

| Degree programme | Type | Course |
|------------------|------|--------|
| Medicine         | FB   | 2      |

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## Group languages

You can consult this information at the [end](#) of the document.

## Prerequisites

No official prerequisites are defined for this subject. However, it is recommended that the student has acquired the basic knowledge and competence on the structure and organization of the human body and its body systems, particularly in the subjects of Cell Biology, Biochemistry and Molecular Biology, and Biophysics. It is also necessary to have completed and achieved the basic knowledge and competence of the General Physiology subject of the first year, as well as of the Medical Physiology I of the first semester of the second year.

## Objectives

The Medical Physiology II subject is programmed during the second semester of the second year of the Degree of Medicine and develops the knowledge of the normal function of the following systems of the human body: nervous system and special senses, endocrine and reproductive systems, and the mechanisms of adaptation of the body to the environment. The acquisition of the basic competence of this subject will allow the student to understand the normal function of the systems and to confront the study of the physiopathology and the understanding of the mechanisms of diseases that affect the different systems of the human body during the next years.

The general training objectives of the subject are:

- To understand the basic concepts of physiology of the nervous, endocrine and reproductive systems of the human body in health, as well as the mechanisms of adaptation to the environment.
- To acquire a comprehensive and integrated view of the interrelations of the different systems of the body.
- 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 achieve a global vision of the functioning of the human body.
- To train the student to apply the physiological knowledge in deducing the consequences of the diseases.
- To acquire practical skills in each one of the fields of Physiology 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.

## Learning outcomes

1. Describe the general organisation and function of the systems of the human body in health.
2. Identify the scientific bases of human physiology.
3. Identify the main techniques used in physiology laboratories.
4. Identify the basic mechanisms of cell and tissue physiology.
5. Identify the functional variations of the human organism at different stages in life and their principal causes.
6. Describe the function and regulatory mechanisms of the cardiovascular system, the respiratory system, the excretory system, the digestive system, the endocrine system and the male and female reproductive system.
7. Describe the functioning of the nervous system and the neural regulation mechanisms.
8. Describe the physiology of the different sense organs.
9. Relate the cell and tissue characteristics of the organs and systems of the body to their function.
10. Describe the interrelationship between the different body systems in the maintenance of homeostasis and good health.
11. Analyse the functional mechanisms that help the organism to adapt to the main environmental variations.
12. Identify the functional disorders at the level of each system that cause various types of diseases.
13. Identify the main experimental techniques in physiology and their usefulness to basic and applied research.
14. Perform basic techniques for the examination and functional assessment of physiological systems.
15. Indicate techniques of functional studies that are appropriate for diagnosis and evaluation of biomedical procedures.
16. Interpret normal and abnormal results of techniques of functional studies of body systems.
17. Make correct use of the international physiological nomenclature.
18. Apply knowledge of physiology to the production of structured review texts.
19. Identify physiological information sources, including textbooks, atlas images, internet resources and other specific bibliographic databases.
20. Organise and plan time and workload in professional activity.
21. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
22. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
23. Demonstrate basic research skills.

24. Use information and communication technologies in professional practice.

## Contents

### ***NERVOUS SYSTEM AND SPECIAL SENSES***

INTRODUCTION TO NEUROPHYSIOLOGY

NEURONAL CIRCUITS

SEGMENTAL CONTROL OF MOVEMENT AND POSTURE

SUPRASEGMENTAL CONTROL OF MOVEMENT AND POSTURE

AUTONOMIC NERVOUS SYSTEM

NERVOUS REGULATION OF VISCERAL FUNCTIONS

INTRODUCTION TO SENSE PHYSIOLOGY

SOMATIC AND VISCERAL SENSITIVITY

TASTE AND SMELL SENSITIVITY

AUDITORY AND VESTIBULAR SENSITIVITY

VISUAL SENSITIVITY

BRAIN ELECTRICAL ACTIVITY. SLEEP-WAKE STATES

HIGHER FUNCTIONS OF THE NERVOUS SYSTEM

### ***ENDOCRINE SYSTEM***

INTRODUCTION TO ENDOCRINOLOGY

HYPOTHALAMUS AND PITUITARY GLAND (HYPOPHYSIS)

