

Program: Physiology
Course Name: Principles of Physiology
Course Number: 507
Course Director: James P. Ryan, Ph.D.
Room 204D OMD
215-707-6919
jryan1168@aol.com
Credits: 3
Semester: Fall, every year
Times: Meets Twice weekly for 2 hours each session
Location: 215MRB
Prerequisites: Students are required to have a background in chemistry and biology.

Description: The goals of the course are to provide students with the fundamental facts and principles of cellular and organ system physiology and to prepare students to successfully complete additional required physiology courses, e.g. Medical Physiology and upper level graduate courses. Although the course is exclusively lecture-based, the lectures will involve the Socratic approach in order to engage the students in a dialogue. The philosophy is that a student is best served by taking an active role in the development of a mental model.

Textbook & Readings: Required readings will be assigned from a textbook (*Medical Physiology*: Boron and Boulpaep, 1st edition) and from articles provided by the lecturer. Assigned readings should be completed prior to class, as the Socratic method will be used to teach the course. This will permit an interactive experience between the students and the faculty.

Examinations: There will be three examinations (see schedule for dates). Each exam will be worth 30% of the final grade. Class participation will make up the remaining 10% of the grade. The exams will consist of short-answer questions, data analysis, and graphic representation of physiological interrelationships.

The grading policy is as follows: A = 90% and above
B = 80 to 89%
C = 70 to 79%
D = 60 to 69%
F = grades below 60%

Office Hours: The Course Director is available during the normal work day hours. Other instructors are available on the same terms. Students may always use email to address issues when faculty are not available.

COURSE LECTURE SCHEDULE

TOPIC (Chapter Assignment)

Introduction; Homeostasis (2/3)

Transport Across Cell Membranes I(3)

Transport Across Cell Membranes II (3)

Membrane Bioelectricity I (6)

Membrane Bioelectricity II (7)

Skeletal Muscle (9)

Smooth Muscle (9)

EXAM I

Cardiac Muscle Electrophysiology (20)

Cardiac Muscle Contraction (21)

The ECG (20); Heart as a Pump I (21)

Heart as a Pump II (21)

Hemodynamics (17)

Regulation of Blood Flow (18/19)

Control of Blood Pressure (22)

EXAM II

Lung Structure-Function & Volumes

Lung Mechanics I (19)

Lung Mechanics II; Gas Exchange I (29/30)

Gas Exchange II (29/30)

Gas Transport

Control of Respiration (31)

NO CLASS

NO CLASS

Renal Function; Glomerular Filtration (32/33)

Renal Tubular Transport I (34/35/37)

Renal Tubular Transport II (34/35/37)

Regulation of ECF Salt and Water (39)

Principles of Acid-Base (27)

TBA

EXAM III