

26760 - Physiology I

Syllabus Information

Academic year: 2024/25

Subject: 26760 - Physiology I

Faculty / School: 104 - Facultad de Medicina

229 - Facultad de Ciencias de la Salud y del Deporte

Degree: 304 - Degree in Medicine

305 - Degree in Medicine

ECTS: 6.0

Year: 1

Semester: First semester

Subject type: Basic Education

Module:

1. General information

Physiology I A subject with essential information to follow the study of biophysics and systemic physiology. The aim is that the student knows the most useful general and tissue functions of the human body applied in Medicine: 1) Study of biorhythms and oxidative stress.

2) Cellular compartments, substance transport.

3) Bioelectric potentials in excitable cells.

4) Cellular communication.

5) Bases of human nutrition

6) Functions of the muscle

These approaches are aligned with the goals of the United Nations 2030 Agenda for Sustainable Development (SDGs): 3 (Health and well-being), 4 (Quality education) and 5 (Gender equality)

<https://www.un.org/sustainabledevelopment/es/>

2. Learning results

2.1. Learning Results

In order to pass this subject, the student must demonstrate that they know how to define, analyse, apply and explain the following learning results on:

1. The field of study of Physiology, General Physiology, Special Physiology and Biophysics.

2. Biological servo systems and their characteristics.

3. Biological rhythms and their characteristics.

4. The main free radicals, antioxidant mechanisms in living organisms and their characteristics.

5. The concept of oxidative stress.

6. Biological liquids and their characteristics.

7. The compartments of the organism and their characteristics.

8. The concept of pH, its values in biological fluids, buffers and their characteristics.

9. The general principles of the transport of substances in biological membranes and their characteristics.

10. The mechanisms of intercellular information transmission and their characteristics.

11. The mechanisms of information transmission in excitable tissues, and their characteristics.

12. The processes of genesis, conduction and transmission of the action potential.

13. The main neurotransmitters used in the vegetative nervous system.

14. The mechanisms of hormonal action and their characteristics.

15. The physical basis of bioenergetics.

16. The physical and functional basis of human nutrition.

17. Nutritional parameters in humans in special physiological situations.

18. Muscle contraction.

19. Differences in contraction in skeletal, smooth and cardiac muscle.

2.2. Importance of learning results

The importance of the learning results obtained in this subject lies in the ability to give a good foundation to the functional and pathophysiological knowledge necessary in the training of a physician

3. Syllabus

Theory: Physiology I

Concept and field of study and role of physiology; homeostasis, biorhythms; free radicals; oxidative stress and antioxidants; transport of substances; bioelectrical potentials: genesis, conduction and transmission of action potentials; synapses; neurotransmitters and receptors; autonomic nervous system; organic fluids and compartments; pH and its regulation; mechanisms of hormonal action; bioenergetics; normal nutrition and in special situations; skeletal, smooth and cardiac muscle

Practices:

Learning workshop, aging, transport and permeability, bioelectric potentials, action potential transmission, study of a cellular function or concept map, nutritional status evaluation, diet assessment, muscle contraction, muscle metabolism in exercise.

4. Academic activities

Academic activities

1- This registration does not give the right to the theoretical class, the last year they were (1.6 ECTS): 40 hours.

2- This enrollment does not give the right to laboratory practices, computer simulations, seminars and problems and cases, the last year they were (0.8 ECTS): 20 hours

To learn about the risks that may arise when taking the practical exam for this subject, as well as whether dangerous products are handled and what to do in the event of an accident, all students must consult the information for students of the Occupational Risk Prevention Unit:

<http://uprl.unizar.es/estudiantes.html>

and sign the commitment to comply with work and safety standards in order to carry them out. For more information:

<http://uprl.unizar.es/estudiantes.html>

3- Evaluation (0.24 ECTS): 6 hours. 4- Study (3.36 ECTS): 60 hours.

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5. Assessment system

Assessment system

The evaluation will have 2 parts:

1/ **Written exam (90%)**. Will explore theoretical and practical learning outcomes.

2/ **Evaluation of practices (10%)**.

To pass the subject you must independently pass both the theory and practical parts. If this requirement is not met, the numerical grade that will appear in the minutes will be that of the suspended party. Minimum grade required 5 out of 10.

1. **Written exam:** To pass you need to pass (5 out of 10) in the written exam. First and second calls:

1. a) Contents: Complete theory and practice programs.

2. b) Duration: 75 minutes.

3. c) Evaluation Mode: or 6 questions (development, problems or short) of 12minutes/question. 90% rating.

2. **The evaluation of practical learning results:** will account for 10% of the overall grade and the rubrics and/or tasks

from the previous course will be used (minimum grade required 5 out of 10).

1. b) Students who do not pass this evaluation or who have more than two absences from practices will take a practical skills exam. Minimum grade required 5 out of 10.

6. Sustainable Development Goals

3 - Good Health & Well-Being

4 - Quality Education