

# Syllabus: BIOS-3755-A Human Physiology

**Class:** Mondays, Wednesdays; 9:30am – 10:45am

**Class Location:** Room B-5, Boggs Building

## Instructor Information

### Instructor

**Dr. Boris I. Prilutsky**  
Biological Sciences

### Email

boris.prilutsky@biosci.gatech.edu

### Office Hours

Online: Mondays, 5pm-6pm

**GTA: Henry Chionuma**

**GTA: Siming Zhao**

**UTA: Vibha Murthy**

henry.chionuma@gatech.edu

szhao322@gatech.edu

vmurthy32@gatech.edu

Online: Wednesdays, 11am-12pm

Online: Mondays, 2pm-3pm

Online: Fridays, 6:00pm-7:00pm

## General Information

### Description

Human Physiology will use a systems approach to provide a foundation for understanding the function of anatomical structures comprising the human body. Students will explore the functions and adaptations of organ systems with emphasis on the neuromuscular, endocrine, cardiorespiratory, gastrointestinal and urinary systems. The major theme will focus upon homeostatic mechanisms integrating physiological responses (from cell signaling to whole organism) to maintain human health and well-being.

The course is offered in hybrid mode. The class is divided into 4 groups to maintain physical distancing and each group will attend classes in person once every two weeks on the designated day while the rest of the class is watching the broadcast from the class via Blue Jeans. You are expected to attend the in-person class sessions unless you have a compelling reason not to do so. Each lecture will be recorded and posted in Canvas but you are expected to attend each lecture either in person or online. Dates of in-person attendance for each Group are indicated in the Class Schedule below.

### Pre- &/or Co-Requisites

This course will allow students the opportunity to integrate physiological principles with knowledge previously learned in anatomy. It is assumed that students in this course have taken and earned a minimum grade of D in Human Anatomy, BIOS/APPH 3753 (or BIOS/BIOL 3753).

### Course Goals and Learning Outcomes

To introduce and establish an organizational framework for any future study in human physiology. Upon completion of this course, students will be able to demonstrate understanding of the following topics:

- a working knowledge of terminology in medical physiology.
- fundamental principles of normal function of tissues and organ systems of the human body.
- how physiological function follows anatomical form.
- how different physiological systems provide homeostasis for the human body.

## Course Requirements & Grading

### Description of Graded Components:

1. Midterm Tests (3 @ 15% each)	45% of final grade
2. Final Exam	30% of final grade
3. Homeworks (4 @ 5% each)	20% of final grade
4. Class Attendance	5% of final grade

**Mid-term Tests (45% of final grade):** Three mid-term tests will be given on-line, open-book, open-notes but must be your own work (collaboration is NOT allowed). To take tests, you should have access to a webcam, microphone, and reliable Internet connection. The exams will test your knowledge and mastery of the material presented in lectures over the first three Sections (Modules) of the course. The format will be multiple choice. It will test recall knowledge as well as your ability to synthesize the material and apply it to novel contexts.

**Final Exam (30% of final grade):** A final exam will be given during exam week using the same format as the mid-term tests. It will cover lecture material of the last fourth Section of the course as well as lecture material of the first three Sections.

**Homework assignments (20% of final grade):** You will complete four homework assignments throughout the semester. Each assignment will be based on relevant course topic for each Section. You may collaborate and discuss the assignments with your peers, but you must submit an individual assignment online via Canvas. Cite resources other than the textbook or lecture slides and names of peer collaborators.

**Class Attendance (5% of final grade):** Class attendance in person or on-line is mandatory. You should use class time to ask questions, voice your opinions, and engage in class discussions. Tardiness or leaving a class session prior to the end of class will lower your attendance grade.

**Extra Credit Opportunities:** Extra credit is typically not given in this class. If any opportunities for extra credit should arise, it will be announced in class as appropriate.