PINEAL GLAND

GROWTH HORMONE SYSTEM

PROLACTIN SYSTEM

HYPOTHALAMIC-PITUITARY-THYROID AXIS

ADRENAL MEDULLA

HYPOTHALAMIC-PITUITARY-ADRENOCORTICAL AXIS

HYPOTHALAMIC-PITUITARY-GONADAL AXIS

ENDOCRINE PANCREAS

HORMONAL CONTROL OF CALCIUM METABOLISM

OTHER HORMONES

## ***REPRODUCTIVE SYSTEM***

FEMALE REPRODUCTIVE SYSTEM

MALE REPRODUCTIVE SYSTEM

PHYSIOLOGY OF THE SEXUAL RESPONSE

FERTILIZATION AND PREGNANCY

PARTURITION AND LACTATION

**INTEGRATION AND ADAPTATION**

REGULATION OF BODY TEMPERATURE

SPORTS PHYSIOLOGY

PHYSIOLOGY OF AGING

**Learning activities and methodology**

| Title                                        | Hours | ECTS | Learning outcomes                                                                 |
|----------------------------------------------|-------|------|-----------------------------------------------------------------------------------|
| TUTORIALS                                    | 23    | 0.92 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 22                 |
| PREPARATION OF CASE-BASED WORK AND PRACTICES | 23    | 0.92 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 |
| SELF STUDY                                   | 90    | 3.6  | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 20, 22             |
| THEORY (TE)                                  | 53    | 2.12 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 18, 19, 21, 22, 23, 24     |
| LABORATORY PRACTICES (PLAB)                  | 21.5  | 0.86 | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 19, 20, 21, 22, 23, 24 |
| CASE RESOLUTION WORK (PAUL)                  | 5     | 0.2  | 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 19, 20, 21, 22, 23, 24     |

**Theory classes:**

Systematic explanation 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 and 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.

Use of AI: In this subject, the use of Artificial Intelligence (AI) technologies is permitted as an integral part of the development of the work, provided that the final result reflects a significant contribution from the student in terms of analysis and personal reflection. The student must clearly identify which parts have been generated using this technology, specify the tools used, and include a critical reflection on how these have influenced the process and the final outcome of the activity. Lack of transparency regarding the use of AI will be considered a breach of academic integrity and may result in a penalty in the activity's grade or more severe sanctions in serious cases.

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

### Continuous assessment activities

| Title                                                                                                                                                                        | Weight                        | Hours | ECTS | Learning outcomes                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------|------|---------------------------------------------------------------------------------------------------|
| Written evaluation through objective tests: 2 tests of multiple choice questions and/or restricted questions essay tests of theoretical knowledge and knowledge of practices | 80%<br>(40%<br>each<br>test)  | 8     | 0.32 | 1, 2, 3, 4, 5, 6, 7, 8,<br>9, 10, 11, 12, 13,<br>15, 16, 17, 22                                   |
| Practical evaluation and/or questionnaires in Moodle application                                                                                                             | 20%<br>(10%<br>each<br>block) | 1.5   | 0.06 | 1, 2, 3, 4, 5, 6, 7, 8,<br>9, 10, 11, 12, 13,<br>14, 15, 16, 17, 18,<br>19, 20, 21, 22, 23,<br>24 |

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.

### 1. Evaluation model:

Each block or system that integrates the program of the subject will be evaluated individually, both from the theoretical and practical syllabus (laboratory and case practices).

Systems for evaluation in Medical Physiology II:

- Nervous system and special senses
- Endocrine and reproductive Systems, Adaptation/Integration

To pass the subject it will be necessary to pass each of the two blocks with a minimum grade of 5.0 in the same academic year.

### 2. Continuous evaluation:

Two partial exams will be programmed in order to evaluate the two blocks of the subject:

- 1) Nervous system and special senses
- 2) Endocrine and reproductive Systems, Adaptation/Integration

The continuous evaluation of each block will consist in:

#### 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 this exam will be 80% of the final grade of the block.

B. Tests throughout the course on the knowledge acquired in laboratory practices and case studies. The grade of these tests will be 20% of the final grade of the block:

- Evaluation of practices, through on-site tests and/or questionnaires carried out in the Moodle application, on the concepts achieved in these.

To pass each system it will be necessary 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 (80% partial exam A + 20% tests B).

To pass the subject it will be necessary to have passed each one or of the systems with a minimum of 5.0. In this case, the final grade will be the average of the marks obtained in each of the approved systems.

