

Academic Year/course: 2021/22

25606 - Human physiology

Syllabus Information

Academic Year: 2021/22

Subject: 25606 - Human physiology

Faculty / School: 127 - Facultad de Ciencias de la Salud

Degree: 275 - Degree in Physiotherapy

605 - Degree in Physiotherapy

ECTS: 6.0

Year: 1

Semester: First 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 learning process of this subject is progressive, beginning with the study of theoretical concepts mainly in lectures. Afterwards, procedural, integration and understanding skills will be worked in practice sessions in small groups.

For a better monitoring of the learning process, students will be encouraged to use tutorials, as conventional academic tutorials or more specific tutorials related to practice lessons.

Supportive materials used in the different activities will be available on Moodle. This tool will also be used to communicate the course programming or incidents that may occur during it.

4.2. Learning tasks

- Lectures (4 ECTS: 40 hours), in which the basic theoretical knowledge of the subject is presented. Audiovisual supportive materials will be used. Participation of students is expected.

- Practice sessions that include:

a) Laboratory practice or work in small groups: students will have the opportunity to carry out functional explorations of the main physiological parameters on real samples or individuals (5 sessions of 2 hours = 1 ECTS).

b) Large group practices ("seminar" type) or problem-based learning (PBL): functional explorations will be carried out in larger groups. In addition, students will face simple clinical cases of alteration or adaptation of functions, to develop integrative capacity and application of theoretical knowledge (5 sessions of 2 hours = 1 ECTS).

4.3. Syllabus

The course will address the following topics:

LECTURES

1. General Physiology

Concept of Physiology. Homeostasis. Internal environment and body fluids. Membrane transport. Physiology of excitable tissues. Membrane potential. Action potential. Conduction and transmission of nerve impulses. Synapses

1. Physiology of the nervous system
 - Sensitive functions
 - Special senses
 - Motor function
 - Regulation of vegetative functions. The autonomic nervous system
3. Skeletal muscle contraction
 - Muscle types. Functional organization of skeletal muscle cell
 - Muscular contraction
5. Internal environment. Blood
 - General functions of blood. Components. Functions of erythrocytes and leukocytes
 - Physiological hemostasis. Coagulation. Fibrinolysis. Anticoagulants
7. Cardiovascular Physiology
 - General functions of the cardiovascular system. Electrical and mechanical activity of the heart. Regulation of cardiac activity.
 - Arterial Physiology. Arterial pressure.
 - Microcirculation. Venous and lymphatic return
9. Respiratory Physiology
 - General functions of the respiratory system. Mechanics of respiration
 - Gas exchange. Respiratory membrane: Diffusion of O₂ and CO₂. Transport in blood of respiratory gases.
 - Gas exchange between blood and tissues
 - Regulation of respiration
11. Renal Physiology
 - Functions of the kidney
 - Hydroelectrolyte balance
 - Urination
13. Digestive Physiology
 - General digestive functions: motility, digestion, secretion, absorption. Integrated digestive function.
 - Defecation
15. Endocrine Physiology
 - Endocrine system. Hormonal control of basal metabolism, energy metabolism and growth.

PRACTICE LESSONS

a) Seminars / PBL / Large group explorations:

- I. Examination of special senses (2h)
- II. Examination of touch. Examination of reflex (2h)
- III. PBL: Skeletal Muscle Physiology / Neurophysiology (2h)
- IV. PBL: Respiratory Physiology (2h)
- V. PBL: Physiology of digestive system / Physiology of endocrine system (2h)

b) Laboratory / Small Group Explorations:

- I. Examination of blood system (2h)
- II. Examination of renal system (2h)
- III. Examination of cardiac electrical activity (2h)
- IV. Examination of blood pressure (2h)
- V. Examination of lung function: forced spirometry (2h)

4.4. Course planning and calendar

Lectures will be taught during the first semester at the time and place assigned by the Faculty of Health Sciences.

Practice lessons will be adapted whenever possible to the development of lectures, previously announcing the times and days. For some practices, it will be necessary to use spaces from other University Centers and / or will be carried out in the afternoon. In laboratory sessions with chemical or biological risks, it will be mandatory to wear a laboratory coat (it will not be provided) and other individual protection items, such as gloves or safety glasses.

All the training activities (practice lessons calls, publication of partial and final grades, general or personal communications, etc.) will be carried out through Moodle.

If the health circumstances derived from Covid-19 pandemic prevent the realization of face-to-face activities, teaching will be adapted to the online format.

4.5. Bibliography and recommended resources

The recommended bibliography is available here: <http://psfunizar10.unizar.es/br13/egAsignaturas.php?codigo=25606>