BIME 6006

HUMAN PHYSIOLOGY FOR BIOENGINEERS

Spring 2023

CLASS DAYS and TIME: January 7 – May 2nd
Tuesday: 9:00am – 10:15am and 10:30am – 11:45am
Thursday: 9:00am – 10:15am

CLASSROOM: Academic Learning and Teaching Center (AL&TC) 2.211

Course Director: **Jean C. Bopassa, M.S., Ph.D., FAHA**
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Course Co-Director: **Jeffery A. Boychuk, Ph.D**.
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Course Instructor: **Martin Paukert, M.D.**
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Course Instructor: **Misty Malamakal, Ph.D.**
Postdoctoral Fellow, Dept. of Cell. & Integrative Physiology
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Course Instructor: **Benjamin Enslow, M.D.**
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Course Description: The objective of this course is to introduce students to human physiology with emphasis on physical principles, guiding rules, and quantitative approaches. The course will focus on cellular function and physiological processes as applied to human systems including cardiovascular, respiratory, musculoskeletal, nervous, digestive, renal, reproductive and endocrine systems.

Required/Recommended Textbooks: Lecture slides

Time & Location: 9:00 a.m. – 10:15 a.m. and 10:30 am – 11:45 am, Room T/R; AL&TC 2.211

Grading scale: Letter, A (90-100), B (80-89), C (70-79), D (60-69), F (<60)

Semester Credit Hours: 3 Credit Hours
Clock/Contact Hours: Lecture (40 hrs); Exams (4 hrs)
Total clock/contact: 44 hrs
Prerequisites: Undergraduate Biology or equivalent

READ THIS DOCUMENT CAREFULLY - YOU ARE RESPONSIBLE FOR ITS CONTENTS.

COURSE DESCRIPTION AND OBJECTIVES

The objective of this course is to introduce students to human physiology with emphasis on physical principles, guiding rules, and quantitative approaches. The course will focus on cellular function and physiological processes as applied to human systems including cardiovascular, respirartory, musculoskeletal, nervous, digestive, renal, reproductive and endocrine.

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

- Understand the basic concepts of human physiology.

COURSE ORGANIZATION

The main teaching modalities used in this course include:

1) Didactic lectures designed to convey information to the students in traditional lecture format
2) In-class discussion on specific topics.

Computer Access – Students may need access to a computer and the internet to obtain course materials if applicable.

Reading Assignments – Reading assignments may be provided during the lecture.

ATTENDANCE

Attendance is mandatory. Students are expected to attend all classes and to be on time. In cases of illness or other serious event, the student is responsible for all materials presented on that day. There will be no make-ups for missed lectures.

REQUESTS FOR ACCOMODATIONS FOR DISABILITIES

In accordance with policy 4.2.3, **Request for Accommodation Under the ADA and the ADA Amendments Act of 2008 (ADAAA)**, any student requesting accommodation must submit the appropriate request for accommodation under the American with Disabilities Act (ADA, form 100) to his/her appropriate Associate Dean of their School and a copy to the ADA Coordinator. Additional information may be obtained at http://uthscsa.edu/eeo/request.asp.

ACADEMIC INTEGRITY AND PROFESSIONALISM

Any student who commits an act of academic dishonesty is subject to discipline as prescribed by the UT System Rules and Regulations of the Board of Regents. Academic dishonesty includes, but is not

limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an exam for another person, signing attendance sheets for another student, and any act designed to give unfair advantage to a student or the attempt to commit such an act. Additional information may be obtained at

http://catalog.uthscsa.edu/generalinformation/generalacademicpolicies/academicdishonestypolicy/

TITLE IX AT UT Health SA

Title IX Defined:

Title of the Education Amendments of 1972 is a federal law that prohibits sex discrimination in education. It reads "no person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any education program or activity receiving Federal financial assistance."

UT Health San Antonio's Commitment:

UT Health San Antonio is committed to maintaining a learning environment that is free from discriminatory conduct based on gender. As required by Title IX, UT Health San Antonio does not discriminate on the basis of sex in its education programs and activities, and it encourages any student, faculty, or staff member who thinks that he or she has been subjected to sex discrimination, sexual harassment (including sexual violence) or sexual misconduct to immediately report the incident to the Title IX Director.

In an emergency, victims of sexual abuse should call 911. For non-emergencies, they may contact UPD at 210-567-2800. Additional information may be obtained at http://students.uthscsa.edu/titleix/

EMAIL POLICY

All course communication will be conducted by e-mail using the student's LiveMail account. Students are expected to check their e-mail accounts regularly and are responsible for materials, assignments, notifications, and test materials distributed by e-mail.

USE OF RECORDING DEVICES

The use of recording devices is allowed.

