



Medical Physiology

PHYS 306

Course Description

Physiology introduces the student to the basics of normal human physiology or the study of function, activities, and processes of the human body. The course provides an in depth introduction to a systems/organ system study of medically pertinent physiology. Teaching covers general and cell physiology, nerve and muscle physiology, blood, respiratory, gastrointestinal and hepatobiliary physiology, and nutrition. As the student is introduced to normal physiology, concepts of pathophysiology are also presented

Credit: 5.0 semester credits

Repeatable: No

Competencies: At the end of Pharmacology I and II, the student will have had the opportunity to practice the following competencies through meeting the objectives of the course:

Medical Knowledge

- MK1 Demonstrate knowledge of normal and abnormal structure and function of the human body on the macroscopic, microscopic and molecular levels.
- MK2 Identify the pathology and pathophysiology of various diseases and correlate them with clinical signs and symptoms.
- MK3 Demonstrate knowledge of common or significant, acute and chronic clinical problems.
- MK4 Differentiate between normal and abnormal development and age-related changes across the life span.
- MK5 Demonstrate comprehension of clinical interventions and agents including pharmaceutical, surgical, genetic, complementary and alternative medicines, and other therapies.
- MK6 Demonstrate knowledge and ability to interpret epidemiological and public health contributions to understanding health and disease.
- MK7 Demonstrate knowledge of preventive medicine and current guidelines for health promotion and disease screening.

Course Structure

The sequence of topics in the course builds on and emphasizes the relationships between systems and the importance of homeostasis in maintaining health. We encourage students to develop skills in using their understanding of physiology for future diagnostic applications and selection of appropriate medical treatments. Topics covered include the following: introductory cell physiology, nerve and muscle, endocrines, reproduction, blood, respiratory, cardiovascular,

gastrointestinal, and renal and acid-base balance. Throughout the course, we use case studies to illustrate the interactions among different physiological systems.

Course Objectives

At the end of this course, the student should be able to:

- Explain physiological mechanisms by applying basic principles of physics and chemistry.
- Describe the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems of the human body, commensurate with the requirements for a physician providing primary care to patients.
- Explain the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems.
- Apply knowledge of functional mechanisms and their neural and hormonal regulation to explain the pathophysiology underlying common diseases.
- Effectively solve basic problems in Physiology and Pathophysiology, working independently and in groups.
- Identify and utilize appropriate reference resources to clarify and expand knowledge of Physiology and Pathophysiology.

Professors in the Medical Physiology course provide lists of specific learning objectives, either with each class meeting or when introducing a new topic. These frequently take the form of, “Define/describe/explain/discuss/outline/list the” The topics are specific enough to help guide the students in their study of the material, but general enough to avoid listing all minutiae a student would do well to consider.

We use the document “Medical Physiology Objectives” as a guide for course content. This document is produced and regularly updated by the American Physiological Society. It can be accessed at:

<http://www.the-aps.org/education/MedPhysObj.htm>

Teaching Formats

Lectures: Students have access to the lecture files, and are encouraged to download and review them prior to class meetings. We professors use the lecture format as a means to organize the material; in addition, we strive to interact with the students through posing questions and encouraging responses. We encourage students to ask for clarifications in class and during office hours. Lectures are recorded on the Panopto system so that students can review material presented in class.

Small Groups: Although lectures are valuable for their organization, we believe that discussions ensure that students actively apply the material covered in lectures. For this reason, we organize class meetings to include small group discussions in various formats, such as “problem-based learning” and “team-based learning.” Discussions are important for both consolidating ideas and

practicing skills in expressing ideas. Such skills are essential for successful interactions with future patients and fellow medical students and physicians.

Schedule: Available through the online calendar.

Assignments

- Readings and Case Studies are assigned at the beginning of each unit in the course, and they correspond to the learning objectives stated for that unit.

Textbooks and Reference Materials

- Costanzo, L. Physiology, 6th (2017) edition
- Costanzo, L. Physiology Cases and Problems, 4th edition. 2012.
- Costanzo, L. BRS Physiology (Board Review Series), 6th edition (2014).
- Kaplan Q-Bank Physiology/Pathophysiology Questions
- USMLE Step 1 First Aid

Evaluation: The Physiology courses adhere to the TSOM grading policy. The assessments will consist of quizzes and exams.

Final grades are based on active class participation (up to 10 points), quizzes, and exams.

	Points	Percentage
Quiz 1	20	80%
Midterm exam	80	
Quiz 2	20	
Quiz 3	20	
Participation: e.g. discussion in TBL/PBL formats	10	
NBME exam	-	20%
Final Grade	150	100%

Grade:

Percent of Points	Letter Grade
95-100%	A(h)
90-94%	A
85-89%	B+
80-84%	B
75-79%	C+
70-74%	C
<70%	F

Attendance: Students are expected to attend all lectures and discussion sessions. A student's absence may adversely affect their academic status. Any absenteeism due to illness or any other

valid and justifiable reasons will be considered. Students should notify the course director regarding an absence in a timely manner

Faculty:

Dr. Margaret Anderson

Dr. Raju Panta

Dr. Yulia Modna