COURSE DATA

DATA SUBJECT

Code: 34450
Name: Medical physiology I
Cycle: Undergraduate Studies
ECTS Credits: 6
Academic year: 2025-26

STUDY (S)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Facultat de Medicina i Odontologia	1	Second quarter

SUBJECT-MATTER

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

COORDINATION

PASCUAL MORA MARIA

SUMMARY

The goal of this subject is that the students acquire the knowledge, skills and aptitudes regarding the study of the organic systems functions related with the mobilization and regulation of the volume and composition of the body fluids (blood and circulatory and urinary systems) aimed at developing the functions of nutrition, depuration, humor correlation and tissue interrelation and, in general, contributing in an special way to the homeostatic maintenance of the Interne Environment constancy. With the acquisition of the cited knowledge, the student of the Degree in medicine will be provided the basic theoretical-practical knowledge of Physiology, which will allow him to understand the necessary foundations of the rational deduction of the physiopathology and of the diagnosis, treatment and prevention of the organs and systems diseases previously cited, whose teachings will be provided in the successive subjects of the degree.

PREVIOUS KNOWLEDGE

RELATIONSHIP TO OTHER SUBJECTS OF THE SAME DEGREE

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

OTHER REQUIREMENTS

Method of Health Sciences in high school, where the student curse contents of Biology, Physics and Chemistry and General Physiology first semester of the first year.

COMPETENCES / LEARNING OUTCOMES

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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.

Handles material and the use of basic laboratory techniques.

Interprets a normal test.

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

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 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. THEORETICAL THEMATIC UNITS

PHYSIOLOGY OF THE CARDIOVASCULAR SYSTEM

1. Introduction. Generalities of the Cardiovascular System.
2. Electric activity in the heart. Automatism, conduction and myocardial refractivity.
3. The normal electrocardiogram.
4. Cardiac mechanical and cardiac output I.
5. Cardiac mechanical and cardiac output II.
6. Cardiac cycle. Study of the heart sounds.
7. Hemodynamic characteristics of the circulatory system.
8. Arterial circulation. Special study of the blood pressure.
9. Capillary blood circulation.
10. Lymphatic circulation.
11. Venous circulation.
12. Cardiovascular regulation: local factors.
13. Cardiovascular regulation: nervous and humoral factors.
14. Coronary circulation.
15. Pulmonary circulation.
16. Cerebral circulation. Study of the cerebrospinal fluid.
17. Splanchnic, skeletal and cutaneous muscular circulation.

BLOOD PHYSIOLOGY

18. Blood composition and functions.
19. Erythrocytes. Erythropoiesis regulation.
20. Erythrocateresis.
21. Leukocytes characteristics and general function.
22. Primary hemostasis.
23. Secondary hemostasis.

KIDNEY AND URINARY TRACT PHYSIOLOGY

24. Introduction to the study of the renal function. Kidney general functions.
25. Glomerular filtration.
26. Tubular functions. Tubular reabsorption.
27. Tubular functions. Tubular secretion.
28. Mechanisms of urine concentration and dilution.
29. Urinary tracts physiology. Urination.
30. Role of the kidney in the acid-base equilibrium.

From each subject the student will be given a sufficiently detailed script in order to facilitate the preparation and study of the subjects.

2. PRACTICES

LABORATORY PRACTICES

1. Red series: hematocrit index, erythrocyte sedimentation rate.
2. Recount of leukocytes and erythrocytes.
3. Blood group.
4. Handling of the electrocardiograph and ECG register.
5. Study and interpretation of the ECG.
6. Determination of the blood pressure.
7. Cardiac auscultation.
8. Control of the vascular tone.
9. Urine analysis.
10. Renal filtration, reabsorption and secretion.
11. Renal exploration.

Practices are designed according to the international agreements about the use of animals in teaching and experimentation.

Rules regarding to practice:

- Attendance of practices will be compulsory.
- Attendance at practices will be controlled by a roll call.
- If a student is late, he/she will not be allowed to attend the practice already begun.
- If for reasons of force majeure (which can be proven by a certificate), somebody is late or cannot attend any of the practices, the responsible of the group will be asked to authorize changes. Without that authorization, group changes are not permitted.
- Repeaters may attend practices only if they wish, although it is not necessary to make them again.

TUTORIALS

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	5,00
Independent study and work	55,00
Preparation of lessons	20,00
Preparation for assessment activities	10,00
Resolution of case studies	0,00
Total hours	**90,00**

TEACHING METHODOLOGY

Theoretical lessons: the theoretical units will be taught through master classes of about 50 minutes, supported by the complementary material accessible through Aula Virtual, usually available prior to the lesson. The teacher will encourage the participation of the student, during the development of the class, through the formulation of questions.

