

# Bio3200: Human Physiology

F2017

T-Th 1:00-2:15 PM

General Lectures 100

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**Description:** This is a 3000 level class covering the Principles of Human Physiology. You have been introduced to many of these topics in previous years (e.g. high school & 1000 level classes), and some of you have had Anatomy and Physiology. This class goes into *much more* detail to help prepare you for future careers in allied health, medicine or biology. Emphasis is on *the structure and function* of molecules, organs and organ systems, as well as regulation over time and space. For those of you who have taken our cell biology and microbiology classes, you should have a strong understanding of how cells work which will provide a critical background to Physiology. For those having taken only A&P, you have a good introduction to the concepts of physiology *but will have to pay greater attention to the details* and consider things at the cellular and molecular levels. Everyone should review the information in the first five chapters of the textbook, as this is considered basic prerequisite knowledge.

## Learning Outcomes:

You will be expected to recall numerous specific *and detailed* facts about each tissue and organ system. You will utilize lots of vocabulary - specific molecules, cell types and concepts of homeostasis. Effective use of this new language is critical to your ability to communicate.

You will understand the basic structure/function of body organs and systems and the interaction between systems under normal physiological conditions. You will order affecter and effector events, depict the structure & function of tissues/organ systems/cells/molecules, compare/contrast similar processes between cell types, and identify common exceptions. These concepts are emphasized in the textbook and lectures with flow charts and diagrams. I have also generated some study worksheets.

Again, physiology is primarily about regulation, the cause and effect relationships. That is, the how, when, where and WHY of regulation will be constantly noted. This also means that you will be integrating basic physical and chemical processes to understand how a cell or organ functions (e.g. membrane potential, ion flow, blood flow, osmosis, transport). Learning to integrate (de-compartmentalize) knowledge is an important part of your future professional activity.

The *required* textbook provides essential material and the last page(s) of each chapter summarize essential vocabulary and concepts, serving as a good study guide. Students generally focus on only the “what” - especially as you memorize things. This is a start, and easiest for you to do by reading the textbook. As the instructor, I often assume you know the basic words, and therefore focus on the physiology processes during lecture, with particular attention to the “how and why” parts of the process. Since I do not download the textbook in class, you will do much better having read the textbook ahead of time. Old exams are posted to help you understand how concepts are assessed in exams while clicker questions, homework, and BB quizzes run by the TA help you assimilate information throughout the semester, as well as help you monitor your progress. During lecture, clicker questions stimulate active learning, and provide immediate feedback (to both of us) on the concepts covered in lecture (see below).

So, to improve learning: 1. Read textbook chapters AHEAD of class to **decrease** boredom, and familiarizes yourself with vocabulary and key concepts. 2. Come prepared to take notes and think about concepts. 3. Do the textbook questions and the worksheets in a timely fashion, as they help you identify what you do NOT KNOW. Finally, 4. Concentrate on physiology and a grade will follow (not vice versa).

**Text:** *It is critical that you have and READ/STUDY the textbook.* Unless otherwise stated, students are responsible for ALL material found in assigned chapters even if NOT specifically covered in class. I sometimes miss out on something yet it appears in exams, but in fact, some areas of the text are meant for your private reading, and often help you increase your interest and understanding of the material. Don't selectively study. Each chapter is a unit of information that has been reduced down to basics and which needs to be rebuilt (by you) into a whole picture. **The text is: Human Physiology: An Integrated Approach with Interactive Physiology, by Dee Unglaub Silverthorn.** The seventh edition is the current one available from publisher, *and probably the best one to purchase.* But the sixth edition, and even the fifth editions will work. So if you need to, settle for a cheaper version of an older edition, but get a textbook, read and study it! If there are discrepancies between editions, POINT them out to me and we will all learn something. The textbook does not unilaterally supersede lecture material.

**Office hours:** I will be available in my office from **11:00 am to 12 noon**, or as announced in class. After 12:00 noon, please wait until I get to class, typically ~15 min early. Once the electronics are set up I am happy to answer questions. You may also e-mail for a mutually convenient appointment. I only answer an odd question or two via e-mail; if complicated I just ask you to find me. I do NOT reply to e-mails that require me to repeat class or BB announcements. Mr. Kendall Case is our TA this semester and can be reached at [kendall.case@wayne.edu](mailto:kendall.case@wayne.edu). He will also announce discussion sessions via BB.