### 3. Final examination:

A final recovery exam will be carried out, in which the student will have to attend only to the blocks that they have not passed in the continuous evaluation of the same academic year.

The final examination of each system will consist of tests of multiple-choice questions and/or restricted written questions, and will evaluate the knowledge of theory and laboratory and case-based practices.



To pass each system it will be necessary to obtain a minimum of 5.0 in the exam. The final grade for the recovered system will be the one obtained in the recovery exam.

To pass the subject it will be necessary to have passed the two systems with a minimum of 5.0. In this case, the final grade will be the average 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 partial and final exams expressly scheduled.

#### 4. Examination review procedure:

Students may submit claims to the statement of the questions during 24 hours following the completion of the exams.

The revision of the grades will be carried out in the period to be announced together with the publication of the grades of the midterm and final exams.

#### 5. Single evaluation

This subject does not include a single-evaluation system

#### Irregularities in evaluation activities

Any irregularity committed during an evaluation activity (academic fraud, plagiarism, or misuse of AI) that may lead to a significant change in the grade will result in that activity being graded with a 0. If the guide establishes that passing the subject requires obtaining a minimum mark in this assessment activity, or if multiple irregularities occur in the assessment activities of the same subject, the final grade for the subject will be 0. In addition, the student who commits any of these irregularities may be subject to disciplinary proceedings.

## Bibliography

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## Software

No specific software is needed

## Course groups and languages

The information provided is provisional until November 30. After this date, you will be able to consult the language of each group through this [link](#). To access the information, you will need to enter the course CODE

| Type of teaching                                       | Group | Language        | Semester           | Shift         |
|--------------------------------------------------------|-------|-----------------|--------------------|---------------|
| (PAUL)<br>Classroom<br>practices                       | 1     | Catalan         | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 1     | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 1     | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 2     | Catalan         | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 2     | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 2     | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 3     | Catalan         | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 3     | Catalan         | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 3     | Catalan/Spanish | second<br>semester | morning-mixed |
| (PAUL)<br>Classroom<br>practices                       | 4     | Catalan         | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 4     | Catalan         | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 4     | Catalan/Spanish | second<br>semester | morning-mixed |
| (PAUL)<br>Classroom<br>practices                       | 5     | Catalan         | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 5     | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 5     | Catalan/Spanish | second<br>semester | afternoon     |

|                                                        |    |                 |                    |               |
|--------------------------------------------------------|----|-----------------|--------------------|---------------|
| (PAUL)<br>Classroom<br>practices                       | 6  | Catalan         | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 6  | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 6  | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 7  | Catalan         | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 7  | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 7  | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 8  | Catalan         | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 8  | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 8  | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 9  | Catalan         | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 9  | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 9  | Catalan/Spanish | second<br>semester | afternoon     |
| (PAUL)<br>Classroom<br>practices                       | 10 | Catalan         | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 10 | Catalan         | second<br>semester | afternoon     |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 10 | Catalan/Spanish | second<br>semester | afternoon     |
| (PLAB)<br>Practical<br>laboratories                    | 11 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 11 | Catalan/Spanish | second<br>semester | morning-mixed |
|                                                        |    |                 |                    |               |

|                                                        |    |                 |                    |               |
|--------------------------------------------------------|----|-----------------|--------------------|---------------|
| (PLAB)<br>Practical<br>laboratories                    | 12 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 12 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 13 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 14 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 14 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 15 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 15 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 16 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 16 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 17 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 17 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 18 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 18 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 19 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les<br>pràctiques de<br>laboratori | 19 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLAB)<br>Practical<br>laboratories                    | 20 | Catalan/Spanish | second<br>semester | morning-mixed |
| (PLABs)<br>Suport a les                                | 20 | Catalan/Spanish | second<br>semester | morning-mixed |

|                                     |     |                 |                    |               |
|-------------------------------------|-----|-----------------|--------------------|---------------|
| pràctiques de<br>laboratori         |     |                 |                    |               |
| (PLAB)<br>Practical<br>laboratories | 31  | Catalan/Spanish | second<br>semester | morning-mixed |
| (TE) Theory                         | 101 | Catalan/Spanish | second<br>semester | morning-mixed |
| (TE) Theory                         | 102 | Catalan/Spanish | second<br>semester | morning-mixed |
| (TE) Theory                         | 103 | Catalan/Spanish | second<br>semester | morning-mixed |