

Academic Year/course: 2021/22

29301 - Human General Physiology

Syllabus Information

Academic Year: 2021/22

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

2. Learning goals

3. Assessment (1st and 2nd call)

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, tutorships and autonomous work and study.

4.2. Learning tasks

This course is organized as follows:

Lectures (1.6 ECTS - 40 hours): Basic concepts of the subject are presented, directing students towards the acquisition of skills and learning outcomes. Audiovisual supportive material will be used and provided to the students who might have it available through the intranet ADD. During these activities, students will be encouraged to be participatory and dynamic.

Laboratory sessions (0.4 ECTS - 10 hours). Students will have the opportunity to perform functional examinations of the main physiological parameters in order to improve knowledge acquisition. All students will be informed about the potential risks that may have while execution of the practices (lab sessions) of this subject and if dangerous products may be handled, which actions must be implemented in the event of accident. It is compulsory to sign a commitment to fulfill lab standards and safety measures before attending lab sessions. It is the student's responsibility to be aware of these issues and to behave and act in an extremely cautious manner to avoid any potential causes for eventual accidents at the laboratory premises.

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

Physiology/Clinical cases (0.2 ECTS - 6 hours): the student should solve problems about clinical cases of alteration or adaptation of function, in order to integrate and apply the theoretical knowledge.

Autonomous work and personal study (3.5 ECTS - 88 hours): From all other activities, students should be responsible for creating diagrams and structured work programs.

Exams (0.24 ECTS - 6 hours).

Tutorships and academic follow-up/feedback: Personal attendance at Professors' office could be used to solve doubts and to

follow-up students' work and performance. Basic general material will be available at the intranet ADD (teaching guide, course planning, practical sessions protocols, specific material?) in order to promote course adherence and achievements of learning outcomes.

4.3. Syllabus

LECTURE TOPICS:

General Physiology

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

Physiology of the nervous system

6. Functional organizations of the nervous system
7. Sensitive functions: Sensory receptors. Receptors classification.
8. Motor system. Neuromuscular junction. Motor control. Reflexes.
9. Autonomic nervous system.

Physiology of muscle contraction

10. Types of muscle. Functional organization of the skeletal muscle cell. The contraction

Blood Physiology

11. The general functions of blood. Components of plasma.
12. Erythrocytes: Characteristics and functions. Iron metabolism. Blood groups.
13. Types and functions of leukocytes.
14. Hemostasis: coagulation. Fibrinolysis. Anticoagulants.

Endocrine System Physiology

15. Characteristics of the endocrine system.
16. Hypothalamic-pituitary axis.
17. Thyroid hormones.
18. Hormones of the adrenal gland.
19. Hormones of the endocrine pancreas.
20. Phosphocalcic Metabolism.

Cardiovascular Physiology

21. General functions of the cardiovascular system. Hemodynamics.
22. Electrical and mechanical activity of the heart.
23. Regulation of cardiac activity.
24. Arterial circulation and arterial pressure. Regional blood circulation.
25. Microcirculation. Venous and lymphatic return.

Respiratory Physiology

26. General functions of the respiratory system. Functions of the upper airways. Mechanics of respiration. Pulmonary and bronchial circulation.
27. Respiratory membrane. Transport of gases. Regulation of respiration.
28. Regulation of breathing.

Renal Physiology

29. Function and structure of the kidneys and urinary system. Filtration, reabsorption, secretion and excretion
30. Hydroelectric balance. Regulation of acid-base balance
31. Urination.

Digestive Physiology

32. Structure and general functions of the digestive system.
33. Functions of the oral cavity. Function of the esophagus. Stomach. Gastric secretion and its regulation. Gastric motility.
34. Functions of the liver and gallbladder. Exocrine functions of the pancreas. Bowel functions small and large intestine

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: Haematocrit, leukocyte formula and sanguineous groups.
4. Exploration of hormonal system: glycemic curve.
5. Exploration of the cardiovascular system: normal electrocardiogram (simulation). Blood pressure and pulse.
6. Exploration of the respiratory and renal system: spirometry (simulation) and urinalysis.

PROBLEM SESSIONS:

1. Problem Based Learning (PBL): General/Nervous.
2. Problem Based Learning (PBL): Blood/Endocrine.
3. Problem-Based Learning (PBL): Cardiovascular/Renal/Respiratory.

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

To consult the bibliography and recommended resources, you must access the *Recommended Bibliography* link.