



Universitat de Lleida

DEGREE CURRICULUM

HUMAN BODY'S FUNCTION 1

Coordination: SERRANO CASASOLA, JOSE CARLOS
ENRIQUE

Academic year 2023-24

Subject's general information

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| Subject name | HUMAN BODY'S FUNCTION 1 | | | |
| Code | 102702 | | | |
| Semester | 1st Q(SEMESTER) CONTINUED EVALUATION | | | |
| Typology | Degree | Course | Character | Modality |
| | Bachelor's Degree in Physiotherapy | 1 | COMMON/CORE | Attendance-based |
| | Double bachelor's degree: Degree in Nursing and Degree in Physiotherapy | 1 | COMMON/CORE | Attendance-based |
| Course number of credits (ECTS) | 6 | | | |
| Type of activity, credits, and groups | Activity type | PRALAB | PRAULA | TEORIA |
| | Number of credits | 1 | 2 | 3 |
| | Number of groups | 2 | 1 | 1 |
| Coordination | SERRANO CASASOLA, JOSE CARLOS ENRIQUE | | | |
| Department | EXPERIMENTAL MEDICINE | | | |
| Teaching load distribution between lectures and independent student work | 60 h Lecture 90 h Independent student work at home | | | |
| Important information on data processing | Consult this link for more information. | | | |
| Language | Castellano, Català, English | | | |
| Distribution of credits | 5 ECTS Theoretical class 1 ECTS Practices | | | |

| Teaching staff | E-mail addresses | Credits taught by teacher | Office and hour of attention |
|---------------------------------------|----------------------------|---------------------------|------------------------------|
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Subject's extra information

Physiology is a basic matter, according to Royal Decree 1393/2007 of October 29 on the organization of official university education. In the training of graduates in Health Sciences is a fundamental matter for the implication that has the physiological knowledge in the understanding of the functioning of the human body and the bases of the disease. Physiology defines the characteristics of the human being in a state of health and serves as a basis for the study of the deviations of this in the disease. In this context, the teaching of Physiology has as a general objective the knowledge of the functions of the organism, the acquisition of the necessary methodology for its study and the development of attitudes towards the maintenance of health and the treatment of the disease.

The contribution of Physiology to the acquisition of their final competences by the student would be:

1 / provide sufficient knowledge to understand and describe the functions of the apparatus and systems of the healthy organism at its different levels of the organization, and the integration processes that give rise to homeostasis. All as a basis for the later understanding of the pathophysiology and the etiological mechanisms of the disease, the bases of the therapy and the measures for the maintenance and prevention of health;

2 / provide the necessary mechanisms to understand and describe the basic methods of functional exploration of different systems and devices

3 / facilitate the acquisition of skills necessary for the performance of certain functional explorations and laboratory techniques.

Its fundamental objective is for students to understand and recognize the structure (Histology and Anatomy) and function (Physiology) of the human body. This knowledge will allow them to understand and interpret the most advanced Physiology and the bases of human pathology. In addition, the student will also acquire terminological skills that are fundamental to deepen the cellular Pathology and Pathology blocks of the upper grades.

Learning objectives

At the level of knowledge

- Understand and make use of physiological terminology.
- Demonstrate knowledge of the specific components of the human body at the functional level.
- Understand the physiological knowledge of the different structures of the human body
- Assimilate the concept of the functional unit of the human body and the nature and mechanisms of the control and integration systems that make it possible.
- Understand the different physiological mechanisms that contribute to the maintenance of homeostasis in the human body.

- Analyze the functioning of the different organs and systems, and their control mechanisms.
- Integrate the functioning of the organism and be able to relate the activity of the different organs and systems.
- Recognize physiological normality as a starting point to assess the needs of the human body and the relationship of this normality with the disease.
- Know the terminology and the basic scientific language related to Physiology.
- At levels of capabilities and applications
- Understand the basic physiology of the body and know how to integrate it with morphological knowledge.
- Learn to integrate and apply the concepts learned about the structure and normal physiology of the body to understand and interpret the most advanced physiology and human pathology.

