

**COURSE DATA****Data Subject**

Code	34450
Name	Medical physiology I
Cycle	Grade
ECTS Credits	6.0
Academic year	2023 - 2024

Study (s)

Degree	Center	Acad. year	Period
1204 - Degree in Medicine	Faculty of Medicine and Odontology	1	Second term

Subject-matter

Degree	Subject-matter	Character
1204 - Degree in Medicine	5 - Physiology	Basic Training

Coordination

Name	Department
VILA SALINAS, JOSE M	190 - Physiology

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 course contents of Biology, Physics and Chemistry and General Physiology first semester of the first year.

COMPETENCES (RD 1393/2007) // LEARNING OUTCOMES (RD 822/2021)

1204 - Degree in Medicine

- 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.
- Understand and recognise the effects of growth, development and aging which affect individuals and their social environment.
- 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.
- Know how to use IT in clinical, therapeutic and preventive activities, and those of research.
- In the professional practise, take a point of view which is critical, creative, constructive and research-oriented.
- Be able to formulate hypothesis, gather information and evaluate it critically in order to solve problems by following the scientific method.
- 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.
- 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.
- Criticism and self-criticism skills.
- Capacity for communicating with professional circles from other domains.
- Acknowledge diversity and multiculturality.
- Consideration of ethics as a fundamental value in the professional practise.
- Working capacity to function in an international context.
- 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.
- Handles material and the use of basic laboratory techniques.
- Interprets a normal test.
- Knows how to carry out functional tests, determines vital parameters and interprets them.

LEARNING OUTCOMES (RD 1393/2007) // NO CONTENT (RD 822/2021)

In the know.

In general, to know how to demonstrate enough knowledge to understand and describe the functions of the healthy human organism systems and apparatus on their different levels of organization, and the integration processes that give rise to the homeostasis. Especially in this module, over those organic systems related with the mobilization and regulation of the volume and composition of the body fluids (blood and circulatory and urinary systems) to keep the physical-chemical characteristics of the Internal Environment. This has a base for the posterior understanding of the physiopathology and the mechanisms of the disease production, the therapeutics bases and the mediums for the health maintenance and prevention.

To know how to demonstrate the necessary knowledge to understand and describe the basic methods of the functional exploration of the different organic systems described in the previous competence and to use those normal results.

In the know-how.

To acquire the necessary skills for the performance of determined functional and technical explorations and laboratory techniques.

To apply this knowledge to real life situations. To interpret graphics and results of customary use in Physiology.

DESCRIPTION OF CONTENTS

1. THEORETICAL THEMATIC UNITS

1. Introduction to the Medical Physiology.
2. Introduction. Generalities of the Cardiovascular System.
3. Electric activity in the heart. Automatism, conduction and myocardial refractivity.
4. The normal electrocardiogram.
5. Cardiac mechanical and cardiac output.
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. Erythrocytosis.
21. Leukocytes characteristics and general function.
22. Primary hemostasis.
23. Secondary hemostasis.

RENAL PHYSIOLOGY AND OF THE URINARY TRACTS

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

ACTIVITY	Hours	% To be attended
Theory classes	33,00	100
Laboratory practices	23,00	100
Tutorials	4,00	100
Development of group work	5,00	0
Study and independent work	50,00	0
Readings supplementary material	5,00	0
Preparation of evaluation activities	10,00	0
Preparing lectures	10,00	0
Preparation of practical classes and problem	10,00	0
TOTAL	150,00	

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 and the sustainable development goals (SDGs) will be incorporated into teaching, whenever possible.

EVALUATION

Theoretical assessment: 60% of the final mark. It will be made by written test (final exam) about the content on the theoretical program and it will have as the main goal to assess the acquisition of knowledge.

Practical assessment: 40% of the final mark. It will be made by a test that assess the acquisition of the skills related with the general and specific competencies (30% of the final mark) and by the continuous assessment of the attitude, the participation, and the acquisition of skills and knowledge in the practices and in the work of the tutorials (10% of the mark).

Attendance to practical sessions is mandatory. Unjustified non-attendance to more than 20% of the sessions will make it impossible to pass the course.

Final exam: written test that will consist on multiple-choice and essay questions that will assess both the theoretical and practical knowledge. The test will have:

- 40 multiple-choice questions with four options from which only one will be the complete answer to the question. Each well answered question will have a score of 0.15. Each wrong answer will subtract the corresponding value of the fourth part of a right answer (0.0375). The blank questions will not be subtracted.
- 6 essay questions, whose answers will not consist of more than half or a page foolscap folio. The test will be valued with a maximum of nine points and will state that six points will correspond to the theoretical knowledge and three to the practical knowledge.

The subject will be approved with a 5 final grade. The content of proof shall be the same for all groups.

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



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