured review texts.
2. Communicate clearly, orally and in writing, with other professionals and the media.
3. Demonstrate basic research skills.
4. Describe the function and characteristics of the different components of blood.
5. Describe the function of the different body compartments.
6. Describe the general organisation and function of the systems of the human body in health.
7. Explain the basic functional mechanisms of the different cell types and the tissues they make up.
8. Identify physiological information sources, including textbooks, atlas images, internet resources and other specific bibliographic databases.
9. Identify the basic mechanisms of cell and tissue physiology.
10. Identify the functional variations of the human organism at different stages in life and their principal causes.
11. Identify the main techniques used in physiology laboratories.
12. Identify the scientific bases of human physiology.
13. Make correct use of the international physiological nomenclature.
14. Organise and plan time and workload in professional activity.

Content

INTRODUCTION TO PHYSIOLOGY

TRANSPORT OF IONS THROUGH THE CELL MEMBRANE

PHYSIOLOGY OF EPITHELIAL CELLS

CELL ELECTRICAL PHENOMENA

SYNAPTIC TRANSMISSION

PHYSIOLOGY OF SKELETAL MUSCLE

PHYSIOLOGY OF CARDIAC MUSCLE

PHYSIOLOGY OF SMOOTH MUSCLE

PHYSIOLOGY OF BLOOD AND HEMATOPOIETIC ORGANS

BLOOD PLASMA

ERYTHROCYTES

LEUKOCYTES

LYMPHOCYTES AND IMMUNITY

BLOOD GROUPS

HEMOSTASIS

[Detailed contents are provided in the Subject Program]

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
LABORATORY PRACTICES (PLAB)	8.5	0.34	3, 10, 14
THEORY (TE)	18	0.72	9, 10, 14
Type: Supervised			
CASE RESOLUTION WORK	2	0.08	9, 10, 14
TUTORIALS	3	0.12	9, 10, 14
Type: Autonomous			
PREPARATION OF WRITTEN WORKS / READING OF ARTICLES	7.5	0.3	3, 9, 10, 14
SELF STUDY	30	1.2	3, 9, 10, 14

Theory classes:

Systematic explanation and study of the subject topics, giving relevance to the most important concepts. The student acquires the basic scientific knowledge of the subject in theory classes, which will be complemented by self-study of the themes of the subject program.

Laboratory practices:

Practical sessions for the observation and performance of procedures, the practical learning of physiological techniques and their medical application. Group work and active self-learning are promoted.

Case-based work:

Work on cases or problems of relevance for learning the subject. The knowledge acquired in theory classes, practices and personal study is applied to the resolution of practical cases presented using the Moodle application.

Tutorial teaching:

Availability of tutorials for helping in the autonomous study of physiological concepts and application for the resolution of cases throughout the semester.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Objective tests on practical knowledge	10%	0.5	0.02	2, 3, 6, 4, 9, 11, 10, 13
Objective tests on theory knowledge	75%	3.5	0.14	2, 6, 5, 4, 7, 12, 9, 8, 10, 14, 13
Practical learning evaluation	10%	1	0.04	1, 3, 6, 4, 12, 9, 11, 10, 14, 13
Questionnaires on case and problem solving	5%	1	0.04	1, 3, 6, 5, 4, 7, 12, 9, 8, 11, 10, 14, 13

EVALUATION
The acquisition of the competences described in the subject will be valued, including the learning of the Physiology of the human organism, the general training to distinguish between normality and dysfunction and the ability to integrate theoretical and practical concepts.
The evaluation of the subject will be based on the theoretical and practical syllabus that appears in the Program of the subject.

Evaluation model
Each block or system that integrate the program of the subject will be evaluated individually, both from the theoretical and practical syllabus (laboratory and case practices).
Systems for evaluation in General Physiology are considered:
- Physiology of Blood and Hematopoietic Organs
- Cell Physiology of Nerve, Muscle and Epithelium
To pass the subject it is required to pass each of the two blocks with a minimum grade of 5.0 in the same academic year.