ELECTRONIC DEVICES

Cell phones may not be used in class and must be shut off during class. Laptops or tablets can be used in class for class—related purposes and note taking. They may not be used for e-mail, web surfing, or any activity not related to class.

BIME 6006 Human Physiology for Bioengineers 2020

Date		Topic	Lecturer
Jan 10, 2023	9:00-10:15	Homeostasis	Dr. Bopassa
Jan 10, 2023	10:30-11:45	Genetic Code	Dr. Bopassa
Jan 12, 2023	9:00-10:15	Cell Structure	Dr. Bopassa
Jan 17, 2023	9:00-10:15	Proteins & Enzymes	Dr. Bopassa
Jan 17, 2023	10:30-11:45	Biochemistry & Metabolic Pathways	Dr. Bopassa
Jan 19, 2023	9:00-10:15	Diffusion & Movement Across Membranes	Dr. Bopassa
Jan 24, 2023	9:00-10:15	Body Fluid Compartments	Dr. Bopassa
Jan 24, 2023	10:30-11:45	Signal Transduction & Control of Cellular Function	Dr. Bopassa.
Jan 26, 2023	**9:00-10:15**	***Review for Exam 1***	**Dr. Bopassa**
Jan 31, 2023	**9:00-10:15**	**EXAM 1**	**Dr. Bopassa**
Feb 7, 2023	9:00-10:15	Bioelectricity	Dr. Paukert
Feb 7, 2023	10:30-11:45	Skeletal Muscle	Dr. Enslow
Feb 9, 2023	10:30-11:45	Central & Peripheral Nervous System	Dr. Paukert
Feb 14, 2023	9:00-10:15	Sensory Physiology	Dr. Paukert
Feb 14, 2023	10:30-11:45	Somatic Nervous System	Dr. Gould
Feb 16, 2023	9:00-10:15	Smooth & Cardiac Muscle	Dr. Enslow
Feb 21, 2023	9:00-10:15	Autonomous Nervous System	Dr. Malamakal
Feb 23, 2023	**9:00-10:15**	***Review for Exam 2***	**Dr. Bopassa**
Feb 28, 2023	**9:00-10:15**	**EXAM 2**	**Dr. Bopassa**
Mar 2, 2022	9:00-10:15	Blood	Dr. Bopassa
Mar 7, 2023	9:00-10:15	Circulatory System & the Heart	Dr. Bopassa
Mar 7, 2023	10:30-11:45	The Heart as a Pump	Dr. Bopassa
Mar 9, 2023	9:00-10:15	Regulation of Blood Pressure	Dr. Bopassa
Mar 14 & 16,		**Spring Break – No Class**	
Mar 21, 2023	9:00-10:15	The Kidney as a Selective Filter	Dr. Enslow
Mar 21, 2023	10:30-11:45	Filtration & the Renal Corpuscle	Dr. Boychuk J.
Mar 23, 2023	9:00-10:15	Transport & the Renal Tubule	Dr. Boychuk J.
Mar 28, 2023	9:00-10:15	Concentrating Urine	Dr. Boychuk J.
Mar 28, 2023	10:30-11:45	K, Ca, Mg, Pi & Micturition	Dr. Boychuk J.
Mar 30, 2023	9:00-10:15	Vascular & Lymphatic Systems	Dr. Bopassa
Apr 4, 2023	**9:00-10:15**	***Review for Exam 3***	**Dr. Bopassa**
Apr 6, 2022	**9:00-10:15**	**EXAM 3**	**Dr. Bopassa**
Apr 11, 2023	9:00-10:15	Respiratory System & Gas Exchange	Dr. Paukert
Apr 11, 2023	10:30-11:45	The Lungs as a Pump	Dr. Paukert
Apr 13, 2023	9:00-10:15	Control of Respiration	Dr. Paukert
Apr 18, 2023	9:00-10:15	Acid Base Balance	Dr. Paukert
Apr 18, 2023	10:30-11:45	Endocrine System	Dr. Bopassa
Apr 20, 2023	9:00-10:15	Hypothalamic-Pituitary Axis	Dr. Malamakal
Apr 25, 2023	9:00-10:15	Sex Determination & Male Reproductive System	Dr. Bopassa
Apr 25, 2023	10:30-11:45	Digestive System	Dr. Boychuk J.
Apr 27, 2023	10:30-11:45	Enteric Nervous System & Regulation of the Digest Syst	Dr. Boychuk J.
May 2, 2023	9:00-10:15	Immune System & Body Defense	Dr. Boychuk J.
May 2, 2023	10:30-11:45	Female Reproductive System	Dr. Bopassa
May 4, 2023	**9:00-10:15**	***Review for Exam 4***	**Dr. Bopassa**
May 9, 2023	**9:00-10:15**	**EXAM 4**	**Dr. Bopassa**