

BSC3096– Human Physiology

Syllabus Policy

You are responsible for reading and following the instructions, guidelines and schedules in this syllabus, and for checking the e-Learning announcements at least weekly for announcements regarding any changes. Not having read the information in this syllabus or the announcements will not constitute an excuse for missing an assignment or deadline.

Course Description

The functioning of human tissues, organs and organ systems, emphasizing the physical, chemical and mechanistic bases of normal physiology and the integrated function of the human body. Also introduces pathophysiological changes associated with human diseases. 3 credits.

Prerequisites

Either Integrated Principles of Biology 2 (BSC 2011) or Applied Human Physiology with Laboratory (APK 2105C); and General Chemistry 2 (CHM 2046) or Basic Chemistry Concepts and Applications 2 (CHM1031), all with a minimum grade of C, or permission of instructor.

Corequisite

None

Instructors

COURSE INSTRUCTOR

Andrew Hill, Ph.D. (Neuroscience),
Adjunct Lecturer, Department of Biology
Office hours: TBA in BAR 123

COURSE GRADUATE TAs

T.B.A

COURSE SCHEDULE

T.B.A.

Course Fee

None. (You will need to purchase a Peerceptiv license for \$6.95, see below.)

Course Objectives

At the end of the course, students should be able to:

- Explain physiological mechanisms of humans by applying basic principles of biology and chemistry
- Describe the fundamental mechanisms underlying normal function of cells, tissues, organs, and organ systems in humans.
- Explain the basic mechanisms of homeostasis by integrating the functions of cells, tissues, organs, and organ systems.
- Effectively solve basic problems in physiology, working independently and in groups.
- Apply knowledge of functional mechanisms and their regulation to explain the pathophysiology underlying common diseases.
- Generate hypotheses about physiological processes, design experiments to test these hypotheses, and then analyze, interpret and report experimental results.

Required Course Materials, Software and Hardware

PRIMARY COURSE TEXTBOOK

Students will purchase a package that includes the E-book (Human Physiology) and homework software (MasteringA&P). It will be \$115.95 for students purchasing directly online.

E-book: Human Physiology: An Integrated Approach. 7th Edition, by Dee Unglaub Silverthorn. Pearson, 2015.

MasteringA&P. This package comes with *PhysioEx 9.1: Laboratory Simulations in Physiology*.

They will also need:

Peerceptiv license for \$6.95 (peer assessment technology, improves writing and critical thinking skills by engaging students in the role of the teacher).

Just Physiology is free for now.

CLASSROOM RESPONSE SYSTEM

We will use the MasteringA&P online system to both aid in your understanding of the course material and for assessment of your understanding.

DIGITAL LESSONS

All non-textbook course readings and lessons will be accessible from the Canvas website (<https://elearning.ufl.edu>).

COMPUTER REQUIREMENT

To complete the tutorials outside of class, you must have a computer that runs the Windows operating system. As of December 2016, all of the simulations also run on Intel-based Macs running Boot Camp or VMware.

The course instructor will not provide any computer support. You may be able to get assistance from the UF Computing Help Desk, but in the past, most students have gotten the best support from other students in the course via discussion posts.

SIMULATION SOFTWARE

All of the simulation software packages used in the course are publicly available for your use or will be accessible to you with a free access code.

- Nernst-Goldman Simulator
A simple simulation of resting membrane potential and action potentials in neurons using the Hodgkin-Huxley model: <http://www.nernstgoldman.physiology.arizona.edu/>.
- Nerve
A web-based simulation of nerve action potentials and action potential propagation (with a squid model): <http://nerve.bsd.uchicago.edu/nervejs/MAP.html>.
- HumMod
HumMod Modeler is a detailed, customizable simulation of human physiology that utilizes over 5,000 physiological variables. The software was initially developed at the University of Mississippi Medical Center. The project is <http://hummod.org/>. Note that this course uses a custom version of the simulation that will be available from a link on the course home page. **Do not** use the version of the simulation that is available from the HumMod site.
- JustPhysiology
JustPhysiology (www.justphysiology.com) is a web application based on the HumMod simulation engine. You will be provided an access code.

Activities and Assessments

The class content will include textbook reading, homework lessons, homework problem-based learning (“active learning” questions), homework experiments using physiological simulations, and writing and peer-review of research reports.

PROBLEM-BASED LEARNING

You will be asked to answer questions and solve problems. You will provide your answers using an online system (MasteringA&P) and JustPhysiology.

SIMULATIONS

You will complete a number of lessons in Just Physiology that use computerized mathematical simulations to explore systems physiology. These lessons have embedded questions that gauge and reinforce your comprehension of key physiology concepts. Each lesson will typically require 20 to 30 minutes to complete.