### Grading Scale

Every effort will be taken to provide you with timely and thorough feedback on your performance and if you have any questions, please ask. Final average grades will be rounded to the nearest whole percentage point. Curving grades is rare and should not be expected. Your final grade will be assigned as a letter grade according to the following scale:

A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	0-59%

## Course Materials

### Required Course Text

“**Vander’s Human Physiology**”, 15<sup>th</sup> Ed. (or 14<sup>th</sup> Ed.) by Widmaier, Raff, and Strang  
 Publisher: McGraw-Hill  
 ISBN: 9781259903885  
 Print and Digital Copies available at GT Barnes & Noble

## **Course Website and Other Classroom Management Tools**

Additional announcements, assignments and resources will be posted to the course website on Canvas.

## **Course Expectations & Guidelines**

### **Academic Integrity**

Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. For information on Georgia Tech's Academic Honor Code, please visit <http://www.catalog.gatech.edu/policies/honor-code/> or <http://www.catalog.gatech.edu/rules/18/>.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will automatically be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for any violations uncovered.

### **Accommodations for Students with Disabilities**

If you are a student with learning needs that require special accommodation, contact the Office of Disability Services at (404)894-2563 or <http://disabilityservices.gatech.edu/>, **as soon as possible** to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail us as soon as possible in order to set up a time to discuss your learning needs.

### **Attendance and/or Participation**

This is a fast-paced and intensive course. Missing any class will put you at a serious disadvantage to complete the course requirements. If you are absent from class, you are still responsible for the work assigned for that day, as well as any information given out that day. We encourage you to participate in class. If you have a question, the chances are good that someone else is wondering the same thing.

### **Missed Exams, Extensions & Late Assignments**

If you miss an exam for any reason, you will receive a grade of 0 (zero) on that exam unless you petition for a makeup exam within 24 h of the start of the missed exam, and your petition is approved. Your petition must be submitted in writing and must include documentation of a legitimate reason for missing the exam. You may submit your petition before the exam if you know of your scheduling conflict in advance. Examples of legitimate reasons to miss an exam include a documented illness, illness or death in your immediate family, and participation in official university activities. If your petition is approved, the missed exam grade will not be included in calculating your final average. The weighted mean of your other exam scores will substitute for the missed exam, making the missed exam completely neutral in determining your final point total.

Home Assignments will not be accepted after the date and time when they are due. In the event that you have advanced notice of an absence (i.e., approved Institute event), please notify us as soon as possible and submit known assignments prior to the absence.

### **Student-Faculty Expectations Agreement**

At Georgia Tech we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. See <http://www.catalog.gatech.edu/rules/22/> for an articulation of some basic expectations that you can

have of us and that we will have of you. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, we encourage you to remain committed to the ideals of Georgia Tech while in this class.

### **Student Use of Mobile Devices in the Classroom**

As research on learning shows, unexpected noises and movement automatically divert and capture people's attention, which means you are affecting everyone's learning experience if your cell phone, pager, laptop, etc. makes noise or is visually distracting during class. The use of cell phones to make phone calls is not permitted during class time.

Many students find it useful to have a mobile device on hand to access course materials or to take notes. Laptops and mobile devices will be allowed for class-related activity **if the sound is turned off**. Please do not abuse this privilege by checking email, Facebook, YouTube, web surfing, etc. during class. If this becomes a distraction in class, the right to deny this privilege to an individual or the entire class can be taken away at the discretion of the instructor(s).

### **Additional Course Policies**

#### **Institute-Approved Absences**

As per Georgia Tech policy, you are permitted to be absent from class to participate in athletic events, official field trips, and religious observances. For planning purposes, please provide us with **written notice of your upcoming absence at least two weeks before the event, and ideally within the first two weeks of class**. When we receive this notice, we will discuss opportunities with you to make up any missed work in your absence. Please see <http://catalog.gatech.edu/rules/4/> for more information about receiving official notice from the Registrar about the nature and timing of your upcoming Institute-approved absence.

#### **Food and Drink**

We ask that you do not eat or drink during class time.

