

BIOLOGY 4431 – Human Physiology
Spring 2010

Instructor: Scott Reese, Ph.D.	Lecture Room: SCI 213 Lab Room: SCI 245
Office: SC 323	Lecture Time: M & W 08:00-09:15 AM Lab Time: M or W 09:30-12:15 PM
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TENTATIVE SCHEDULE¹

	Date	Topic	Text²	Laboratory
M	11 Jan.	Introduction & Homeostasis	Chaps. 1 & 2	Course Introduction & Writing Exercises
W	13 Jan.	Membrane Transport	Chap. 4	
M	18 Jan.	MLK day-No Class		No Lab
W	20 Jan.	Membrane Transport/potentials	Chap. 4 & 6	
M	25 Jan.	<i>Quiz 1</i> Action potentials	Chap. 6	Diffusion, Osmosis, Tonicity
W	27 Jan.	Synaptic transmission	Chap. 6	
M	01 Feb.	Exam I	Chaps. 1, 2, 4, 6	Science Writing & Reviewing <i>Materials and Methods Due</i>
W	03 Feb.	<i>Quiz 2</i> Muscle Physiology	Chap. 9	
M	08 Feb.	Muscle Physiology	Chap. 9	Nerve Physiology
W	10 Feb.	Muscle Physiology	Chap. 9	
M	15 Feb.	<i>Quiz 3</i> Muscle Physiology	Chap. 9	Science Writing & Reviewing <i>Results Due-Nerve Phys.</i>
W	17 Feb.	Respiratory Physiology	Chap. 13	
M	22 Feb.	Respiratory Physiology	Chap. 13	Muscle Physiology
W	24 Feb.	Respiratory Physiology	Chap. 13	
M	01 Mar.	Respiratory Physiology	Chap. 13	Science Writing & Reviewing <i>Discussion Due-Muscle Phys</i>
W	03 Mar.	Exam II	Chaps. 9, 13	
M	08 Mar.	Spring Break-No Class		No Lab
W	10 Mar.	Spring Break-No Class		
M	15 Mar.	<i>Quiz 4</i> Cardiovascular Physiology	Chap. 12	Spirometry
W	17 Mar.	Cardiovascular Physiology	Chap. 12	

M	22 Mar.	Cardiovascular Physiology	Chap. 12	Science Writing & Reviewing <i>Introduction Due-Spirometry</i>
W	24 Mar.	Cardiovascular Physiology	Chap. 12	
M	29 Mar.	<i>Quiz 5</i> Renal Physiology	Chap. 14	Cardiovascular Physiology I-Turtles
W	31 Mar.	Renal Physiology	Chap. 14	
M	05 Apr.	Renal Physiology	Chap. 14	Cardiovascular Physiology II- Humans
W	07 Apr.	Exam III	Chaps. 12, 14	
M	12 Apr.	<i>Quiz 6</i> Reproductive Physiology	Chap. 17	Urinalysis <i>Paper I Due-Turtle Cardiovascular Exp.</i>
W	14 Apr.	Reproductive Physiology	Chap. 17	
M	19 Apr.	Reproductive Physiology	Chap. 17	Metabolism
W	21 Apr.	<i>Quiz 7</i> Digestive Physiology	Chap. 15	
M	26 Apr.	Digestive Physiology	Chap. 15	<i>Paper II Due-Urinalysis Exp.</i>
W	28 Apr.	Digestive Physiology	Chap. 15	
W	05 May	Final Exam	Cumulative & Chaps. 15 & 17	

¹ Please be aware that this schedule is tentative.

² Text Book: Widmair, Raff, & Strang. 2008 *Vander's Human Physiology*. 11th Ed. McGraw Hill, New York, NY.

COURSE DESCRIPTION

BIOL 4431. Human Physiology. 3-3-4. Prerequisite: "C" or better grade in BIOL 2108, PHYS 1111 or 2211, and a minimum of 12 credit hours of upper division biology or chemistry courses. A course in human systems physiology in which the principle of homeostasis will be used to understand how function is integrated from the cellular to the organismal level. The course will focus on the respiratory, cardiovascular, muscular, and renal systems. Critical thinking and quantitative methods will be emphasized.

COURSE PHILOSOPHY

Human Physiology is an introduction into the function of the human animal. Physiological systems have evolved to a very complex state in mammals and that means there will be a large amount of material presented quite rapidly during this course. It is essential that students do not fall behind in this material as it will be difficult (to the extreme) to "catch up." The lectures will focus on functional aspects utilizing the concept of homeostasis to link disparate physiological systems. Lectures will focus on giving students a framework for understanding difficult concepts, but it is imperative that students do not forget about the details that will be important for understanding these physiological concepts. This class will integrate lots of scientific principles from fields as diverse as physics and chemistry to try and understand the evolutionary results for the modern physiological systems in the human animal.

