COURSE DATA

DATA SUBJECT

Code: 34452
Name: Medical physiology III
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2026-27

STUDY (S)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Facultat de Medicina i Odontologia	2	Second quarter
1204 - Degree in Medicine	Facultat de Medicina i Odontologia	2	Second quarter

SUBJECT-MATTER

Degree	Subject-matter	Character
1204 - Degree in Medicine	Physiology II	BASIC
1204 - Degree in Medicine	Physiology II	BASIC

COORDINATION

LLORET ALCAÑIZ ANA

SUMMARY

This subject is intended for students to acquire knowledge, skills and aptitudes for the study of the functions of the organs related to the homeostatic mechanisms, adaptations to the environment and nutrition as a basis for the maintenance of the internal environment.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

Mode of "A levels" of health science, in which the student course contents of biology, physics and chemistry. General Physiology, biochemistry and Medical Physiology I in the first year.

COMPETENCES / LEARNING OUTCOMES

1204 - Degree in Medicine

Acknowledge diversity and multiculturality.

Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.

Capacity for communicating with professional circles from other domains.

Consideration of ethics as a fundamental value in the professional practise.

Criticism and self-criticism skills.

Establish a good interpersonal communication which may allow professionals show empathy and talk to the patients efficiently,as well as to their relatives, the media and other professionals.

In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.

Is aware of the basic principles in human nutrition.

Know how to use IT in clinical, therapeutic and preventive activities, and those of research.

Know how to use the sources of clinical and biomedical information available, and value them critically in order to obtain, organise, interpret and communicate scientific and sanitary information.

Knows how to carry out functional tests, determines vital parameters and interprets them.

Knows how to perform a basic physical examination.

Knows the morphology, structure and function of skin, blood, organs and body systems: circulatory, digestive, locomotor, reproductive, excretory and respiratory systems; endocrine system, immune system, central and peripheral nervous systems.

Knows the processes of growth, maturation and aging of the different organs and systems. Homeostasis. Adaptation to the environment.

Proper organisation and planning of the workload and timing in professional activities.

Team-working skills and engaging with other people in the same line of work or different.

Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.

Understand and recognise the structure and normal function of the human body, at the following levels: molecular, tissue, organic, and of systems, in each phase of human life and in both sexes.

Working capacity to function in an international context.

DESCRIPTION OF CONTENTS

1. THEORY

1. Introduction to the study of nervous system physiology.
2. Sensorial biophysics basis.
3. Somatic sensibility physiology: somatic senses generated by mechanoreceptors.
4. Somatic sensibility physiology: somatic senses for pain and temperature.
5. Chemical senses: taste and smell.
6. Hearing biophysics basis.
7. Hearing physiology.
8. Vision biophysics basis. Eye geometric optics.
9. The physiology of vision I. The retina physiology.
10. The physiology of vision II. Optical path.
11. Spinal reflexes physiology. Muscle tone.
12. Physiology of the vestibular system. Regulatory mechanisms of the postural activity.
13. Voluntary movement control I: cerebellum functions.
14. Voluntary movement control II: basal ganglia and cortex functions. Motor and premotor cortex.
15. Sleep physiology.
16. Visceral functions regulation.
17. Instinctive conduct and emotions.
18. Memory and learning.
19. Language.
20. Introduction to the study of metabolism, dietetics and nutrition.
21. Function of carbohydrates and proteins in the diet.
22. Function of lipids in the diet
23. Micronutrients.
24. Body composition and dietary recommendations.
25. Intake and body weight regulation.
26. Adaptations to the environment. Adaptations to physical exercise.
27. Altitude and hyperbaric conditions adaptations.
28. Stress physiology.
29. Aging physiology.
30. Body temperature and its regulation.

1. Basic physical exploration of the nervous system. Part 1: level of consciousness, language, meningeal signs and cranial nerves.
2. Basic physical exploration of the nervous system. Part 2: motor function and reflexes.
3. Basic physical exploration of the nervous system. Part 3: sensory function.
4. Physiological visual exploration.
5. Physiological hearing exploration.
6. Exploration of the nervous system skeletal motor function: muscle tone and strength, reflexes and gait examination.
7. Electroencephalography.
8. Needle electromyography.

2. LABORATORY PRACTICE SESSIONS

1. Basic physical exploration of the nervous system. Part 1: level of consciousness, language, meningeal signs and cranial nerves.
2. Basic physical exploration of the nervous system. Part 2: motor function and reflexes.
3. Basic physical exploration of the nervous system. Part 3: sensory function.
4. Physiological visual exploration.
9. Cardiovascular adaptations to physical exercise.
10. Determination of basal metabolism and daily energy expenditure.
11. Dietary survey: caloric calculation and diet caloric distribution.

