

UNIVERSITY OF PUERTO RICO
MEDICAL SCIENCES CAMPUS
SCHOOL OF MEDICINE

PHYSIOLOGY DEPARTMENT

COURSE DESCRIPTION

COURSE TITLE: **ADVANCE EXERCISE PHYSIOLOGY I**

COURSE CODE: **FISA 8513**

CREDIT HOURS: **3 CREDITS (54 HOURS)**

COURSE DURATION: **18 WEEKS**

NUMBER OF STUDENTS: **MIN.: 3 MAX.: 10**

COORDINATOR NAME: **STAFF**

COORDINATOR OFFICE HOURS: **TO BE ARRANGED**

COORDINATOR OFFICE: **N/A**

COURSE HOURS: **TO BE ARRANGED (3.0 HRS. /WEEK)**

WHEN WILL BE OFFERED: ___ QUATERLY X SEMESTER
 ___ YEAR ___ SUMMER

PREREQUISITE: **N/A**

COURSE JUSTIFICATION: **This course provides important leads concerning human biology issues related to the role of exercise in the spectrum of health-disease. This specialty has become part of the general scientific training provided by academic institutions to graduate and medical students as well as health related professions.**

COURSE DESCRIPTION:

This course will address how the body adapts to exercise during acute and chronic time frames. It will also review and discuss basic terminology and concepts of cellular metabolism, muscle contraction and neuromuscular function for enhanced understanding of acute and chronic adaptations to exercise. The course is concluded with a review of recent findings on various pharmacological, hormonal, physiological, and environmental agents known to either enhance or impair exercise performance. The course consists of three sections: fundamentals of exercise physiology, systemic response to exercise and aids to exercise performance.

COURSE OBJECTIVES AND EXPECTED OUTCOMES:

1. Demonstrate knowledge of the concept of physical activity and exercise.
2. Demonstrate knowledge on the function of anaerobic and aerobic metabolic pathways in response to exercise.
3. Demonstrate knowledge on the function of muscle contraction and neuromuscular function in response to exercise.
4. Describe acute and chronic adaptations of the human organism to exercise.
5. Describe what types of exercise influences organ remodeling.
6. Demonstrate knowledge on how drugs, nutrients, and practices can enhance/reduce exercise performance.

The students should provide proficiency with the course objectives, that will be measured by analysis, integration and comparison of the above mentioned concepts, that will be evaluated through multiple choice questions, essay exams, term papers, presentations and/or publications.

COURSE TOPICS AND TIME DISTRIBUTION:

- Week 1. Historical review, basic terminology and bioenergetics
- Week 2. Catabolism and exercise
- Week 3. Anabolism and exercise
- Week 4. Ergometry and calorimetry
- Week 5. Exam #1
- Week 6. Neuromuscular adaptations to exercise
- Week 7. Muscle metabolic adaptation to exercise
- Week 8. Cardiovascular adaptations to exercise
- Week 9. Pulmonary adaptations to exercise
- Week 10. Exam #2
- Week 11. Neuroendocrine adaptations to exercise
- Week 12. Bone and immune function adaptations to exercise
- Week 13. Aids to exercise performance I
- Week 14. Aids to exercise performance II
- Week 15. Exam #3
- Week 16. Presentations by students
- Week 17. Presentations by students
- Week 18. Presentations by students

TEACHING STRATEGIES:

METHODS:

Lectures
Independent study
Group discussions

RESOURCES:

Power Point
Transparencies
Hand outs
Blackboard

ESSENTIAL REQUIREMENTS:

Attendance
Class Participation

EVALUATION STRATEGIES:

Paper presentations	30%
Exam I	20%
Exam II	20%
Exam III	20%
Class attendance and participation	<u>10%</u>
	100%

EVALUATION SYSTEM:

90-100 % = A
80-89 % = B
70-79 % = C
60-69 % = D
50-59 % = F

BIBLIOGRAFY:

- 1) Physiology 5th ed. (2004) Robert M. Berne et al., Mosby
- 2) Recent scientific articles to be selected by the instructor.

REASANABLE ACCOMODATION STATEMENT:

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 STUDENT AFFAIRS, SECOND FLOOR OF THE SCHOOL OF 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 THE STUDENT FROM COMPLYING WITH THE ACADEMIC REQUIREMENTS PERTAINING

TO THE PROGRAMS OF THE MEDICAL SCIENCES CAMPUS.

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.