**Tutoring:** In addition to our own TA, the Academic Success Center (ASC) offers several services to help you in your studies: See their web site for details: <https://success.wayne.edu/tutoring/>. Note that the professor is NOT directly involved in this program, but a good tutor will help you learn basic concepts, and will understand the class if they took it with me (ask them!).

**Blackboard:** Go to Blackboard [<https://blackboard.wayne.edu/wsuauth/>] to access the class web site for most class handouts (syllabus, lecture notes etc) as PDF files. Bookmark the Blackboard site directly. CHECK our BB site often, as I will try to upload a PDF file (> 5 MB) of my PowerPoint slides before each class. I also anticipate using the electronic overhead so come prepared to take notes. Lectures are recorded and available via a ECH360 link found on BB. If you have problems contact C&IT help desk.

**Attendance:** Class attendance is mandatory for an exam day (see dates below): failure to write an exam results in a zero (0). I also *strongly* recommend that you attend all classes to complement your own reading and provide insight into how the prof views topics. You are responsible for all class announcements (usually done at the beginning) and these should be recorded and found on BB.

### **Grading Policy & Exams:**

This class consists of 4 exams, and a **cumulative** final exam. Each exam is worth 100 points, although you will drop your lowest scoring exam so the top three yield 300 points. Failure to sit for a class exam results in a zero - NO Makeup Exam will be provided regardless of why you miss it (i.e. dropping the lowest serves as the 'make-up'). Take all four exams and drop the lowest; don't just skip one. The final exam is cumulative and is worth 200 points towards your final grade. You will also have access to BB quizzes which will ultimately be worth 50 points (see below), and this semester, clicker questions, asked throughout the semester, will serve as bonus points as explained in detail below.

#### **EXAM DATES:**

Tues. Sept. 26, 2017  
Thurs. Oct. 19, 2017  
Tues. Nov. 14, 2017  
Tues. Dec. 5, 2017

**Final: Thursday**  
Dec. 14, 2017  
12:30 to 2:30 pm.

**EXAM dates** are in the box above and will NOT change, although content may change to reflect pace of lecture. Scantron/answer sheets are provided and all questions will be answered via this bubble sheet. Questions will be multiple-choice, but can involve problem solving and reasoning skills. A copy of each

old exam is available on Blackboard. I reserve the right to alter the type/style of question as long as I warn you beforehand in lecture. The **FINAL Exam** is a CUMULATIVE exam worth 200 points. It is scheduled by WSU for **Thursday Dec. 14, 2017, starting at 12:30 and ending at 2:30 pm**. It has the same format as class exams, but longer. A make-up exam will be set for any student that misses this final exam if they provide a **documented** reason (e.g. illness, or family emergency) that is signed by a *non-family* professional person (e.g. doctor, police officer, funeral director etc.). Without this note you will NOT write the exam and it will be counted as zero. **Travel plans are NOT an acceptable reason for a make up.**

**PHOTO-IDENTIFICATION IS REQUIRED FOR ALL EXAMS and only conventional calculators (not phones) are allowed when so announced.**

**Summary of final grade calculation:** To calculate letter grades, your top three exam scores, final cumulative exam and homework points are totaled. These are used to identify the second highest score, which becomes the new total for this class. After adding your clicker bonus points to your total, your points will be converted to a percentage using this second highest score. Effectively this means that clicker points are acting as bonus (see below for more explanation). The percentage obtained is assigned a letter grade according to the table at right.

Exam I 100 points	}	top 3 scores counted
Exam II 100 points		
Exam III 100 points		
Exam IV 100 points		
Final Exam		= 200 points
<b>Homework</b>		= <b>50 points</b>
TOTAL		= 550 points

[Second highest score is calculated based on these values]

**Bonus Clickers = 20**

[added to your three best exam scores]

94-100%	A
90-93	A-
86-89	B+
83-85	B
80-82	B-
76-79	C+
73-75	C
70-72	C-
66-69	D+
63-65	D
60-62	D-
59 or less	F

**There is NO extra credit available under any circumstances.**

(Actually, the clickers and the homework are extra, but you earn these points, I don't give them to you.)

