

Medical Physiology II

Code: 103629
ECTS Credits: 9

2024/2025

Degree	Type	Year
2502442 Medicine	FB	2

Contact

Name: Raquel Moral Cabrera

Email: raquel.moral@uab.cat

Teachers

Xavier Navarro Acebes

Andreea Ciudin Mihai

Roser Velasco Fargas

Jordi Bruna Escuer

Esther Udina Bonet

Montserrat Durán Taberna

Ismael Capel Flores

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 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 and Contextualisation

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.

Competences

- 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 causal agents and the risk factors that determine states of health and the progression of illnesses.
- 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.
- Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
- Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
- Indicate the basic diagnosis techniques and procedures and analyse and interpret the results so as to better pinpoint the nature of the problems.
- Organise and plan time and workload in professional activity.
- Perform the basic practical procedures of examination and treatment.
- Use information and communication technologies in professional practice.

Learning Outcomes

1. Analyse the functional mechanisms that help the organism to adapt to the main environmental variations.
2. Apply knowledge of physiology to the production of structured review texts.
3. Demonstrate basic research skills.
4. Demonstrate, in professional activity, a perspective that is critical, creative and research-oriented.
5. 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.
6. Describe the functioning of the nervous system and the neural regulation mechanisms.

7. Describe the general organisation and function of the systems of the human body in health.
8. Describe the interrelationship between the different body systems in the maintenance of homeostasis and good health.
9. Describe the physiology of the different sense organs.
10. Formulate hypotheses and compile and critically assess information for problem-solving, using the scientific method.
11. Identify physiological information sources, including textbooks, atlas images, internet resources and other specific bibliographic databases.
12. Identify the basic mechanisms of cell and tissue physiology.
13. Identify the functional disorders at the level of each system that cause various types of diseases.
14. Identify the functional variations of the human organism at different stages in life and their principal causes.
15. Identify the main experimental techniques in physiology and their usefulness to basic and applied research.
16. Identify the main techniques used in physiology laboratories.
17. Identify the scientific bases of human physiology.
18. Indicate techniques of functional studies that are appropriate for diagnosis and evaluation of biomedical procedures.
19. Interpret normal and abnormal results of techniques of functional studies of body systems.
20. Make correct use of the international physiological nomenclature.
21. Organise and plan time and workload in professional activity.
22. Perform basic techniques for the examination and functional assessment of physiological systems.
23. Relate the cell and tissue characteristics of the organs and systems of the body to their function.
24. Use information and communication technologies in professional practice.

Content

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

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
CASE RESOLUTION WORK (PAUL)	6	0.24	1, 2, 3, 4, 6, 7, 9, 5, 8, 10, 17, 12, 13, 11, 15, 16, 14, 18, 19, 23, 20, 24
LABORATORY PRACTICES (PLAB)	21	0.84	1, 3, 4, 6, 7, 9, 5, 8, 10, 17, 12, 13, 15, 16, 14, 18, 19, 21, 22, 23, 20
THEORY (TE)	52	2.08	1, 4, 6, 7, 9, 5, 8, 17, 12, 13, 11, 15, 16, 14, 18, 19, 23, 20, 24
Type: Supervised			
TUTORIALS	23	0.92	1, 6, 7, 9, 5, 8, 10, 17, 12, 13, 11, 15, 16, 14, 18, 19, 21, 23
Type: Autonomous			

PREPARATION OF CASE-BASED WORK AND PRACTICES	23	0.92	1, 2, 3, 4, 6, 7, 9, 5, 8, 10, 17, 12, 13, 11, 15, 16, 14, 18, 19, 21, 22, 23, 20, 24
SELF STUDY	90	3.6	1, 2, 6, 7, 9, 5, 8, 10, 17, 12, 13, 11, 15, 16, 14, 18, 19, 21, 23, 20, 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.

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	Weighting	Hours	ECTS	Learning Outcomes
Practical evaluation and/or questionnaires in Moodle application	15%	1.5	0.06	1, 2, 3, 4, 6, 7, 9, 5, 8, 10, 17, 12, 13, 11, 15, 16, 14, 18, 19, 21, 22, 23, 20, 24
Written evaluation through objective tests: 2 tests of multiple choice questions and/or restricted questions essay tests of theoretical knowledge (75%) and knowledge of practices (15%)	85%	8.5	0.34	1, 6, 7, 9, 5, 8, 17, 12, 13, 15, 16, 14, 18, 19, 23

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:

1) Nervous system and special senses

2) Endocrine and reproductive Systems, adaptation to the environment

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 to the environment

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 85% 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 15% of the final grade:

- 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 (85% partial exam A + 15% 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 (corresponding approximately to 75% the exam) and laboratory and case-based practices (corresponding approximately to 25% the exam)

To pass each system it will be necessary to obtain a minimum of 5.0 in the 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

Students can benefit from the single evaluation system, according to the regulations of the Faculty. The single assessment 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 assessment.

The single evaluation will consist of tests, carried out on the same date, for each 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 studies, with an approximate weighting of 75% and 25% of the overall grade of each system.

To pass each system it will be necessary to obtain a minimum of 5.0 in the exam.

To pass the subject it will be necessary to have approved all the systems or blocks with a minimum of 5.0. In that case, the final grade will be the average 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 is not presented to 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 assessment.

Bibliography

Hall JE, Guyton AC. Tratado de Fisiología Médica: Guyton & Hall, 14ª ed, Elsevier, 2021.

<https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C20200037060>

Koeppen BM, Stanton B. Berne & Levy Physiology. 8th ed. Elsevier, 2024.

<https://www-clinicalkey-com.are.uab.cat/student/content/toc/3-s2.0-C20230011980>

Purves D. Neuroscience. 6th ed. Sinauer, 2018.

Software

No specific software is needed

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	101	Catalan	second semester	afternoon
(PAUL) Classroom practices	102	Catalan	second semester	afternoon
(PAUL) Classroom practices	103	Catalan	second semester	afternoon
(PAUL) Classroom practices	104	Catalan	second semester	afternoon
(PAUL) Classroom practices	105	Catalan	second semester	afternoon
(PAUL) Classroom practices	106	Catalan	second semester	afternoon
(PAUL) Classroom practices	107	Catalan	second semester	afternoon
(PAUL) Classroom practices	108	Catalan	second semester	afternoon
(PAUL) Classroom practices	109	Catalan	second semester	afternoon
(PAUL) Classroom practices	110	Catalan	second semester	afternoon
(PLAB) Practical laboratories	101	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	102	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	103	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	104	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	105	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	106	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	107	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	108	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	109	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	110	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	111	Catalan/Spanish	second semester	afternoon

(PLAB) Practical laboratories	112	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	113	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	114	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	115	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	116	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	117	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	118	Catalan/Spanish	second semester	afternoon
(PLAB) Practical laboratories	119	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	120	Catalan/Spanish	third semester	morning-mixed
(TE) Theory	101	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	102	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	103	Catalan/Spanish	second semester	morning-mixed