At the level of values and attitudes

- Understand the need for basic physiological training of the human body for the professional future within the field of health sciences.
- Understand how scientific knowledge is generated and know and use the scientific method.
- Develop your critical and scientific capacity.

The student who passes the subject, must reach the following competences

- Use correctly the basic technological environment in which your training will be developed (virtual campus, email, scientific databases and information sources), and use general computer packages at the user level.
- Acquisition of habits for self-training: search, select and process information related to the subject using ICT; show regular habits of sustainable study.
- Knowing how to collect the most relevant aspect of a scientific text, prepare a summary and expose it to your colleagues.
- Work as a team in the resolution of problems and in the hypothesis statement.
- Think clearly and critically, merging experience, knowledge and reasoning.
- Identify, interpret and respond to problems effectively.

Competences

Specific competences and learning outcomes

CE1 Know and understand the morphology, physiology, pathology and behavior of humans, both healthy and sick, in the natural and social environment.

Learning outcomes:

- 1.1 Identify and describe the general physiology of the elements that make up the human being.
- 1.6 Understand the normal functioning of each organ and system and its possible functional alterations.

CE2 Know and understand the sciences, models, techniques and instruments on which physiotherapy is based, articulated and developed.

Learning outcomes:

- 2.1 Understand the general, basic and proper theories of Physiotherapy.
- 2.5 Know how to use the most common health terminology among health professionals, applied to the physiotherapy model.
- 2.7 Identify, describe and know the theories and general principles of functioning, disability, health and assessment

CE5 Assess the patient's functional status, considering the physical, psychological and social aspects.

Learning outcomes:

5.3 Identify the concepts of functioning and disability in relation to the process of intervention in Physiotherapy and describe the alterations, functional limitations and actual and potential disabilities found

CE12 Intervene in the areas of promotion, prevention, protection and recovery of health.

Learning outcomes:

12.1 Identify and describe the basic principles of prevention, as well as the different medical and surgical treatments applicable to each type of pathology.

CE15 Understand the importance of updating the knowledge, abilities, skills and attitudes that make up the professional competencies of the physiotherapist.

Learning outcomes:

15.1 Promote the updating and recycling of knowledge, skills and fundamental attitudes of professional skills, through a process of ongoing training.

15.5 Demonstrate skills in searching, critical examination and integration of scientific literature and other relevant information.

CG1 Communicate effectively and clearly, both orally and in writing, with users of the health system as well as other professionals

CT1 Correction in written oral expression.

CT4 Respect for the fundamental rights of equality between men and women, for the promotion of Human Rights and for the values of a culture of peace and democratic values.

General competences of the Degree:

CG1 Communicate effectively and clearly, both orally and in writing, with users of the health system as well as other professionals

CG2 Know how to work in professional teams as a basic unit in which the professionals and other personnel of the healthcare organizations are structured in a uni or multidisciplinary and interdisciplinary way.

CG3 Incorporate the ethical and legal principles of the profession into the axial professional practice such as integrating social and community aspects into decision making.

Transversal competences of the Degree:

CT4 Respect for the fundamental rights of equality between men and women, for the promotion of Human Rights and for the values of a culture of peace and democratic values.

Strategic competences of the University:

CEUdL1 Adequate comprehension and oral and written expression of Catalan and Spanish;

CEUdL2 Significant knowledge of a foreign language, especially English;

CEUdL3 Training in the use of new technologies and information and communication technologies;

CEUdL4 Basic knowledge of entrepreneurship and professional environments;

CEUdL5 Essential notions of scientific method

Subject contents

Topic 1. Introduction and communication

Principles of cell function

Homeostasis of body fluids,

Transduction of signals, membrane receptors, second messengers and regulation of gene expression.