RESEARCH REPORTS AND PEER REVIEW

You will individually complete one research report during the term. For the report, you will be provided with a research problem about a physiological phenomenon. You will typically do the following:

1. Develop a hypothesis for the assigned problem.
2. Design and conduct an experiment to test your hypothesis using the physiology simulation software.
3. Collect and analyze the data.
4. Craft a clear, well-supported draft report explaining the answer to the question.
5. Submit your draft report for peer review.
6. Participate in peer reviews of other student draft reports.
7. Revise your draft report based on reviewer feedback.
8. Back-evaluate your reviewer feedback.
9. Submit your report.
10. Participate in peer reviews of other student reports.
11. Back-evaluate the reviewer feedback you received on your report.

Your report must be formatted according to the detailed instructions provided for each report, which will be posted on the course home page. Reports that are not formatted correctly will receive a score of zero. You

are welcome to work on your report with other students in the course, but the final product must represent your own work. Completion of each research report, including the peer review process, will typically require 12 hours. The total grade will be determined from the following criteria:

- **Review Grade** - a combination of the Accuracy and Helpfulness grades, which are then curved, after which any Reviewing Late Penalties are subtracted.
- **Accuracy** - correlation of your own ratings to mean ratings by others on same documents.
- **Helpfulness** - how helpful the author thought your comments were via back evaluation.
- **Writing Grade** - average score given by reviewers which is then curved, and then any Writing Late Penalties are subtracted.
- **Task Grade** - accounts for the percentage of assigned reviews and back-evaluations that were done. It represents only your reviewing activities, which is then curved.
- **Weighting** – How each category is weighted. The breakdown is 40% reviewing, 40% writing, and 20% task.
- **Overall** - The sum of all of the weighted grades

EXAMS

There will be one midterm exam and a final exam. These will consist mostly of problem-based, multiple choice, fill-in-the-blank, ordering and numeric (calculation) questions. Each midterm will consist of approximately 50 questions, will be administered online (115 minutes in duration), and will be worth 125 points. The final exam will cover all course material from the entire term but will focus primarily on the last section of the course. It will also consist of approximately 50 questions and will be worth 250 points, but it will be administered during the final exam period (2 hours duration). Both exams will be closed-book and you will not be allowed to use notes.

Grading

ASSESSMENTS

Assessment Type	Quantity	Points	Subtotal	Percent of Total
Problem-based Learning	150	2	300	30%
Simulation Tutorials	10	10	100	10%
Simulation Research Reports	1	50	100	10%
Midterm Exam	1	250	250	25%
Final Exam	1	250	250	25%
<i>Total</i>			1000	100%

GRADE DISTRIBUTION

Point Range (%)	Letter Grade
93.33 or higher	A
90-93.32	A-
86.66-89.99	B+
83.33-86.65	B
80-83.32	B-
76.66-79.99	C+

Point Range (%)	Letter Grade
73.33-76.65	C
70-73.32	C-
66.66-69.99	D+
63.33-66.65	D
60-63.32	D-
< 60	E

Grades will not be assigned by a curve, but the grade cutoffs may be adjusted downward. In other words, if your final point accumulation is 93.33%, then you are guaranteed to receive an A. This means there is no upper limit to the number of “A” grades that can be given out.

Note that a “C-” will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. More information on grades and grading policies is here:

<https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

EXTRA CREDIT

There will be no opportunities for extra credit.

Time Commitment

The UF College of Liberal Arts and Sciences assumes that you will devote 3-4 hours per week per credit-hour to each course during the regular fall and spring semesters. Because this course is 3 credits (including the Discussion session), you should therefore expect to devote 9-12 hours per week to this course. If you find yourself spending more than 12 hours per week on average, discuss this with your course instructor to see if you can refine your work and study habits. If you find yourself spending less than 12 hours per week on average, you should recognize that you may have difficulty fully learning and comprehending the material in this time, which will probably be reflected in poor performance on the various assessments, causing you to receive a lower overall course grade.

Activity	Time (hours)
Lectures/Problem-based Learning	60
Textbook Readings and Reviewing Notes	90
Simulation Tutorials	20
Simulation Research Reports	20
Midterm Exam	2
Final Exam	2
<i>Total</i>	<i>194</i>

Communication

Updates and changes to the course schedule, this syllabus, and any other aspects of the class content and structure will be communicated to you via announcements on the course e-Learning site. You are responsible for checking this site regularly for announcements.

