University of Puerto Rico Medical Sciences Campus
School of Medicine
Department of Physiology

Course Syllabus

Course Title: Basic Concepts of Human Physiology

Codification: FISA 8105

Credits/Contact Hours: 3 credits - 54 contact hours

Prerequisite Courses: None

Co-requisites: None

Faculty (Coordinator): Sabzali Javadov
(787)758-2525 ext. 2909
sabzali.javadov@upr.edu

Coordinator's Office & hours: A-674, Tuesday & Thursday, 3:00PM-5:00PM

Course Description:

Through interactive conferences, this course will offer basic physiological knowledge necessary to understand the essential concepts of human physiology. This course is designed for "non-Physiology" graduate students in order to have a basic understanding of the body function from the molecular, cellular and system levels. In this way, the students will acquire knowledge and develop the skills to integrate the function of the systems (Nervous, Muscular, Cardiovascular, Respiratory, Renal, Gastrointestinal, and Endocrine). The concepts presented in this course are, therefore, essential to the everyday research experience in any department of the basic sciences.

Expected Outcomes:

At the end of the course, the students will be able to describe, and explain all the Physiological systems (muscular, cardiovascular, respiratory, renal, gastrointestinal, endocrine, reproductive and nervous systems). The course objectives and outcomes will be measured by analyzing, integrating and comparing the above mentioned concepts, which will be evaluated through some multiple choice questions and comprehensive/subjective questions.

Terminal Objectives:

At the end of the course, the student is expected to:

1. Demonstrate knowledge of the function of the cell membrane and the mechanisms cells communicate (intra- & intercellularly).
2. Describe the nervous system, the main receptors that mediates neuronal responses and explain the basis of neurophysiological responses after a stimulus.
3. Describe the morphological and functional characteristics of the three types of muscle in the body: skeletal, cardiac, and smooth muscle.
4. Understand the basic organization, properties, and function of the cardiovascular system.
5. Describe and analyze the function of the respiratory system.
6. Compare the physiological responses caused by acid or base disturbances.
7. Describe the function of the gastrointestinal system.

8. Name and analyze the structural-functional relationship of the renal system and its integrative function with other organ systems.
9. Describe the composition and function of the endocrine system and its role in the regulation of organic metabolism and energy balance.
10. Describe the overall workings of the endocrine system, emphasing the various types of hormones, their receptors and their underlying mechanisms of action.
11. Describe and compare the male and female reproductive systems.

Schedule: (First semester)

Topic	*Time*
Introduction to Physiology	1.5 hrs
Membranes	1.5 hrs
Signal Transduction	1.5 hrs
Nervous System Cells & Structures	1.5 hrs
Central Nervous System	1.5 hrs
Nervous System: PNS & ANS	1.5 hrs
Neurotransmitter Synthesis & Receptors	1.5 hrs
Neurophysiology	1.5 hrs
Exam 1	1.5 hrs
Muscle Physiology	1.5 hrs
Cardiovascular System	1.5 hrs
Cardiovascular System	1.5 hrs
Cardiovascular System	1.5 hrs
Cardiovascular System	1.5 hrs
Respiratory System	1.5 hrs
Respiratory System	1.5 hrs
Respiratory System	1.5 hrs
Respiratory System	1.5 hrs
Acid/Base	1.5 hrs
Exam 2	1.5 hrs
Renal System	1.5 hrs
Renal System	1.5 hrs
Renal System	1.5 hrs
Renal System	1.5 hrs
Gastrointestinal System	1.5 hrs
Gastrointestinal System	1.5 hrs
Gastrointestinal System	1.5 hrs
Gastrointestinal System	1.5 hrs
Exam 3	1.5 hrs
Endocrine System	1.5 hrs
Endocrine System	1.5 hrs
Endocrine System	1.5 hrs
Endocrine System	1.5 hrs
Reproductive System	1.5 hrs
Reproductive System	1.5 hrs
Exam 4	1.5 hrs
TOTAL:	**54.0 hrs**

Participating Faculty:

Dr. María J. Crespo, Lab. A667, Ext. 5078
Dr. Nelson Escobales Lab. A-663, Ext. 1612
Dr. Carlos Jimenez, Lab. A-688, Ext. 1676
Dr. Jorge D. Miranda Lab. A-682, Ext. 1631
Dr. Guido E. Santacana, Lab. A-644, Ext. 1644
Dr. Annabell Segarra, Lab. A-691, Ext. 1965
Dr. Walter Silva, Lab. A-688, Ext.1611
Dr. Carlos Torres, Lab. A-659, Ext.1393
Dr. Sabzali Javadov, Lab. A-674, Ext.2909

All of the above laboratories are located in the 6th floor of the Medical Sciences Building.

