Medical Physiology II

Academic Year: (2020 / 2021) **Review date: 22-07-2020**

Department assigned to the subject: Bioengineering and Aeroespace Engineering Department

Coordinating teacher: CUSSO MULA, LORENA

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is convenient, although not a requirement, to have completed:
- Cell and molecular biology
- Biochemistry
- Biological systems

OBJECTIVES

The subjects Medical Physioloy I and II are mainly focused to provide a background on human Anatomy and Physiology, but it will also cover some aspects of Pathology and Patophysiology, diagnostic ans therapeutic procedures and medical terminology. Whenever it is possible, the diiferents topics will be explained trying to address an engineer's perspective and interests rather than providing a conventional medical or biological viewpoint.

The practical sessions will facilitate a better contact with the real world, using instrumentation and devices available at the University and at the Hospital Gregorio Marañón, and paying visits to several Departments of the Hospital. Among the skills the students are expected to acquire we can mention:

- Basic knowledge of human anatomy and anatomical terminology
- Intermediate-level knowledge of human physiology, with particular emphasis on quantitative descriptions of physiological models, whenever it is possible
- Familiarity with some basic medical procedures
- Ability to comunicate with physicians, understanding their statements and being able to read clinical documents

DESCRIPTION OF CONTENTS: PROGRAMME

The program for the subjects Medical Physiology I and II include the following topics:

Medical Physiology I:
- Introduction to the human body
- The skeletal system and joints
- Muscular tissue and system
- Nervous tissue
- Nerves and spinal chord
- Autonomous nervous system
- The brain
- Sensory and motor nervous system
- The blood
- Immunity and lymphatic system
- Respiratory system

Medical Physiology II:
- Special senses: Vision, Audition, Olfaction, gustation, equilibrium
- Endocrine system
- Cardiovascular system: The heart

- Cardiovascular system: The circulation
- Digestive system
- Metabolism and nutrition
- Urinary system
- Fluid and acid-base balance, homeostasis
- Reproductive system, development and inheritance

LEARNING ACTIVITIES AND METHODOLOGY

Each section of the program will be divided into lectures and practical sessions/seminars.

Some practical sessions will take place at the Laboratories in the UC3M some others will require visits to Hospital Gregorio Marañón (lab coat mandatory).

ASSESSMENT SYSTEM

Students should read assigned chapters before lectures and seminars. During seminars there will be interactive discussion with the students.

Periodically short-exams will be passed during the first half-hour of the session. Results of these exams will constitute an important part of the continuous evaluation.

Students will finn in a laboratory notebook during practical sessions. This document is also evaluated.
Grading:
- Final exam: 60%
- Short exams, practical sessions and hospital visits: 30%
- Participation, attitude: 10%

NOTE 1:
To perform an average with the continuous evaluation the minimum score in the final exam has to be more than 4.5 out of 10.

NOTE 2:
The mark for students attending any extraordinary examination will be the maximum between:
a) 100% exam
b) 60% exam and 40% continuous evaluation if its is available in the same course (subject to NOTE 1)

% end-of-term-examination:	60
% of continuous assessment (assigments, laboratory, practicals…):	40

BASIC BIBLIOGRAPHY

- Guyton & Hall Textbook of medical physiology, Saunders Elsevier, 2011
- Linda S. Costanzo Physiology. Cases and problems, Lippincot Williams & Wilkins, 2012
- Tortora & Derrickson Principles of Human Anatomy and Physiology, WILEY, 2009