

69300 - Fundamentals of Anatomy, Physiology, Pathology and Therapeutics

Syllabus Information

Academic Year: 2019/20

Subject: 69300 - Fundamentals of Anatomy, Physiology, Pathology and Therapeutics

Faculty / School: 110 -

Degree: 330 - Complementos de formación Máster/Doctorado

547 - Master's in Biomedical Engineering

ECTS: 12.0

Year: 330 - Complementos de formación Máster/Doctorado: XX

547 - Master's in Biomedical Engineering: 1

Semester: 330 - First semester

547 - First semester

547 - First semester

547 - First semester

Subject Type: 547 - Compulsory

330 - ENG/Complementos de Formación

Module: ---

1.General information

1.1.Aims of the course

1.2.Context and importance of this course in the degree

1.3.Recommendations to take this course

2.Learning goals

2.1.Competences

2.2.Learning goals

2.3.Importance of learning goals

3.Assessment (1st and 2nd call)

3.1.Assessment tasks (description of tasks, marking system and assessment criteria)

4.Methodology, learning tasks, syllabus and resources

4.1.Methodological overview

The learning process will be developed in several levels: master classes in which the participation of the student will be encouraged, practical laboratory classes, practical classes of the operating room, realization of practical application works. The methodology proposed aims to encourage the student's continued work.

Classroom materials will be available via Moodle. These include a repository of the lecture notes used in class, the course syllabus, as well as other course-specific learning materials, including a discussion forum.

Further information regarding the course will be provided on the first day of class.

4.2.Learning tasks

The learning process that has been designed for this subject is based on the following:

In order that the students achieve the learning results described above and acquire the competences designed for this subject, the following training activities are proposed:

A01 Participatory master class (95 hours). Teacher's presentation of the main contents of the subject. This activity will take place in the classroom in person.

A03 Laboratory practices (7 hours). They may take place in the research laboratories of the I3A or the Faculty of Veterinary Medicine.

A04 Special practices (8 hours). They will take place in the operating rooms of the Hospital Clínico Universitario Lozano Blesa and Miguel Servet.

A06 Tutoring. Schedule of personalized attention to the student with the objective of reviewing and discussing the materials and topics presented in the theoretical and practical classes. The schedules will be informed at the beginning of the course.

A08 Evaluation. Set of theoretical-practical written tests and presentation of reports or works used in the evaluation of the student's progress. The detail is found in the section corresponding to the evaluation activities.

4.3.Syllabus

The program offered to the student to help him achieve the expected results includes the following sections with the following lessons:

The three sections will not be taught simultaneously, but for a better monitoring and understanding of the subject, sequencing will be planned so that the student has first seen the biological and anatomical aspects, then the physiological and finally the pathology and therapeutics for a certain device or organ.

The following is the schedule for each thematic block separately:

SECTION 1. Fundamentals of Anatomy and Cell Biology:

Theoretical classes:

Topic 1 The cell

Topic 2 Cellular organelles

Topic 3 Mitosis and Meiosis. General embryology

Topic 4 Histology I

Topic 5 Histology II

Topic 6 Histology III

Topic 7 Introduction to Anatomy

Topic 8 Anatomy of the Nervous System

Topic 9 Anatomy of the Urinary System

Topic 10 Anatomy of the Circulatory and Respiratory Apparatus

Topic 11 Anatomy of the digestive system

Topic 12 Anatomy of the Locomotor Apparatus

Topic 13 Organs of the senses

Practical sessions:

- Performing a blood smear.

- Operation of an anatomopathological diagnostic laboratory.

- Histology viewing.

- Osteology (will be integrated with the theoretical classes).

SECTION 2. Fundamentals of Physiology:

Theoretical classes:

Topic 1: Concepts of Physiology.

Topic 2: Homeostasis. Internal medium. Bases of cellular metabolism

Topic 3: Transmembrane transport.

Topic 4: Bioelectrical potential. Genesis and conduction of the action potential.

Topic 5: Transmission of the action potential. Neurotransmission.

Topic 6: Muscular physiology.

Topic 7: Neuromuscular junction. Excitation-contraction coupling.

Topic 8: Functional structure of the nervous system.

Topic 9: Nervous sensitivity.

Topic 10: Motor control.

Topic 11: Electroencephalography.

Topic 12: Renal physiology.

Topic 13: General functions of the cardiovascular system.
Topic 14: Electrical activity of the heart.
Topic 15: Mechanical activity of the heart. Cardiac cycle.
Item 16: Cardiac expenditure. Regulation of cardiac activity.
Topic 17: Blood pressure and its regulation. Microcirculation
Topic 18: Venous and lymphatic returns.
Topic 19: Respiratory mechanics.
Topic 20: Respiratory membrane. Transport of blood gases.
Topic 21: Physiology of the digestive system.
Topic 22: Endocrine system.

Practical sessions:

- Blood groups.
- Blood pressure.
- Electrocardiogram.
- Spirometry.

SECTION 3. Fundamentals of Pathology and Therapeutic:

Theoretical classes:

Topic 1: Concept of health and disease.
Topic 2: Pathology. Diseases and syndromes. Clinic and diagnosis of diseases
Topic 3: Bioethics
Topic 4: Digestive system: Function and pathology
Topic 5: Respiratory system: Function and pathology
Topic 6: Vascular system: Function and pathology
Topic 7: Locomotor system: Function and pathology
Topic 8: Treatment / therapeutics of diseases: Medical (pharmacology), Surgical, Radiotherapeutic
Topic 9: Bases and fundamentals of Surgical Pathology and Clinic. Bases of Surgery
Topic 10: Spectrum of current surgery
Topic 11: Minimally invasive surgery and New perspectives
Topic 12: Bioengineering and surgery.
Topic 13: M.B.E. and Research in surgery.
Clinical practice in Surgical Services of University Hospitals

4.4. Course planning and calendar

The calendar of the subject, both of the classroom sessions and of the laboratory sessions, will be determined by the academic calendar that the center establishes for the corresponding course.

Among the main activities planned are the presentation of the theoretical contents and the realization of laboratory practices in the Faculty of Veterinary and in the operating rooms of Lozano Blesa and Miguel Servet University Hospital Clinics.

The start and end dates of the theoretical and problem classes, as well as the dates of completion of the laboratory practices and the global assessment tests will be set by the School of Engineering and Architecture and published on the master's website (<http://www.masterib.es>).

4.5. Bibliography and recommended resources

http://biblos.unizar.es/br/br_citas.php?codigo=69300&year=2019