Instructional Strategies and Methods of Evaluations:

The course will be lecture-based. The students will meet with the faculty in charge to receive the specific objectives for the section, and the assigned readings. The material to be studied will be mostly from the textbook of the course. In addition, illustrations, slides, and handouts prepared by the staff could be used.

- LECTURE: 48.0 hrs (89%)

- EXAMS (four partial exams: 1.5 hrs/test): 6.0 hrs (11%)

TOTAL COURSE HOURS: 54 hrs

EXAM 1:		Membrane Physiology & Cell Signaling (Cap. 6 & 7) Nervous System (CNS, PNS & Autonomic) (Cap. 8 & 9) Neurophysiology (Cap. 8) Neurotransmitters synthesis and receptors
	Time: 1.5 hrs	
EXAM 2:		Muscle Physiology (Cap. 11) Cardiovascular Physiology (Cap. 14) Respiratory Physiology (Cap. 15) Acid-Base Physiology
	Time: 1.5 hrs	
EXAM 3:		Renal Physiology (Cap. 16) Gastrointestinal Physiology (Cap. 17)
	Time: 1.5 hrs	
EXAM 4:		Endocrine Physiology (Cap. 10 & 18) Reproductive Physiology (Cap. 19)
	Time: 1.5 hrs	

Reasonable Accommodation

Todo estudiante que presente una condición o situación de salud que lo cualifica ante la ley para recibir acomodo razonable, tiene el derecho de hacer su solicitud por escrito al Decano, Decano Asociado o Decano Auxiliar de Asuntos Estudiantiles de su Facultad, siguiendo el procedimiento establecido en el documento **Proceso de Tramitación de Acomodo Razonable del Recinto de**

Ciencias Médicas. Copia de este documento se obtiene en el Decanato de Estudiantes del RCM localizado en el segundo piso del edificio de Farmacia (787-758-2525 ext. 5203), en cada Facultad, y en la página cibernética del RCM. La solicitud no exime al estudiante de cumplir con los requisitos académicos de los programas de estudio.

Students with a health condition or situation that, according to the law, makes them eligible for reasonable accommodation have the right to submit a written application to the professor and the dean of their faculty, according to the procedures established in the document "submittal process for reasonable accommodation of the medical sciences campus". A free copy of this document may be obtained at the office of the dean for students affairs, second floor of the pharmacy building; phone 787-758-2525 ext. 5203. A copy may also be obtained at the office of the faculty deans as well as in the msc web page. The application does not exempt students from complying with the academic requirements pertaining to the programs of the medical sciences campus.

Evaluation Procedures:
Examinations: The partial exams 1, 2, 3, and 4 will contribute 20%, 30%, 30%, and 20%, respectively, to final scoring. Students scoring above 90% will receive an A, students scoring 80 to 89, will receive a B, students scoring 70 to 79 will receive C, and students below 70% will receive F. A minimum of 70% is required to pass the course. **Student who fails to attain this level of performance will have the opportunity of taking a reposition test that will cover the material of all the course.** The highest possible grade to be registered by the Physiology Department in the reposition test is a B.

Additional information:

1. The course consists of 48.0 contact hours in which the major areas of Human Physiology will be presented using a lecture-based format. **Attendance is mandatory**.

2. The coordinator will not entertain requests from students regarding exam questions from the faculty involved. The student must negotiate complaints about exam questions with the writer of the question. Discrepancies in the material found in books other than those assigned by the department will not be taken into consideration for adjustments. Students with requests on exam questions, have seven working days after the date of evaluation to clarify doubts with the faculty in charge of the particular area of concern. After this period, no request will be entertained. THERE WILL BE NO DISCUSSIONS OF EXAMINATIONS IN CLASS.

