BISC 330: Systemic Physiology, Fall 2020

A. Logistics

Mode	Frequency	Duration& mode	Access	Due date
Lectures	Posted every T, Th	75 minute pre-recorded lectures (asynchronous)	Email invitation to Box (cloud storage)	Not applicable
Labs	See schedule	Approx.. 1.5-3 hrs to complete	Email invitation via Lt website	Th, by 5pm of week lab is scheduled

B. Course Instructors

1. Faculty

Mika Jekabsons, Ph.D. Office: 110 Shoemaker
Email: jekabson@olemiss.edu Phone: 915 3998
Tentative Zoom Office hours (open learning/discussion sessions): Mondays 4:15-5:45pm, Fridays 12:00-1:30pm.

2. Teaching Assistants

A. Chyna-Rae Dearman (Remote sections 1-3); email: cdearma1@go.olemiss.edu; Zoom office hours Wednesdays 9-11am

B. Belinda Bagwandeen (Remote sections 4-6); email: bbagwand@go.olemiss.edu; Zoom office hours Mondays and Fridays 12:30-1:30 pm.

C. Course Texts and online labs

1. Required Lecture textbook

Sherwood, L. Human Physiology, From Cells to Systems, 9th Edition, Brooks/Cole Publishing

2. Online labs will be through AD Instruments Lt (Lab tutor) site. You will receive an email invitation to join this course through the Lt site (check your junk or spam mail in the event you do not receive it) the first week of classes. Once you accept the invitation, you will need to create a password for your account. Each lab 'module' is partitioned into two or more interactive 'Lessons' that consist of (a) background physiology relevant to the lab, (b) a 'Pre-lab' that provides practical information on the instrumentation used to collect data for each lab, and (c) a 'Lab' that consists of running the virtual experiment to collect the data, analyzing the data, and drawing conclusions from the data. There are questions and interactive activities that must be completed for each lesson, some of which will be graded (you'll see point values associated with the graded questions and activities). Each lab has been designed such that the experiments could be performed in the lab by you and your lab partners so that you collect your own data (the physiology lab in 429 Shoemaker has the instrumentation necessary to do this); however, you will not be collecting your own data due to the ongoing COVID19 pandemic. Instead, most of the experimental procedures have an option to display example data previously recorded by others; we will use this option. Your TA will explain how example data is displayed in each recording window. Once you have completed a lab, the Labtutor site will generate a pdf file of your report that you will download, save, and then email to your TA for grading. If you are in Remote sections 1-3, your TA is Chyna-Rae; if you are in Remote sections 4-6, your TA is Belinda Bagwandeen.

D. Course Description

This is a one semester course in systemic physiology, with an emphasis on human physiology. The lectures are designed as a first course in physiology for Biology majors, assuming a fundamental understanding of cellular processes. We will explore some of the mechanisms important for cell, organ, and organ system function. Concepts from chemistry and cell biology will be integrated with those from organs and organ systems to establish the fundamental principles underlying organismal function. Information relevant to the function of essential cells and organ systems will be covered in the lecture. The online labs will provide an introduction on how different body functions can be quantitatively measured, and how the collected data are analyzed and interpreted. These active learning exercises reinforce the physiological principles covered in lecture.

E. Learning Objectives

Upon completing this course, students should understand the principles governing (a) homeostasis, (b) electrical properties of excitable cells, (c) cell-cell communication by neurotransmitters and hormones, (d) nervous system organization and function, (e) skeletal muscle organization and function, (f) cardiac muscle/heart organization and function, and (g) cardiovascular organization and function. If time permits, respiratory system organization and function and renal function may also be covered. Students should understand how the interaction of specific molecules contributes to cell function, how collective cell function contributes to tissue and organ function, and how organs contribute to homeostasis.

