

29301 - Human General Physiology

Syllabus Information

Academic Year: 2019/20

Subject: 29301 - Human General Physiology

Faculty / School: 229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 442 - Degree in Odontology

ECTS: 6.0

Year: 1

Semester: Second semester

Subject Type: Basic Education

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 methodology followed in this course is oriented towards the achievement of the learning objectives. A wide range of teaching and learning tasks are implemented, such as lectures, laboratory sessions, tutorials and autonomous work and study.

4.2.Learning tasks

This course is organized as follows:

Lectures: Basic concepts of the subject are showed, directing students towards the acquisition of skills and learning outcomes. Audiovisual support material will be used and students could find it in the intranet ADD. During these activities, students will be encouraged to be participatory and dynamic. This activity occupies 4 ECTS, 40 hours in the lecture room.

Laboratory sessions (0.5 ECTS - 12 hours). Students will have the opportunity to perform functional examinations of the main physiological parameters on animal or human samples. All students will be informed about the risks that may have the realization of the practices of this subject, and if dangerous products are handled, and what to do in case of accident. To perform them is compulsory to sign a commitment to comply with lab standards and safety. It is the student's responsibility to be aware of all

such issues and act in an extremely cautious manner to avoid any potential causes for accidents in the laboratory.

For more information, see the information for students of the Occupational Health and Safety Unit: <http://uprl.unizar.es/estudiantes.html>. Before each session, students will have available the protocol of the practice. At the end of it, students submit to the teacher a laboratory assignment with answers to questions about the practice performed and the results obtained. Along with the degree of participation and teamwork done, this assignment will grade this part of the course.

Physiology cases (0.4 ECTS - 8 hours): the student should solve problems about cases of alteration or adaptation of function, in order to integrate and apply his theoretical knowledge.

Autonomous work and personal study (3.3 ECTS - 84 hours): From all other activities, students should be responsible for creating diagrams and structured work programs.

Exams (0.2 ECTS - 6 hours).

Tutorials: Professors' office hours can be used to solve doubts and to follow-up students' work.

4.3.Syllabus

LECTURE TOPICS:

General Physiology

1. The concept of Physiology.
2. Levels of organization. Cell.
3. Organic fluids. Homeostasis. Mechanisms of regulation.
4. Membrane transport.
5. Physiology of excitable tissues: Neurons y Muscle. Membrane potential. Action potential.
6. Methods of conduction. Nervous system. Synapses. Hormone.
7. Muscle fibers. Muscle contraction.

Physiology of the nervous system

1. Functional organizations of the nervous system
2. Sensitive functions: Sensory receptors. Receptors classification. Hearing sensitivity. The vestibular system. Photoreception.
3. Motor system. Neuromuscular junction. Motor control. Reflexes.
4. Autonomic nervous system.
5. Superior functions of the nervous system. Wakefulness and sleep. Body temperature: control and regulation.

Endocrine System Physiology

1. Characteristics of the endocrine system.
2. Hypothalamic-pituitary axis.
3. Thyroid hormones.
4. Hormones of the adrenal gland.
5. Hormones of the endocrine pancreas.
6. Phosphocalcic Metabolism.
7. Endocrine function of gonads.

Blood Physiology

1. The general functions of blood. Components of plasma.
2. Erythrocytes: Characteristics and functions. Iron metabolism. Blood groups.
3. Types and functions of leukocytes. Immunity.
4. Hemostasis: coagulation. Fibrinolysis. Anticoagulants.

Cardiovascular Physiology

1. General functions of the cardiovascular system. Hemodynamics.
2. Electrical and mechanical activity of the heart.
3. Regulation of cardiac activity.
4. Arterial circulation and arterial pressure. Regional blood circulation.
5. Microcirculation. Venous and lymphatic return.

Respiratory Physiology

1. General functions of the respiratory system. Functions of the upper airways. Mechanics of respiration. Pulmonary and bronchial circulation.
2. Respiratory membrane. Transport of gases. Regulation of respiration.
3. Regulation of breathing.

Renal Physiology

1. Functions of the kidneys and urinary system. Micturition.
2. Ultrafiltration and tubular function. Renal clearance.
3. Renal regulation of the volume and composition of extracellular fluid. Mechanisms of concentration and dilution of urine.
4. Regulation of acid-base balance.

Digestive Physiology

1. Introduction to digestive system. Enteric nervous system.
2. Oral cavity functions. Functions of esophagus. Functions of the stomach.
3. Physiological functions of the liver. Liver and gallbladder digestive functions.
4. Functions of the pancreas exocrine.
5. Small and large intestine functions. Defecation.

LABORATORY SESSIONS:

1. Physiology laboratory and functional tests. Laboratory safety, biological hazards, waste control, quality control.
2. Exploration of the nervous system: sensitivity, special senses, Reflexes.
3. Exploration of the blood system: Hematocrit, leukocyte formula and sanguineous groups.
4. Exploration of the cardiovascular system: normal electrocardiogram. Blood pressure and pulse.
5. Exploration of the respiratory and renal system: spirometry and urinalysis.
6. Exploration of hormonal system: glycemic curve.
7. Exploration of the digestive system: Enzymes.

PROBLEM SESSIONS:

1. Problem Based Learning (PBL): General / Nervous.
2. Problem Based Learning (PBL): Endocrine.
3. Problem-Based Learning (PBL): Cardiovascular / Renal / Respiratory.
4. Problem-Based Learning (PBL): Acid-Basic Balance.

4.4.Course planning and calendar

Further information concerning the timetable, classroom, office hours, assessment dates and other details regarding this course will be provided on the first day of class or please refer to the Faculty of Health and Sport Sciences website and Moodle.

<https://fccsyd.unizar.es/academico/horarios-y-calendarios>

4.5. Bibliography and recommended resources