**Clicker Points as a BONUS:** Clicker points only work for you not against you, and are therefore considered bonus points. That is, your overall class performance can be based only on exam scores and the homework points, and these will be normalized (average) to the second highest student performance when a final letter grade is calculated. Because you are studying ahead, doing textbook questions and the worksheets and coming to class, we will use clicker questions to help you accumulate bonus points. The iClickers are a classroom response system that provides an interactive component via anonymous polling. I typically begin classes asking questions about the previous lecture and/or chapter, AND because you are suppose to be reading ahead, a few questions on the chapter we are about to start. Questions also occur randomly throughout class and at times will include assessment of worksheets used before or during a class lecture period. ONLY questions answered using a clicker and seen by my base will be counted, and you must answer correctly to obtain one (1) point per question. During the semester you have the potential to accumulate many clicker points (typically I ask well over 230 pts), and at the end of the semester they will be normalized to a total of **20** possible points. [SO if I ask 244 points worth of questions and you obtained 186 pts worth you would get:  $186/244 * 20 = 15.2$  pts.]

Most students 'enjoy' the questions as it helps them stay awake in class, understand the material better or identify areas they do not understand. **BUT these questions are NOT "give-me" points!!** Some

are suppose to be, but many are quite difficult and/or require you to come to class having done homework and/or a worksheet. So I hope to be encouraging you to come to class prepared, and think about physiology. From my experience, keeping up with the class is the single hardest thing to do.

Again, Clicker points are functioning as a BONUS since they are not used to determine the class maximum (second highest student). So missing these points has no negative impact on your grade. As bonus points, I also don't have to worry about your attendance or you forgetting the clicker or batteries etc. -- ***It is all on you.*** If my base unit does not see your response you don't get the points. In addition, they are ONLY applied at the end of the semester and have zero value if you drop the class.

**If you chose to participate you will need to obtain a clicker AND register it on BB under tools. This allows me to know exactly what clicker you are using so I can assign points to you.**

If you are caught using multiple clickers I will confiscate them and all students involved will lose this opportunity for clicker points. As this is also called cheating, I reserve the right to institute all university rules. **STUDENTS ARE EXPECTED TO POLICE EACH OTHER.** A student cheating is actually doing so to a fellow student, so act accordingly. **If a fellow student or I catch you with multiple clickers, they will ALL be confiscated and everyone involved will forfeit all clicker bonus points.** [I will return the actual clickers in office hours, but not the points.]

**Homework:** Our class TA is available for tutoring and review sessions etc. In addition, he will develop and run some BB quizzes to help you assess your won progress and keep up with the class pace. Quizzes will be about a specific chapter(s) and/or worksheet, and run electronically through Blackboard during a specified period of time announced in class and/or on BB. ***ALL quiz deadlines will be strictly adhered to and will coincide with class pace.*** You will only have a short period of time to take the quiz (about 30 min depending on its size), but you will get TWO attempts at each quiz. Once the due date has expired, you will be able to see your response and the correct ones but apparently ONLY IF YOU ACTUALLY TAKE THE QUIZ.

To calculate your final grade - all of the possible points you accumulate throughout the semester (well over 100) doing these quizzes will be worth 50 points towards your final grade, as determined at the end of the semester *only*. Moreover, if you earn 85% of the total available points you will receive all 50 pts; you will be pro-rated if you receive fewer pts. That is, if we ask say 100 pts worth of questions, then if you earned 85 or more points you would get all 50 pts; if you earned say 65 pts, then you would get  $65/85 * 50 = 38$  pts. Between the TWO attempts and an 85% threshold, these quiz points are added incentive to keep up with the class. ***This means, however, that the timing of the quizzes is very important.*** So again, each quiz will be offered over a specified period of time (as announced on BB and/or in class) and then shut down. It will be your responsibility to carefully read the instructions and pay attention to these deadlines.

**Challenge option:** Students have **one (1) week** after the return of a class Exam (but not Final exam) to challenge a grade; after this the grade stands "as is." Winning a challenge is a rare event. A challenge consists of a typed description of why your answer should be considered a BETTER answer than the one indicated, based on published material that you cite properly [NOTE: MCAT study material is NOT considered valid material.]. Semantics (word use) is an inherent part of examinations, especially with a multiple-choice exam: so arguments based solely on semantics (word use) are not viewed favorably. You will submit your typed challenges to me in person (e.g. before or after a lecture) -- NO e-mail.

**Timeliness:** On exam dates do NOT arrive late!! You may not be allowed to take the exam if you arrive after the first student has finished the exam and left the room (and some students finish in less than 15 min). If you sit for the exam, no additional time will be provided. For other class days, if you are late, try to be as unobtrusive as possible.