#### **Freedom of Expression and Guidelines for Discussion**

We respect your right to freedom of speech and peaceful assembly. We are also committed to maintaining an orderly learning environment for all students and ensuring that all facilities are used in a way that facilitates teaching, learning, and research. Therefore, we encourage you to voice your opinions respectfully, as long as they are related to the content of this class and as long as doing so does not infringe unduly on the rights of others.

#### **Re-grading and Re-submission**

We try to be fair in our grading and generally try to give as much partial credit as possible. As such, please consider carefully any requests you have for regrading other than obvious errors in calculating your grade. Requests for regrading of a quiz or exam may be submitted in writing via email to Dr. Prilutsky within one week of the day the grades are given back to the class (regardless of whether or not you attend class that day). You must justify in writing the technical basis for the regrade. If the regrading request is accepted, your entire homework assignment or exam may be regraded. Note that your grade may potentially decrease upon regrading, and you should not assume that your grade will always go up after regrading.

### **Campus Resources for Students**

College can be stressful. In your time at Georgia Tech, you may find yourself in need of support. There are many on campus who are here to help in this regard. Below you will find some resources to support you both as a student and as a person.

## Academic support

- Center for Academic Success <http://success.gatech.edu>
  - 1-to-1 tutoring <http://success.gatech.edu/1-1-tutoring>
  - Peer-Led Undergraduate Study (PLUS) <http://success.gatech.edu/tutoring/plus>
  - Academic coaching <http://success.gatech.edu/coaching>
- Residence Life's Learning Assistance Program  
<https://housing.gatech.edu/learning-assistance-program>
  - Drop-in tutoring for many 1000 level courses
- OMED: Educational Services (<http://omed.gatech.edu/programs/academic-support>)
  - Group study sessions and tutoring programs
- Communication Center (<http://www.communicationcenter.gatech.edu>)
  - Individualized help with writing and multimedia projects
- Academic advisors for your major <http://advising.gatech.edu/>

## Personal Support

### Georgia Tech Resources

- The Office of the Dean of Students: <http://studentlife.gatech.edu/content/services>; **404-894-6367**; Smithgall Student Services Building 2<sup>nd</sup> floor
  - You also may request assistance at [https://gatech-advocate.symplicity.com/care\\_report/index.php/pid383662?](https://gatech-advocate.symplicity.com/care_report/index.php/pid383662?)
- Counseling Center: <http://counseling.gatech.edu>; **404-894-2575**; Smithgall Student Services Building 2<sup>nd</sup> floor
  - Services include short-term individual counseling, group counseling, couples counseling, testing and assessment, referral services, and crisis intervention. Their website also includes links to state and national resources.
  - *Students in crisis may walk in during business hours (8am-5pm, Monday through Friday) or contact the counselor on call after hours at **404-894-2204**.*
- Students' Temporary Assistance and Resources (STAR):  
<http://studentlife.gatech.edu/content/need-help>
  - Can assist with interview clothing, food, and housing needs.
- Stamps Health Services: <https://health.gatech.edu>; **404-894-1420**
  - Primary care, pharmacy, women's health, psychiatry, immunization and allergy, health promotion, and nutrition
- OMED: Educational Services: <http://www.omed.gatech.edu>
- **Women's Resource Center:** <http://www.womenscenter.gatech.edu>; **404-385-0230**
- **LGBTQIA Resource Center:** <http://lgbtqia.gatech.edu/>; **404-385-2679**
- **Veteran's Resource Center:** <http://veterans.gatech.edu/>; **404-385-2067**
- **Georgia Tech Police:** **404-894-2500**

## Statement of Intent for Inclusivity

As a member of the Georgia Tech community, we are committed to creating a learning environment in which all of our students feel safe and included. Because we are individuals with varying needs, we rely on your feedback to achieve this goal. To that end, we invite you to enter into dialogue with us about the things we can stop, start, and continue doing to make our classroom an environment in which you feel safe to participate in learning.