F. Grading

1. Midterm 1	100
2. Midterm 2	100
3. Comprehensive Final Exam	200
4. Online labs (20 pts each)	160

Midterms will generally be multiple choice, with some short answer and fill-in questions. Exams will be administered asynchronously in Blackboard. Each midterm exam will be available for 90 minutes once you log on to begin the exam; the final exam will be available for 180 minutes once you log on to begin the exam.
Letter grades will be assigned as follows: **A**: 90-100%; **B**: 80-89.9%; **C**: 70-79.9%; **D**: 60-69.9%; **F**: <60%. These are percentages of total possible points accumulated from both the in-class exams and the laboratory abstracts and quizzes. In the event that 10% of the class does not score 90% or higher, the A cutoff will be lowered until a minimum of 10% of the class receives an A. However this does come with restrictions, as the A cutoff will not be lowered below 85% of total possible points even if less than 10% of the class score greater than or equal to 85%. Therefore, you should expect that the minimum A will fall somewhere between 85-90%. In the event that the A cutoff is lowered below 90%, the range of all other letter grades will be increased from 9.9 to 10.9%. As an example, if the A's are greater than or equal to 87%, then the B range will be 76-86.9%, the C range 65-75.9%, the D range will be 54-64.9%, and scores less than 54% will receive an F. The greatest possible 'curve' applied to the class would be: A: greater than or equal to 85%, B: 74-84.9%, C: 63-73.9%, D: 52-62.9%, F: less than 52%. There is no extra credit option for this course.
Note that I will use the +/- grading system for this course. The additional grades possible are: A-, B+, B-, C+, and C- (no D+, D-). It is important to know that a C- is not a passing grade for Biology majors, and is not an adequate grade for acceptance into other courses having Physiology as a prerequisite. The +/- grading will be applied to students within two percentage points below a letter grade cutoff. Students falling short of a higher letter grade by 0.1-0.9% will receive the higher letter grade, designated with a minus. Students falling short of a higher letter grade by 1.0-1.9% will receive the lower letter grade designated with a plus. For example, if the A cutoff is 87%, then an A- would be 86.0-86.9%, and a B+ would be 85.0-85.9%. The B range is then 76.0-84.9%.

G. Technology requirements for online test taking, exam administration, and live office hours

1. Exams administered through Blackboard will be proctored using the software monitoring tool Proctorio. Information about installing and use of the Proctorio extension can be found here (Proctorio website) and here (OleMiss keep learning website). You must have a computer with a microphone and a webcam to take the exams; Proctorio records both video and audio (as well as screen shots) while you take the exam. You should have the latest version of the Google Chrome web browser, which is required to install the Proctorio extension.

2. Exams through Blackboard will be administered asynchronously to reduce the risk of overloading Blackboard's capacity that could cause interruptions to taking your exam. This means that everyone will not have to take the exam at the same time. Exams will be available from 8am to 5pm on the day scheduled. Once you log on to begin, you will have 90 minutes to take each midterm exam (after which time you will automatically be logged off) and 180 minutes to take the final cumulative exam.

3. Run the Blackboard browser checker to ensure that your browser supports the most recent updates of Blackboard.

4. The video conferencing software Zoom will be used for synchronous office hours. The software can be downloaded free on either your computer, tablet, or phone. You will receive a meeting ID link by email to access all office hours for this semester.

H. Student Identity Policy

Federal regulations, our accrediting agency (SACS) and university policies require that safeguards are used to ensure that the student who receives the academic course credit is actually the person doing the work. You will need to present your student ID before taking proctored exams and your instructor may verify your identity through live or virtual meetings, or by using an identity verification program.

I. Student Privacy Policy

The University of Mississippi protects the privacy of all students, including online and distance learning students, through adherence to the Family Educational Rights and Privacy Act of 1974 (FERPA) through compliance with other institutional policies and procedures governing the management and security of protected information of faculty, staff, and students, and by outlining the expectations of privacy for the university community as regards to electronic information. Student Privacy Policy

J. Technology support

The **IT Helpdesk**, centrally located in Weir Hall, is open Monday through Friday, 8 a.m. to 5 p.m. The helpdesk offers assistance to Ole Miss students and employees with technology-related issues involving software, hardware and networking. It provides support for email, Wi-Fi, Microsoft Office and other campus-wide applications. Come by Weir Hall or call us at 662-915-5222. Email helpdesk@olemiss.edu or visit their website for more information.

K. Attendance and Policies

1. Students attending the virtual component of hybrid, remote, or online courses are subject to the same attendance policy and procedures as traditional students. However, participation is defined in a different manner. The University's "Attendance Policy for Online Education" states: "Student attendance in online courses is defined as active participation in the course as described in the individual course syllabus." If students fail to meet online attendance requirements as stated in the syllabus, they will be given an absence.
2. Attendance will be documented throughout the semester by electronic submission of each online lab. Failure to submit a lab by the weekly deadline will result in loss of all points associated with that lab.
3. Make-up exams will be given at a mutually agreed upon time at the discretion of the instructor under the following circumstances: illness (with documentation), family emergency (with documentation and contact information), University-sponsored event (with documentation and contact information), religious holiday, or civic responsibilities.
4. The University of Mississippi is dedicated to supporting and sustaining a safe and scholarly community of learning dedicated to nurturing excellence inside and outside of the classroom. Each student has a duty to become familiar with University values and standards reflected in University policies, and each student has a duty to honor University values and standards reflected in University policies. These policies are outlined in the M Book. Academic dishonesty, plagiarism, or other conduct of this nature will not be tolerated. Note that the exams administered through Blackboard will be closed-book/closed notes exams. If results indicate supporting material was used during the exam period, this will be considered academic dishonesty subject to penalty.