COMMUNICATING ELECTRONICALLY WITH THE INSTRUCTOR AND GRADUATE TEACHING ASSISTANT

There are two primary modes of electronic communication for this class -- the discussion forum and Canvas mail. To ensure that your questions are answered as promptly as possible, please follow the communications guidelines below:

Discussion Forum: This course is participatory. Use the discussion forum on the course website for questions/answers about the course content, structure, assignments and activities. You are strongly encouraged to respond to your peers if you know the answer or can provide guidance. The course Graduate TA will monitor this area, but the TA may not be able to read every posting and therefore this should **not** be used to communicate with the instructors.

Direct Canvas Mail to the Instructors: Direct email to Dr. Julian or to your TA should be used only for messages that are **private** in nature or that have been posted to the Discussion Forum but were not solved. Use the Mail tool in Canvas for all such direct email. If you use any other email tool, it may be filtered as spam or otherwise not be seen by your instructors.

Course Policies

ACADEMIC HONESTY

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code <http://www.dso.ufl.edu/sccr/process/student-conduct-honorcode/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

POLICY RELATED TO ABSENCES AND MAKE-UP WORK

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university attendance policies: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

If you must miss an assignment or exam due to an allowable scheduled absence (for example, to participate in a sanctioned university function), you must notify the instructor as soon as the event is scheduled or during the first week of classes. If you miss an assignment or exam due to an allowable but unscheduled and unpredictable absence (e.g., illness), you must contact the instructor as soon as possible. In the case of illness, you must provide a signed note from your primary care provider indicating that you were unable to complete the assignment or take the exam on the day(s) in question.

LATE WORK

Late work will not be accepted unless it is the direct result of an allowable but unscheduled and unpredictable absence (e.g., illness), as defined above, at the discretion of the instructor.

Campus Resources:

HEALTH AND WELLNESS

U Matter, We Care: If you or a friend is in distress, please contact umatter@ufl.edu or 352 392-1575 so that a team member can reach out to the student.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS): Student Health Care Center, 392-1161.

University Police Department: 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

ACADEMIC RESOURCES

E-learning technical support: 352-392-4357 (select option 2) or e-mail to Learningsupport@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center: Reitz Union, 392-1601. Career assistance and counseling. <http://www.crc.ufl.edu/>

Library Support: <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES

Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, www.dso.ufl.edu/drc/) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

COURSE EVALUATION PROCESS

Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at <https://evaluations.ufl.edu>. Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at <https://evaluations.ufl.edu/results/>.

Course Schedule (subject to change)

Assignments are due at 11:59 p.m. on the date indicated on the course e-Learning site schedule

Wk #	Week of	Reading Topic (Chapter)	Simulation Tutorial	Research Report
1	Jan 02	Introduction to Physiology (1); Molecular Interactions (2); Compartmentation: Cells and Tissues (3)		
2	Jan 09	Energy and Cellular Metabolism (4); Membrane dynamics (5); Communication, Integration, and Homeostasis (6)	Internal Receptors	
3	Jan 16 ¹	Introduction to the Endocrine System (7); Neurons: Cellular and Network Properties (8);	Endocrine Control of Glucose	
4	Jan 23	Central Nervous system (9); Sensory Physiology (10);	Membrane Potential; Synapses	
5	Jan 30	Efferent Division: Autonomic & Somatic Motor Control (11); Muscles (12)	Fight or Flight	
6	Feb 06	Control of Body Movement (13); Cardiovascular Physiology (14);	Cardiac Output	
7	Feb 13	Blood Flow (15); Blood (16);		Draft1
8	Feb 20	Mechanics of Breathing (17); Midterm (Thursday Feb 25)	Ventilation	Draft1 reviews
9	Feb 27	Gas Exchange (18)	Gas Exchange	Draft1 back evals

Wk #	Week of	Lecture Topic (Chapter)	Simulation Tutorial	Research Report
	Mar 06	Spring Break March 6 – March 10		
10	Mar 13	Kidneys (19)	Renal Function	Draft2
11	Mar 20	Fluid & Electrolyte Balance (20); Digestive System (21)		Draft2 reviews
12	Mar 27	Metabolism and Energy Balance (22)	Homeostasis	Draft2 back evals
13	Apr 03	Endocrine Control of Growth and Metabolism (23)		Final report
14	Apr 10	Immune System (24); Exercise (25)		Final report reviews
15	Apr 17 ²	Reproduction and development(26)		back evals
		Final exam: TBA (Apr 22, 24-28), online		

1. January 16 is a holiday (Martin Luther King Jr. Day).
2. Last class is April 19, Reading Days are April 20-21.