Topic 2. Nervous System

Introduction

Generation and conduction of action potentials

Synaptic transmission

The somatosensory system

The special senses

Organization of motor function

Superior functions of the nervous system

The autonomic nervous system and its central control

Topic 3. Muscular System - Skeletal

Physiology of skeletal muscle

Cardiac muscle and smooth muscle

Bone physiology

Topic 4. Cardiovascular System

Introduction to circulation

Elements of cardiac function

Properties of blood vessels

Regulation of the heart and vessels

Integrated control of the cardiovascular system

Topic 5. Respiratory System

Structure and function of the respiratory system

Mechanical properties of the lung and chest wall: static and dynamic

Ventilation, perfusion and ventilation / perfusion ratio

Transportation of oxygen and carbon dioxide

Control of breathing

Non-respiratory functions of the lung

Topic 6. Renal System

Elements of renal function

Transport of water and solutes along the nephron: tubular function

Control of osmolarity and body fluid volume

Homeostasis of potassium, calcium and phosphorus

Topic 7. Body fluids and blood

Body fluids and plasma

Erythrocytes and blood groups

Leukocytes and immunity

Hemostasis

Topic 8. Digestive System

Functional anatomy and general principles of regulation in the gastrointestinal tract

The cephalic, oral and esophageal phase and the integrated response due to feeding

The small intestine phase and the integrated response due to feeding

The colonic phase and the integrated response due to feeding

Metabolic functions of the liver.

Topic 9. Endocrine and reproductive system

Introduction to the endocrine system

The hypothalamus and the pituitary gland

The thyroid gland

The adrenal gland

The male and female reproductive systems

Topic 10. Aging

Concept

Theories of aging

Differences between physiological and pathological aging

Main theories of aging

Physiological changes related to age

Alterations of the main organs

Psychic alterations

Social alterations

Sarcopenia and frailty

Genetic predisposition

Influence of the environment and physical activity in the aging process

Demographics of aging

Methodology

To achieve the objectives and acquire the attributed competences, the following activities will be programmed:

Master classes: these will be done with all the students. Their purpose is to give an overview of the thematic content highlighting those aspects that will be useful in their training.

Seminars and experimental activities: they will be done with 1/2 of the students, they are obligatory and must be done with the corresponding group. The purpose of the seminars and experimental activities is for students to apply theoretical concepts and to delve into the most important and complex aspects of the topics.

Evaluation

Partial exams 50%.

There will be two partial exams that include all the theoretical part, problems and cases and seminars. The exams will be with short answer questions, development of topics and case studies and test type. To pass the subject, the student must approve this evaluation with 50%. The dates of the exams are stipulated in the academic calendars

The distribution of the topics to be evaluated in each exam will be the following:

- First partial exam 25% (Topics 1 to 5)
- Second 25% partial exam (Topics 6 to 10)

Seminar 30%

The seminars will be composed of two types of activities:

- Physiology laboratory simulations and external practices
- Resolution of cases

Attendance, review sheets of each exercise and external practices report will be evaluated.

Short test 20%

On-line short test will be performed at the end of each topic

To pass the subject it is necessary to obtain a final ponderation of 50% in total and in each section. Students who do not pass the evaluation will be entitled to a recovery exam. If they pass the recovery exam, a 5 out of 10 (passed) will be taken as the final grade of the course.

Bibliography

Basic bibliography

Guyton & Hall. Tratado de Fisiología médica by Hall, J.E.

Complementary bibliography

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[Guyton and Hall Textbook of Medical Physiology: with STUDENT CONSULT Online Access \(Guyton Physiology\)](#) by [John E. Hall](#) (Jun 15, 2010)

[Netter's Essential Physiology: With STUDENT CONSULT Online Access \(Netter Basic Science\)](#) by [Susan E. Mulroney](#) and Adam Myers MD (Oct 6, 2008)

[Atlas of Human Anatomy: with Student Consult Access \(Netter Basic Science\)](#) by [Frank H. Netter](#) (May 3, 2010)

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