L. Disability Access and Inclusion

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal here to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at **662-915-7128** so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

M. Student Support Resources

Students are encouraged to visit the University's Keep Learning site to access information and resources related to COVID-19 support. The site provides links to University student services to facilitate and support learning.

N. Lecture schedule of topics to be covered

Week #	Dates	Lecture #	topics
1	8/25/20, 8/27/20	1, 2	Introduction: Levels of organization, Control systems and homeostasis Ch. 1
2	9/1/20, 9/3/20	3, 4	Membrane transport, diffusion, and properties of transporters and channels; Nernst and GHK equations; How cells generate resting membrane potentials- Ch. 3
3	9/8/20, 9/10/20	5, 6	Properties of graded potentials and action potentials; Action potentials and neuronal function; Neuron-neuron communication - Ch. 4
4	9/15/20, 9/17/20	7, 8	Mechanisms of intercellular communication: neurotransmitter and endocrine- Ch. 4; Properties of afferents- Ch. 6; Interneurons and organization of brain and spinal cord- Ch. 5;
5	Available from 8am to 5pm on 9/23/20	-	Midterm 1 on Blackboard
5	9/24/20	9	Functional properties of a somatic reflex- Ch. 5
6	9/29/20, 10/1/20	10, 11	Properties of autonomic efferents; Organization and neurotransmitters of autonomic nervous system- Ch. 7; Motor neurons and the neuromuscular junction- Ch. 7;
7	10/6/20, 10/8/20	12, 13	Skeletal muscle: organization and sarcomere structure; Excitation-contraction coupling- Ch. 8;
8	10/13/20, 10/15/20	14, 15	Skeletal muscle: control of force- Ch. 8; Cardiac muscle compared to skeletal- Ch 8/Ch. 9; Organization of the heart- Ch. 9
9	Available from 8am to 5pm on 10/20/20	-	Midterm 2 on Blackboard
10	10/22/20	16	Initiation and spread of electrical activity in the heart- Ch. 9
10	10/27/20, 10/29/20	17, 18	Cardiac action potentials and consequence to heart function. Mechanical events in the heart- Ch. 9
11	11/3/20, 11/5/20	19, 20	Cardiac output and its control- Ch. 9; Properties of blood vessels and their organization- Ch. 10
12	11/10/20, 11/12/20	21, 22	Determinants of pressure, flow, and resistance; Oscillations in arterial pressure over a cardiac cycle; Arterioles and control of tissue blood flow- Ch. 10
13	11/17/20	23	Regulation of mean arterial pressure
14	11/19/20	-	CUMULATIVE FINAL EXAM

This is a tentative schedule, and is subject to change. Lectures will be pre-recorded and available on Box, the university cloud storage site.

O. Lab schedule of topics to be covered

Week #	Date	Lab #	topics
1	8/24-27/20	No labs	no labs
2	8/31-9/3/20	1	Lab 1 Earthworm action potentials: Lab report due 5pm 9/3
3	9/8-10/20	2	Lab 2 Peripheral nerve function: Lab report due 5pm 9/10
4	9/14-17/20	3	Lab 3 Brain structure and somatic reflexes: Lab report due 5pm 9/17
5	9/21-24/20	No labs	Exam week
6	9/28-10/1/20	4	Lab 4 Autonomic nervous system organization: Lab report due 5pm 10/1
7	10/5-8/20	5	Lab 5 Example of autonomic reflex: dive reflex: Lab report due 5pm 10/8

8	10/12-15/20	6	Lab 6 Skeletal muscle function and electromyography: Lab report due 5pm 10/15
9	10/19-22/20	No labs	Exam week
10	10/26-29/20	7	Lab 7: Heart and the electrocardiogram (part) + Cardiovascular effects of exercise: Lab report due 5pm 10/29
11	11/2-5/20	8	Lab 8: Heart and peripheral circulation (part): Lab report due 5pm 11/5
12	11/9-12/20	9	Lab 9 Blood pressure: Lab report due 5pm 11/12
13	11/16-19/20	No labs	Classes end 11/17/20
14	11/19/20	No labs	Final exam

Most online labs are designed to emphasize selected physiological principles covered in the lectures. You will be introduced to data acquisition, analysis, and interpretation.