Laboratory practices: the practical units are developed in sessions of two hours in the teaching laboratories. They include interactive models, registers of functional parameters of the students, as well as the calculation of variables and their physiological interpretation. Students must present at the end of the practice the obtained results and in some cases, answers to the questions set in the corresponding practices notebook.

Tutorials: in the sessions of tutorials, the students develop different activities, depending on their level of formation and interest in the different modalities of works: topics to be developed, research of physiological parameters determined in the practical lessons through their analysis in several subjects, presentation of the teachings by didactic and integrator schemes, etc.

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

EVALUATION

Theoretical evaluation: It will account for 60% of the final grade. It will be carried out through a written test (final exam) that will address the contents of the theoretical program and will aim to evaluate the acquisition of knowledge.

Practical evaluation: It will account for 40% of the final grade. A test (final exam) will be carried out that evaluates the acquisition of skills related to general and specific competencies (30% of the final grade) and through continuous evaluation of attitude, participation, acquisition of skills and knowledge in practices. and the work of the regulated tutorials (10% of the grade).

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.

Final exam: It will have a maximum score of 9 points and aims to evaluate the acquisition of theoretical (6 points) and practical (3 points) knowledge. It will consist of a written test with 75 multiple-choice questions (multi-choice), with 4 possible answers, of which only one is correct or the one that best answers the statement. Each question answered correctly will have a score of 0.12 and for each question answered incorrectly, a quarter of this score will be subtracted. Unanswered questions do not count. The exam will be the same in all groups.

Final grade: exam grade (maximum 9 points) + tutored work grade and continuous evaluation (maximum 1 point). Both grades will only be added when the exam grade is equal to or greater than 4.5. If you have a score lower than 4.5 in the exam, the final grade published in the minutes will be that of the final exam.

The exam will be the same in all groups.

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

REFERENCES

Básics

Barrett, K.E., Barman, S.M., Boitano, S., Brooks H.L.(2020). Ganong. Fisiología Médica. 26ªed. McGraw-Hill.
Boron W.F & Boulpaep EL (2017) Fisiología médica 3ª ed. Elsevier.
Hall J.E. (2020). Guyton y Hall: Tratado de Fisiología Médica. 14ªed. Elsevier. [http://trobes.uv.es/record=b2522586~S1*val]
Koeppen B.M. & Stanton B.A. (2018). Berne y Levy: Fisiología. 7ª ed. Elsevier. [http://trobes.uv.es/record=b2359082~S1*val]
Costanzo L.S (2016) Fisiología 6ª ed. Elsevier.
Mulroney, S.E., Myers, A.K. (2017) Netter Fundamentos de fisiología 2ªed. Elsevier.
Rhoades R.A., Bell, D.R. (2018) Fisiología médica. Fundamentos de medicina clínica. 5ª ed. Lippincott Williams.

Multiple Choice Question Books

Barrett K.E, Barman S.M., Boitano S., Reckelhoff J.F. (2017) Ganongs Physiology Examination and Board Review McGraw-Hill Education - Hall, J. Guyton and Hall Physiology Review (2015). 3rd ed. Elsevier - Meeting, P.J. PreTest Physiology (2014) 14th Ed. McGraw-Hill.

Practice Bibliography

Balcells A. (2015). La clínica y el laboratorio. 22ª ed. Elsevier.
Byckley L.S. (2016) Bates' Guide to Physical Examination and History Taking, 12ed Walters Kluver

Douglas, G., Nicol, F., Robertson, C. (2011) Macleod. Exploración clínica. 12ª ed. Elsevier.
Fernández, N. (2011). Manual de laboratorio de fisiología. 5ª ed. McGraw-Hill.
Fox S.I. (2009). Laboratory guide Human Physiology. 13th ed. McGraw-Hill.
Noguer L, Balcells A. (2016). Exploración clínica. 28ª ed. Elsevier

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]

Additional

Conti F. (2010) Fisiología Médica. McGraw-Hill.
Fox S.I. (2014). Fisiología Humana . 13ª ed. Mc Graw ¿ Hill. [http: //trobes.uv.es/record=b2382899~S9*val]
Mulroney, S.E., Myers, A.K. (2016) Netter Fundamentos de fisiología. 2ª ed. Elsevier.
Pocock G., Richards C.D. (2005) Fisiología humana. 2ª ed. Masson.