## Course Schedule

Date	Topic	Readings	In-person attendance	Due
<b>WK1: Mon Jan 18</b>	<b>- NO CLASS -</b>	<b>Martin Luther King, Jr. National Holiday</b>		
L01/WK1: Wed Jan 20	Course Introduction & Physiology Concepts	Text CH 1	Group 1	
L02/WK2: Mon Jan 25	Cells and Tissues	Text CH 1, 2, 3	Group 2	
L03/WK2: Wed Jan 27	Membranes and Membrane Transport	Text CH 4	Group 3	
L04/WK3: Mon Feb 1	Cell-cell Communication	Text CH 3, 5	Group 4	
L05/WK3: Wed Feb 3	Electrochemical Potential and Excitable Cells	Text CH 5, 6	Group 1	
L06/WK4: Mon Feb 8	Neuronal Signaling	Text CH 6	Group 2	<b>Homework 1</b>
<b>WK4: Wed Feb 10</b>	<b><u>MIDTERM TEST 1</u> – during class period</b>	<b>Covers CHs 1-6</b>	<b>Online Open book</b>	
L07/WK5: Mon Feb 15	Central Nervous System	Text CH 6, 8	Group 3	
L08/WK5: Wed Feb 17	Sensory Physiology	Text CH 7	Group 4	
L09/WK6: Mon Feb 22	Muscle Physiology – Skeletal & Smooth	Text CH 9	Group 1	
L10/WK6: Wed Feb 24	Motor Control and Reflexes	Text CH 10	Group 2	
L11/WK7: Mon Mar 1	Autonomic Nervous System	Text CH 6	Group 3	
L12/WK7: Wed Mar 3	Nervous and Endocrine Regulatory Systems	Text CH 6, 11	Group 4	<b>Homework 2</b>
<b>WK8: Mon Mar 8</b>	<b><u>MIDTERM TEST 2</u> – during class period</b>	<b>Covers CHs 6-11</b>	<b>Online Open book</b>	
L13/WK8: Wed Mar 10	Cardiovascular Physiology 1	Text CH 12	Group 1	
L14/WK9: Mon Mar 15	Cardiovascular Physiology 2	Text CH 12	Group 2	
L15/WK9: Wed Mar 17	Blood Flow & Capillaries	Text CH 12	Group 3	
L16/WK10: Mon Mar 22	Blood Pressure	Text CH 12	Group 4	
<b>WK10: Wed Mar 24</b>	<b>- NO CLASS -</b>	<b>Mid-semester break</b>		
L17/WK11: Mon Mar 29	Respiratory Physiology 1	Text CH 13	Group 1	

<b>Date</b>	<b>Topic</b>	<b>Readings</b>	<b>In-person attendance</b>	<b>Due</b>
<b>L18/WK11:</b> Wed Mar 31	Respiratory Physiology 2	Text CH 13	Group 2	
<b>L19/WK12:</b> Mon Apr 5	Exercise Physiology	Text CH 12, 13	Group 3	<b>Homework 3</b>
<b>WK12:</b> Wed Apr 7	<b><u>MIDTERM TEST 3 – during class period</u></b>	<b>Covers CHs 12-13</b>	<b>Online Open book</b>	
<b>L20/WK13:</b> Mon Apr 12	Renal Physiology	Text CH 14	Group 4	
<b>L21/WK13:</b> Wed Apr 14	Fluid Balance	Text CH 11, 14	Group 1	
<b>L22/WK14:</b> Mon Apr 19	Electrolyte & Acid-Base Balance	Text CH 14	Group 2	
<b>L23/WK14:</b> Wed Apr 21	Digestive System & Energy Balance	Text CH 15	Group 3	
<b>L24/WK15:</b> Mon Apr 26	Endocrine System & Stress Physiology	Text CH 11	Group 4	<b>Homework 4</b>
<b>WK15:</b> Wed Apr 28	- NO CLASS -	READING PERIOD		
<b>WK15:</b> Thurs Apr 29	- NO CLASS -	EXAM WEEK STARTS		
<b>WK15: Fri Apr 30 8:00 AM – 10:50 AM</b>	<b><u>FINAL EXAM</u></b>	<b>Covers CHs 1-13 CHs 14, 15</b>	<b>Online Open book</b>	