

69700 - Fundamentals of Anatomy, Physiology, Pathology and Therapeutics

Syllabus Information

Academic year: 2023/24

Subject: 69700 - Fundamentals of Anatomy, Physiology, Pathology and Therapeutics

Faculty / School: 110 - Escuela de Ingeniería y Arquitectura

Degree: 633 - Master's Degree in Biomedical Engineering

ECTS: 12.0

Year:

Semester: First semester

Subject type: Compulsory

Module:

1. General information

The objective of this subject is to help the student to become familiar with basic concepts of anatomy, physiology and pathology. The order of the contents will be: introduction to cellular structure, tissue organization and anatomy itself, deepening in the functional aspects of organs, apparatus and systems, in order to understand how the organism works. Finally, along with the contents on pathology, teachers will explain the problems that arise when the balance in the internal environment is broken, and the disease appears.

These goals are aligned with the following SDGs of the United Nations 2030 Agenda (<https://www.un.org/sustainabledevelopment/es/>): Goal 3 (Objective 3.D Strengthen health risk management), Goal 4 (Objective 4.7 Promote Global Education for Sustainable Development), Goal 5 (Objective 5.5 Ensure full participation of women and equal opportunities), Goal 12 (Objective 12.5 Waste prevention, reduction, recycling and reuse) and Goal 16 (Objective 16.10 Access to information and fundamental freedoms).

2. Learning results

Upon completion of this subject, the student will be able to:

- Recognize all the components and organelles of a type cell and know their functions as well as identify different cell types and know their organization in a given tissue.
- Recognize different tissues, as well as their location and function within the organism.
- Know the genetic basis and recognize the different phases within cell replication and the different phases of embryonic development.
- Identify the different systems and apparatus of the human body, and the main organs that compose it, differentiating them from those of the different animal species.
- Understand how each of the different systems and apparatuses of the human body work.
- Integrate the physiological functioning of devices and systems, as well as to see how they interact with each other.
- Understand the concept of health and disease and of diseases and syndromes, knowing the main pathological mechanisms that can affect the different systems and apparatuses of the human body, based on the physiological knowledge acquired.
- Know the general process to establish diagnosis and prognosis in medicine.
- Understand and know the bases and fundamentals of surgical therapeutics.
- Understand and apply the concepts of pathology and therapeutics.
- Understand the basic terminology, concepts and criteria used in the biomedical field.
- Interpret medical data related to medicine that may be handled in the future.
- Know and be able to apply the concepts of pathology and therapeutics.
- Know the main syndromes of various devices and systems.
- Understand general medical language in clinical medical publications.
- Understand and know the bases and fundamentals of surgery.
- Know the main advances, technological tools and therapeutic challenges in the field of surgery and transplantation.

3. Syllabus

1. Thematic block of fundamentals of anatomy and cell biology:

B1.1. The cell. Structure and division.

B1.2. Histology.

B1.3. Anatomy by apparatus and systems:

Nervous system

Locomotor system

Urinary system

Cardiocirculatory and respiratory system

Digestive system

2. Thematic block of fundamentals of physiology:

B2.1. Introduction to physiology.

B2.2. General physiology.

B2.3. Physiology by apparatus and systems:

Nervous system

Locomotor system

Urinary system

Cardiocirculatory and respiratory system

Digestive system

3. Thematic block of pathology and therapeutic fundamentals:

B3.1. Concept of health and disease. General basis.

B3.2. Pathologies by apparatus and systems.

B3.3. Basis of surgical therapeutics.

B3.4. Research and current developments in surgery.

B3.5. Bioethics.

B3.6. Evidence-Based Medicine (EBM).

B3.7. Bioengineering-telemedicine-robotics.

4. Academic activities

The calendar of the subject will be determined by the academic calendar of the centre.

Planned activities:

Master classes:

Theoretical content as well as the approach and discussion of clinical problems will be taught. It will take place during the first four-month-period of the academic year at EINA.

Practical classes:

Completion of 2 mandatory laboratory practices at the Faculty of Veterinary Medicine.

Voluntary surgical internship at the Hospital Clínico Universitario

Written test:

Upon the end of the classes.

The start and end dates of the classes and the assessment tests will be fixed by EINA on the Master's website (<http://www.masterib.es>).

5. Assessment system

-Objective written **test** on the entire program developed during the term. The test will be divided into the 3 blocks of the subject (questions on anatomy, physiology and pathology); it may contain multiple-choice questions and/or short questions, which will have to be answered briefly. In each block, at least a 4 out of 10 must be obtained in order to average with the rest of the grades.

It will account for 90% of the final grade.

- **Participation in the practical sessions:** in the written test, students will answer questions related to the practices performed.

It will account for 10% of the final grade.