**Individuals with Disabilities:** If you have a documented disability that requires accommodations, you will need to register with Student Disability Services (SDS) for coordination of your academic accommodations. The SDS office is located at 1600 David Adamany Undergraduate Library in the Student Academic Success Services department or call 313-577-1851 or 313-577-3365 (TDD only). Once you have your accommodation in place, I will be glad to meet with you privately to discuss your special needs. A delay in getting a SDS accommodation letter may hinder the availability or facilitation of those accommodations; it is in your best interest to process accommodation letters ASAP.

**Religious Conflicts:** If you have a conflict with any of the scheduled class or exam times due to religious reasons, you must notify me in writing **by class time on Sept. 7, 2017:** look over ALL exam dates NOW. Assuming you meet this deadline, every attempt will be made to find a mutually convenient solution, but at times, this may include using your ability to drop one exam. I may require written confirmation by a religious minister.

**ADD/DROP POLICY:** I follow all university policies on adding or dropping this class. Contact a Biology Advisor for help in this area. Recall, you will receive an “F” if you fail to do the administration work required to drop the class. Last day to drop the class this semester is Sun Nov. 12, 2017, just before the third exam. If you drop the course, you will be assigned WP, WF or WN as appropriate. *Be aware that I do NOT drop the lowest exam grade nor do I account for potential clicker or homework points as these are ONLY applied upon completion of the semester.* Any “I” given to a student will automatically revert to “F” if the work is not completed within one calendar year. No exceptions [see: <http://sdcl.wayne.edu/RegistrarWeb/Registrar/policies.htm>.]

**UNEXPECTED UNIVERSITY CLOSURES:** If the University is *officially* closed on an exam day, *the exam will be held on the next regularly scheduled class day.* Closure of the University is announced by the following mechanisms:

1. The University News line (313) 577-5345 \*
2. WSU Homepage ([www.wayne.edu](http://www.wayne.edu)) \*
3. WSU Pipeline ([www.pipeline.wayne.edu](http://www.pipeline.wayne.edu)) \*
4. WDET-FM (Public Radio 101.9)
5. WSU emergency broadcast system
6. by other local radio and television stations

In case of closure, monitor our BB site, as I will post, as necessary, specific information related to the class.

Disputes that cannot be resolved following the guidelines present in this syllabus will be resolved by following the guidelines of the University “Student Due Process”.

## Tentative LECTURE Schedule

F2017

**Exam dates will not change, but chapter coverage may change to reflect pace of lecture.**

- Aug. 31 class administration (and Chp 5 & 6)
- Sept. 5 Chp 7: Intro to Endocrine System  
7 Chp 8: Neurons: Cellular and Network Properties  
12 Chp 8: Neurons: Cellular and Network Properties  
14 Chp 9: CNS Organization  
19 Chp 10: Sensory (somatic senses)  
21 Chp 11: Efferent Division: Autonomic and Somatic Motor Control  
**26 EXAM 1: Chp (6), 7, 8, 9, 10**  
28 Chp 12: Muscles
- Oct. 3 Chp 12/13: Muscles & Motor control  
5 Chp 14: Cardiovascular PSL  
10 Chp 14: Questions and worksheet  
12 Chp 15: Blood Flow & Control  
17 Chp 17: Mechanics of Breathing  
**19 EXAM 2: Chp. 11, 12, 13, 14, 15**  
24 Chp 18: Gas Exchange & Transport [& Chp 16 on your own]  
26 Chp 19: Kidneys  
31 Chp 19/20: Kidneys
- Nov. 2 Chp 20: Integrative PSL 2: Fluid & Electrolyte Balance  
7 Chp 19 & 20 exercises  
9 Chp 21: Digestive System  
**14 EXAM 3: Chp 16, 17, 18, 19, 20**  
16 Chp 22: Metabolism & Energy Balance  
21 Chp 23: Endocrine Control of Growth and Metabolism  
**23 - THANKSGIVING**  
28 Chp 22-23 -- Endocrine Problems/Discussions  
30 Chp 25: Integrative PSL 3: Exercise
- Dec. **5 EXAM 4: Chp. 21, 22, 23, 25**  
7 Chp 24: Immune System

### **EXAM DATES:**

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Thurs. Oct. 19, 2017

Tues. Nov. 14, 2017

Tues. Dec. 5, 2017

**Final: Thursday**

Dec. 14, 2017

12:30 to 2:30 pm.

**FINAL CUMULATIVE EXAM** (set in university exam matrix)

THURSDAY DEC. 14, 2017 Start at **12:30 - 2:30 pm.**