In the laboratory we will be using animal models to investigate the principles that apply to human physiology. We will also incorporate modern physiology laboratory technique and even use ourselves as experimental subjects. Finally, this lab will revolve around teaching students how to write in the sciences; exploring original literature and writing assignments that reflect an understanding of the data as well as the format of a science manuscript.

It should be noted that dates and total points are subject to change if there are circumstances, deemed by me, to be extenuating. You will be given verbal notification of any changes in class and/or it will be posted under Announcements on the course WebCT [Vista](#).

Biol 4431-Course Objectives

1. Physiology is an integrative science combining concepts from biology, chemistry, and physics. Upon completion of this course students will:
 - a. Recognize physical/chemical principles as they apply to biological systems and
 - b. Explain why and how these principles constrain/influence human physiology.
2. Modern biology has become increasingly quantitative and students must be comfortable with quantitative skills to succeed. Upon completion of this course students will:
 - a. Recognize where quantitative applications are necessary,
 - b. Construct mathematical/chemical/physical models,
 - c. Arrange these models for different situations, and
 - d. Solve these models for appropriate understanding.
3. Biology students must be effective communicators (reading & writing) to succeed in the natural sciences. Upon completion of this course students will:
 - a. Write papers in scientific manuscript format
 - b. Relate primary scientific literature to topics covered in class
 - c. Critique the writing and analysis of others.
4. All biology students must understand the centrality of evolution as the natural process governing why/how particular mammalian systems have arisen during life on this planet. Upon completion of this course students will:
 - a. Recognize evolutionary effects on physiological systems
 - b. Explain the compromises natural selection has forced on human physiology.
5. Physiological science involves modern data collection and interpretation. Upon completion of this course students will:
 - a. Formulate physiology relevant, testable hypotheses
 - b. Manipulate experimental subjects and equipment appropriately to test hypotheses.
 - c. Interpret physiological data.

6. Human physiology is a very detailed and a conceptually challenging course. Upon completion of this course students will:
- Describe, in detail, particular physiological systems found in humans.
 - Explain how particular physiological systems perform tasks to maintain homeostasis.
 - Explain how multiple physiological systems interact to maintain homeostasis in an organism using humans as the model.

COURSE POLICIES

Attendance/Participation: Class attendance and participation is expected and will be used in the grading scheme. If you miss a lecture, it is your responsibility to obtain lecture notes from a classmate; my notes will not be made available to students. There will be periodic online discussions moderated through [WebCT Vista](#). You are expected to be an active participant in all of these discussions. Participation is a small, but important part of your grade for this course. Please arrive before the beginning of lecture so as not to disturb your fellow students. You are encouraged to ask questions during lecture. Silence all cell phones, pagers, etc.

Examinations and Quizzes: There are three lecture examinations scheduled during the semester along with a final exam. Each exam will be over the material covered in the lectures and readings since the last exam with emphasis being placed on the lectures. The final exam will be cumulative, although weighted heavily to new material. You must take all exams on the date offered. **If you are unable to take the exam on the given date, you must have an acceptable reason** (these need to be dire situations, not just your buddies party was the night before) **and you must contact me before 8:00 AM the day of the exam**. An email is fine, though special effort should be made to speak to me directly. If I find your excuse acceptable (and you better have a good document trail), then your exam will be forfeited and whatever you achieve on the cumulative portion of the final will substitute for this score. Please be advised, you do not want to make the final weighted this heavy except in the direst of circumstances. If you miss an exam without an acceptable excuse, documentation, or without having contacted me before the proscribed time, you will receive the grade of 0 (zero) for that exam. You **must** take the final exam to receive credit for this course. If you receive 50% or less of the points on the first lecture exam, please talk to me. Such a score indicates that you are having trouble in this class and you may need to consider withdrawing.

There are 7 required quizzes and they will be administered through [WebCT](#). The quizzes will become active 48 hours before the lecture they are due and will cut off at 8:00 AM on the day of the lecture. The material covered for the quiz will be for the material that will be covered in the next lectures (yes that means you must **pre-read the chapters**). Once you begin the quiz on WebCT, you will have exactly 30 minutes to complete 20 multiple choice questions. You are not allowed to use other students, the text, or notes to take the quiz. I cannot monitor this activity, but if I determine someone to be cheating, they will lose all of these points. In addition, the length of the quiz means that you will have 1.5 minutes to answer each question, which is an awfully short time to try and look

up the answer during the quiz. In addition to quizzes, I will periodically place extra assignments (usually calculation problems) that you will be responsible for. There are 35 points possible and your grade will be determined by the average score you make on all assignments/quizzes.