It is compulsory to attend to at least 80% of the practices. Attendance to the practices will be controlled by calling the roll.
If for reasons of force majeure, the student arrives late or cannot attend any of the practices, proof will have to be presented and the head of the group will be asked to authorize the student to do the practice. Without this authorization, group changes are not allowed.
The students repeating the course may attend practices if they wish, although attendance is not compulsory for them. In any case, to be able to take the test, attendance will be checked.
The grade of the supervised groups of the year in which assessment is taking place is kept. Even so, if the students repeating the course wish it, they can retake it.

TUTORIALS
Realization of a group discussion work.

WORKLOAD

PRESENCIAL ACTIVITIES

Activity	Hours
Tutorials	4,00
Theory	33,00
Laboratory	23,00
Total hours	**60,00**

NON PRESENCIAL ACTIVITIES

Activity	Hours
Attendance at other activities	0,00
Individual or group project	4,00
Independent study and work	55,00
Preparation of lessons	20,00
Preparation for assessment activities	10,00
Resolution of case studies	1,00
Total hours	**90,00**

TEACHING METHODOLOGY

In the **theoretical lessons**, the teacher will expose, through master class, the most important concepts and contents in a structured way, to obtain the knowledge and skills that the students must acquire. The students' participation will be encouraged. The teaching materials used by the professor will be available, if he considers it appropriate, through the electronic resource Aula Virtual.

Laboratory practices in reduced groups. They are focused on the consolidation of the theoretical knowledge through the practical application of this knowledge. The professor will set the objectives, will inform about the material management, will supervise the realization of the work and will help in the results interpretation.

Tutorials in reduced groups where the students work in different topics coordinated by the professor with a posterior oral presentation and discussion. It will be a cooperative learning with a co-responsibility strategy.

The gender perspective, the respect for diversity, and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

EVALUATION

The subject consists of 60% theoretical contents and 40% practical content, the final mark being 10 points.

Six points for the evaluation of 30 theoretical issues: students will take a test with multiple choice questions, which will be the same for the 4 groups. There will be 40 questions with 4 optional answers in the exam, from which only one will be correct. For each wrong answered question, one fourth of the value of a correctly answered question will be subtracted. Answers left blank will not penalize.

Three points for the practical sessions in the laboratory: students will take a test with multiple choice questions, which will be the same for the 4 groups. There will be 20 questions with 4 optional answers in the exam, from which only one will be correct. For each wrong answered question, one fourth of the value of a correctly answered question will be subtracted. Answers left blank will not penalize.

One point for the group with tutor's guidance: both the content and the evaluation of the group correspond to the teacher, whose credits have been assigned in the Plan of Teaching Organization of the Department.

Attendance at practical activities is mandatory. The student is considered to meet this requirement if he or she has attended a minimum of 80% of these activities and has adequately justified the impossibility of attending the remaining sessions due to the occurrence of a cause of force majeure. It will be essential to comply with this requirement to pass the subject.

Students are reminded of the importance of carrying out evaluation surveys on all the teaching staff of the degree subjects.

REFERENCES

BASIC:

Theory:

- Purves, Augustine GJ, Fitzpatrick D, Hall WC, LaMantia AS, Mooney RD, Platt ML, White LE. (2018) Neuroscience. 6th Edition. Publisher Sinauer Associates.
- Guyton AC, Hall JE. (2020). Textbook of Medical Physiology 14ª ed. Madrid. Ed. Elsevier.

Practices:

- Codina Puiggròs, A.; Giménez Roldán S.; Morales Asín, F. Examen Neurológico. Sociedad Española de Neurología. Madrid, 2012.
- Stuart Ira Fox¿s Laboratory Manual for Human Physiology, 16th Edition. Boston. McGraw-Hill. 2022.
- Recursos e-Salut: ClinicalKey Student Medicina, Odontologia y Enfermería [https://uv-es.libguides.com/RecursosSalut] Acces Medicina [https://uv-es.libguides.com/Access_Medicina] Médica Panamericana [https://uv-es.libguides.com/Medica_Panamericana]

COMPLEMENTARY:

Theory:

- Kandel ER, Schwartz JH, Jessell TM, Siegelbaum SA, Hudspeth AJ. (2021) Principles of Neural Science. 6ª Edition. McGraw-Hill Education.
- Fox S y Krista R (2022) Human Physiology. 16th Edition. McGraw-Hill Education.
- Berne R, Levy M. (2018). Physiology. 7ª ed. Madrid. Ed. Elsevier.
- Ganongs Review Of Medical Physiology (2019) 26th Edition. Interamericana-McGraw-Hill.
- Tresguerres JAF. (2020). Fisiología Humana. 5ª ed. Editorial McGraw-Hill.

Practices:

- Clínica Mayo. Exploración Clínica en Neurología. 7ª Ed. Editorial Médica JIMS S.L. Barcelona, 2007.
- Balcells. La clínica y el laboratorio. Jesús M. Prieto Valtueña & José Ramón Yuste (2019). 23ª ed. Elsevier.