Grading System:

The grading system for this course will be as follows:

A 90%-100%
B 80%-89%
C 70%-79%
F < 70%

An absence to any examination must be accompanied with an appropriate justification upon the review of the justification by the course coordinator and acceptance of the justification by the department. The student may be allowed to take a makeup exam at a date arranged with the coordinator or to count twice any of the other tests, at the discretion of the department.

No student will be allowed to take an exam if the student arrives 30 minutes after the start of the examination. Late arrival to an exam does not mean that the student will be allowed to remain extra

time to finish the exam. The student will have only the remaining allotted time for the examination and the exam will be collected at the end of the established exam period.

Students that do not achieve the required performance by the end of the Acid/Base Physiology section will receive a letter or email from the coordinator of the course communicating the problem. If the student fails the course FISA 8105-Basic Concepts of Human Physiology for non-Physiologists, the opportunity to take a reposition exam will be evaluated. STUDENTS TAKING AND PASSING THE REPOSITION TEST WILL BE GIVEN A MAXIMUM GRADE OF "**B**" IN THE COURSE.

Statement on Ethics:
The written examinations are the means utilized by the Department to measure the student's performance in their educational experiences. It is our intention to guarantee that all students have the opportunity to demonstrate their academic achievements under the same circumstances, eliminating all possibility for unfair or unethical behavior. To attain this goal, we trust in our students' commitment to honesty and professional ethics. Should unethical behavior be observed, appropriate measures will be taken.

Should knowledge become available that dishonesty regarding any particular examination has occurred; the faculty of the course reserves the right to cancel the examination before or after it has been administered and to require a repeat exam or to completely disregard the exam from the course evaluation.

Academic Integrity

The University of Puerto Rico promotes the highest standards of academic and scientific integrity. Article 6.2 of the UPR Student Bylaws (Certification JS 13 2009–2010) states that "academic dishonesty includes but is not limited to: fraudulent actions, obtaining grades or academic degrees using false or fraudulent simulations, copying totally or partially academic work from another person, plagiarizing totally or partially the work of another person, copying totally or partially responses from another person to examination questions, making another person to take any test, oral or written examination on his/hers behalf, as well as assisting or facilitating any person to incur in the aforementioned conduct". Fraudulent conduct refers to "behavior with the intent to defraud, including but not limited to, malicious alteration or falsification of grades, records, identification cards or other official documents of the UPR or any other institution." Any of these actions shall be subject to disciplinary sanctions in accordance with the disciplinary procedure, as stated in the existing UPR Student Bylaws.

***DISCLAIMER**: The above statement is an English translation, prepared at the Deanship of Academic Affairs of the Medical Sciences Campus, of certain parts of Article 6.2 of the UPR Student Bylaws "Reglamento General de Estudiantes de la Universidad de Puerto Rico", (Certificación JS 13 2009-2010). It is in no way intended to be a legal substitute for the original document, written in Spanish.*

Required Texbook:

Vander's Human Physiology. The Mechanisms of Body Function. 12th edition. Eric P. Widmaier, Hershel Raff, Kevin T. Strang. McGraw-Hill, New York, NY. 2010.

Bibliography:

Physiology, Costanzo, Fifth Edition, 2011, Walters Kluwer/Lippincott Williams & Wilkins

Medical Physiology. Rhoades & Bell. Third Edition, 2009, Lippincott Williams & Wilkins.

Medical Physiology. Walter F. Boron and Emile L. Boulpaep. Second Edition. Saunders Elsevier. Philadelphia, PA, 2011.

Berne and Levy Physiology. Koeppen and Stanton, Sixth Edition, 2010, Mosby Elsevier.

Some websites of interest:

1) Cardiovascular Physiology: (http://jpck.zju.edu.cn/jcyxjp/files/ge/03/MT/0333.pdf) and (www.cvphysiology.com)

2) Respiratory Physiology: (www.acbrown.com)

3) Endocrine Physiology: (www.hormone.org) (www.endo-society.org) and (www.endocrinology.org)

5) Reproductive Physiology
(http://www.nlm.nih.gov/medlineplus/femalereproductivesystem.html)
(http://en.wikibooks.org/w/index.php?title=Human_Physiology/The_female_reproductive_system&stable=0)