Continuous evaluation
The continuous evaluation of each system will consist of:
A. Midterm exam with:
- multiple-choice items and/or restricted written questions to assess theoretical knowledge of the subject and concepts related to laboratory practices.
The grade of the partial exam will represent 85% of the overall grade of the system.
B. Tests throughout the course on the knowledge acquired in laboratory practices and case study. The grade of these tests will be 15% of the final grade and will be distributed in:
- Evaluation of laboratory practices, by on-site tests and questionnaires carried out in the Moodle application, on the concepts achieved in the practices. This grade will represent 10% of the overall grade of the system.
- Questionnaires on solving cases and practical problems, carried out in the Moodle application, which will

represent 5% of the overall grade of the system.
To pass each system it is required to obtain a minimum of 5.0 in the partial examination of theoretical and practical knowledge of the subject (section A) and a minimum of 5.0 in the overall grade of the system (85% partial exam A + 15% questionnaires B).
To pass the subject it will be necessary to have passed each one or of the systems with a minimum of 5.0, so that the overall average is equal to or higher than this grade.
In this case, the final grade will be the weighted average (by the extension of the system) of the marks obtained in each of the approved systems.

Final examination
A final recovery exam will be carried out for the students who have not passed the subject in the continuous evaluation. The student must attend only the blocks that he/she has not passed in the continuous evaluation of the same academic year.
The final recovery exam of each system will be composed of multiple-choice questions and will evaluate the knowledge of:
- Theoretic knowledge of the subject, weighted at 75% of the final grade.
- Laboratory practices and cases, weighted at 25% of the final grade.
To pass each system it is required to obtain a minimum of 5.0 in the exam.
To pass the subject it is required to have passed the two systems with a minimum of 5.0.
In this case, the final grade will be the weighted average (by the extension of the system) of the marks obtained in each of the approved systems. In case of not passing any of the systems, the maximum score obtained will be 4.8.
It will be considered as "not evaluable" the student who does not take the evaluation exams both theoretical and practical.

Examination review procedure
Students may submit complaints to the statement of the questions during the 24 hours following the completion of the in person exams.
The revision of the grades will be carried out in the period announced with the publication of the grades of the midterm and final exams.

Single evaluation
Students can benefit from the single evaluation system, according to the regulationsof the Faculty. The single evaluation will be based on the same content of the subject syllabus, the acquisition of the same competences, and will have the same level of demand as the continuous evaluation.
The single evaluation will consist of tests carried out on the same date for each one of the systems or blocks that make up the subject.
In the evaluation of each system or block, an exam consisting of multiple-choice questions and / or restricted written questions will be carried out to evaluate the theoretical knowledge of the subject and the concepts related to laboratory practices and case study, with an approximate weighting of 75% and 25% of the overall grade of each system.
To pass each system it is required to obtain a minimum of 5.0 in the exam.
To pass the subject it will be necessary to have passed all the systems or blocks with a minimum of 5.0. In that case, the final grade will be the weighted average (by the extension of the system) of the marks obtained in each of the systems. In case of not passing any of the systems, the maximum score obtained will be 4.8. It will be considered as "not evaluable" the student who does not take the scheduled global and recovery exams.

Recovery exam. The same recovery system shall be applied as in the case of continuous evaluation.

The review of qualifications will follow the same procedure as for continuous evaluation.

Bibliography

TEXTBOOKS

- Koeppen BM, Stanton B. Berne & Levy Physiology. 8th ed. Elsevier, 2023.

- Hall JE. Guyton Textbook of Medical Physiology. 14th ed. Elsevier; 2021.

- Purves D. Neuroscience. 6th ed. Sinauer; 2018.

- Paulev PE, Zubieta G. New Human Physiology, 2nd ed. https://www.zuniv.net/physiology/book/

Software

LABCHART https://www.adinstruments.com/

Nernst/Goldman Simulator https://apps.apple.com/us/app/nernst-goldman-equation-simulator/id1022504095

Language list

Name	Group	Language	Semester	Turn
(PLAB) Practical laboratories	101	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	102	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	103	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	104	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	105	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	106	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	107	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	108	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	109	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	110	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	111	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	112	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	113	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	114	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	115	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	116	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	117	Catalan	second semester	morning-mixed
(PLAB) Practical laboratories	118	Catalan	second semester	morning-mixed

(TE) Theory	101	Catalan	second semester	afternoon
(TE) Theory	102	Catalan	second semester	afternoon
(TE) Theory	103	Catalan	second semester	afternoon
(TE) Theory	104	Catalan	second semester	afternoon