Laboratory Papers: There are 6 laboratory papers to be completed this semester. These papers are designed to get you used to reading the scientific literature, critically evaluating each other, and learning how to actually write real scientific papers. As such, we will start out learning how to write a paper section-by-section and then writing one of those section using the experimental labs we do this semester. In addition to writing papers, you will be critiquing the papers of your peers. Your grades for each of these writing assignments will be based on the score of your writing and on how accurately and completely you review others. The final 2 papers will be complete papers and the first one will include a peer review as well as a review by me. Again, your grade will be determined by a combination of your writing and your reviewing. The final paper will be graded solely by me and will reflect the culmination of all you learn about writing.

Introduction & Review	10 pts.
Materials-&-Methods & Review	10 pts.
Results & Review	10 pts.
Discussion & Review	10 pts.
Complete Paper 1	50 pts.
Complete Paper 2	50 pts.
Exam I	100 pts.
Exam II	100 pts.
Exam III	100 pts.
Final Exam	150 pts.
Participation	25 pts.
Quizzes/Assignments	35 pts.
Total	650 pts.

Your grade for this course will be based on the following: A \geq 582; B 581-517; C 516-452; D 451-387; F < 387. **There is no "extra-credit."** The final grading scale may be adjusted at the discretion of the instructor.

Accommodations: Any student with a documented disability or medical condition needing academic accommodations of class-related activities or schedules must contact the instructor immediately. Written verification from the *KSU disAbled Student Support Services* is required. No requirements exist that accommodations be made prior to completion of this approved University documentation. All discussions will remain confidential.

Academic Honesty: Every KSU student is responsible for upholding the provisions of the Student Code of Conduct, as published in the Undergraduate and Graduate Catalogs. Section II of the Student Code of Conduct addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to

University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the University Judiciary Program, which includes either an “informal” resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimum one semester suspension requirement.

You are expected to follow the regulations as stated on pages 233-236 of the 2003-2004 of the Kennesaw State University Undergraduate Catalog. Plagiarism and cheating of any kind will not be tolerated. This includes copying papers and not providing proper literature citations. Any violations of the Student Conduct Regulations will be handled through the University Court.

ACADEMIC WITHDRAWAL POLICY

Students may withdraw from one or more courses anytime before the last three weeks of the semester. ***However, as of Fall 2004, students will be allowed a maximum of eight total withdrawals if they enter KSU as a freshman. Transfer students will be allowed one withdrawal per fifteen credit hours attempted, for a maximum of eight.*** Students who choose to pursue a second degree at KSU will be allowed two additional withdrawals. Students who entered KSU before the Fall of 2004 will be allowed one withdrawal per fifteen credit hours attempted for a maximum of eight. To withdraw, the student should complete an official withdrawal form in the Office of the Registrar. Students who officially withdraw from courses on or before the last day to withdraw without academic penalty will receive a “W”. Students who officially withdraw after the last day to withdraw without academic penalty (and before the last three weeks of the semester) will receive a “WF”, which will be counted as an “F” in calculation of their grade point average.

The only exceptions to these withdrawal regulations will be for instances involving unusual circumstances, which are fully documented. ***Students may appeal to the academic standing committee for consideration of unusual circumstances.***

LAST DATE TO WITHDRAW WITHOUT ACADEMIC PENALTY

March 5, 2010

Recycling Policy: **REDUCE WASTE AND RECYCLE.** If possible, please use (purchase) recycled goods. On campus, paper can be recycled in the bins found in the

front of each classroom and aluminum cans can be recycled in the appropriate containers in the hall. Please do not mix waste with the materials to be recycled. It's your planet, your campus, your health & well-being and your economy -- help them all by recycling. See page 248 of the current catalog for the KSU Position Statement on Environmental Awareness.

URL: Copies of this syllabus, along with other material relevant to this course, can be found on the course Homepage. The URL for the course Homepage is:

<http://vista.kennesaw.edu>

[WebCT Vista](#)

Office Hours: My office hours are listed on the first page of this syllabus. I encourage you to avail yourself of them. If you cannot make it to any of these scheduled hours, please make an appointment. I'm certain that we can find a mutually acceptable time to meet.

Your continued presence in this course signifies your acceptance of the policies and procedures outlined above.