Medical Physiology II

Academic Year: (2023 / 2024) **Review date: 14-11-2023**

Department assigned to the subject: Bioengineering Department

Coordinating teacher: SALINAS RODRIGUEZ, BEATRIZ

Type: Compulsory ECTS Credits : 6.0

Year : 3 Semester : 2

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

It is preferable, although not required, to have completed:

- Cell and molecular biology
- Biochemistry
- Biological systems

OBJECTIVES

The subjects Medical Physioloy I and Medical Physioloy II are mainly focused in providing a sound background on human Anatomy and Physiology. It will also cover some aspects of Pathology and Patophysiology, diagnostic andtherapeutic procedures and medical terminology.

Whenever possible, the different topics will be explained trying to address an engineer's perspective and interests rather than providing a conventional medical or biological viewpoint. After this fascinating course, the student will certainly acquire the necessary knowledge to understand the key role of engineering in advances in physiology-based patient monitoring and treatment.

The practical sessions will facilitate a better understanding of the bases of physiology and a closer contact with the real world, using instrumentation and devices available at the University and at the Hospital Universitario de Getafe. Hospital Visits with experts in the different fields are planned in key hospital services deeply dependent on technology and engineering.

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 appropriate.
- Familiarity with some basic medical procedures.
- Understanding of the (past and ongoing) key role of engineering in the advancement of medical physiology.
- Ability to communicate with physicians, understanding their jargon and needs, and being able to read clinical documents.

DESCRIPTION OF CONTENTS: PROGRAMME

The program for the subjects Medical Physiology II include the following modules:

1. Special senses: Vision, audition, olfaction, gustation, equilibrium
2. Cardiovascular system
3. Digestive system
4. Endocrine system, Metabolism and Nutrition
5. Urinary system and fluid and electrolyte balance
6. Reproductive system, development and inheritance

LEARNING ACTIVITIES AND METHODOLOGY

Each section of the programme will be divided into lectures and practical sessions/seminars/hospital visits.

Some practical sessions will take place at the Laboratories at the UC3M; some others will require visits to Hospital Universitario de Getafe (lab coat mandatory in both sites).

ASSESSMENT SYSTEM

Grading
Final grade is calculated based on the final exam and the continuous evaluation marks:
- Final exam: 60%
- Continuous evaluation 40%
Continuous evaluation consists of short (or midterm) exams, lab practical sessions and hospital visits. These elements will be averaged (60% short exams, 40% lab practical sessions and hospital visits) and be part (40%) of the final grade.
To average the final grade, the score in the final exam AND the continuos evaluation (40% hospital visits and lab sessions; 60% partial exams) should be ¿4.5 out of 10, i.e., both the final exam and the continuous evaluation have to be passed.
The subject coordinator, in agreement with the other teachers of the subject, could, in cases of especial merit, based on participation, attitude (shown, for example, by questions asked and answered), or kahoot quizzes success, add 10% to the final grade to students that have shown especial motivation and commitment.

Extraordinary exam
The mark for students attending any extraordinary examination will be one of the following:
a) 100% exam
b) 60% exam and 40% continuous evaluation if it is available in the same course
The student will be asked to indicate her/his preference (either "a" or "b") before the exam starts.

Academic conduct
Unless otherwise specified, all exams will be closed-book, closed-notes, no PC or mobile phone. Plagiarism, cheating or other acts of academic dishonesty will not be tolerated. Any infractions what so ever will result in a FAILING GRADE.

% 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
- Walter F. Boron Medical Physiology, Elsevier 2016, 2016