

Bio 153 - Human Physiology
Mills College, Fall 2015
W/F 1-2:15pm, NSB 215

Instructor

Robin Ball, rball@mills.edu

Office hours: Wed 2:30-3:30 and Fri 10:30-12:30, NSB 127

Teaching Assistants

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Each TA will lead a discussion section to help with homework and go over concepts. Stay tuned for when those will take place.



Course Description

What is more interesting to study than how your own body functions? We will cover all the major organ systems of the human body, including endocrinology, reproductive system, nervous system, muscles, cardiovascular physiology, respiratory physiology, renal physiology and the gastrointestinal system. By the end of the semester, you will have an understanding of how your organs function and how your body regulates the different organ systems to help maintain homeostasis and keep you alive.

Prerequisites: Bio 1 and 2 (Gen Bio) and Chem 18 (Gen Chem) or equivalent

Learning Goals

- 1) One of the key themes in Physiology is how the body is able to maintain homeostasis in the face of a changing environment. Keep this in mind as you learn about each organ and control system. By the end of the semester you will understand how the different parts of the body work together to keep physiological parameters nearly constant.
- 2) We will have a number of written assignments, such as homework problems, quizzes and exams. You will gain more experience writing with precise scientific language when you answer these questions. Use complete sentences whenever possible.
- 3) You will gain experience giving a clear and concise oral presentation about scientific research. You will learn how to read a journal article, pick out the most important aspects and convey this information to the rest of the class.

Course Website

Please check the Blackboard course site regularly. You will find the lecture notes and slides there. All the journal articles we will be reading are posted there. The homework assignments and keys will be posted on this site, as well.

Required Textbook

Silverthorn, Dee Unglaub. *Human Physiology*. 6th ed. San Francisco: Pearson Benjamin Cummings, 2012.

Note: This textbook comes with a CD-ROM and access to study-related websites. You may find these materials useful, but they are not required for this course; a used copy of the textbook, which may not include these materials, is acceptable. You may use the 5th edition or the new 7th edition, but I will refer to figures and page numbers from the 6th edition.

Copies of the textbook are on reserve at the library.

Reading assignments are listed in the schedule. If there is material in the reading that was not covered in the lectures, you do not need to know it for the exams. The textbook is supplementary to the lectures and lecture notes.

Grading

10 pts	Attendance/participation
40 pts	8 of 9 homework (lowest dropped, 5 pts each)
30 pts	6 of 8 quizzes (lowest dropped, 5 pts each)
40 pts	Paper presentation
	Office hours meeting: 5 pts
	Written outline: 5 pts
	Presentation: 30 pts
60 pts	Midterm 1
60 pts	Midterm 2
60 pts	Midterm 3
100 pts	Final exam
400 pts	Total

Attendance/participation

Everyone should get all the points for attendance and participation. I expect everyone to attend lecture regularly and come to class prepared to learn. This means you should be alert and focused on the course material. I will notice if you stop attending class and I will notice if you are checking your email or phone during class. This is distracting to the other students sitting around you, so please be respectful of the rest of the class. I will sometimes give you questions to work on during class, so I expect everyone to work together and to try to answer the problems.

Homework problems

Homework questions will be posted on Blackboard several days before the due date. Homework is due in class on the due date. Problem sets are intended to review concepts and provide practice with problems presented in class the previous week. Students are encouraged to work together on problem sets; however, each student must turn in work individually, and questions must be answered in her/his own words. Due to grading limitations, only a subset of assigned problems, chosen at random, will be graded each week. A key will be posted after each problem set is due, so that you may check your answers on your own. The lowest homework grade will be dropped.

Quizzes

There will be 8 short quizzes at the start of class (about 5-10 minutes total). The quizzes are meant to help motivate you to stay caught up in the material and test yourself before the exams. Your lowest two quiz grades will be dropped. There are no make-up quizzes.

Exams

There will be three midterms and one cumulative final exam. The exams will have some short answer, fill in the blank and multiple choice questions, but the majority of the exams will be problems similar to the homework.

Paper presentation

I have selected a number of recent journal articles that relate to the topics we will be covering in class. Working in groups of 2-3, you will pick one of these articles to read and present to the class on the assigned date. You will need to meet with me during office hours several weeks before the presentation, so you can ask questions about the paper ahead of time. One week before the presentation, you will submit an outline of your presentation (one page). See the handout about the paper presentations for more detailed information.

Make-up policy

- There are no make-up quizzes, but your lowest two grades will be dropped.
- Homework will lose 1 point for each day they are turned in late. If you can't come to class, then email me your problem set on time so you don't lose points.
- Make-up exams or presentations are allowed only under extenuating circumstances (e.g. extended illness, death in the family), provided that the student provides the instructor with documentation of those extenuating circumstances. Make-up exams must be taken within a week of the regular exam date.
- If a student will be absent from an exam due to non-extenuating circumstances (trips for athletic teams, interviews, etc), the student must take the exam **prior to** the regular exam time. The student must notify the instructor at least 1 week before the regular exam time if (s)he would like to request such accommodations.

How to succeed in Bio 153

1. Attend lecture and discussion sections regularly.
2. Review lecture notes and slides within a day of class. Rewrite notes to make them clearer. Use the textbook to clear up confusing points.
3. Stay up with the material by doing the homework (try answering the questions without using your notes the first time).
4. Form study groups with your classmates.
5. Meet regularly with your study group to discuss the concepts from class. Quiz each other and teach each other. The best way to learn new material is to teach it to someone else.
6. When you are going about your day, think about what is happening in your body. If you are walking, think about what is happening in your motor neurons and skeletal muscles each time you contract your leg muscles. Talk yourself through the process to review the material.
7. Before the exams, study the lecture notes and slides again. Redraw diagrams. Do the practice problems from the slides and review homeworks and quizzes. It is much better to review notes and slides than to reread the textbook.

Information about Mills and academic policies Fall 2015

Important Dates

Semester Begins:	Aug 26
Last day to add:	Sep 9
Convocation:	Sep 25
Last day to withdraw without a "W":	Oct 21
Last day to drop:	Nov 4
Last day of instruction:	Dec 7
Last day to file an Incomplete w/o documentation:	Dec 7
Reading Days:	Dec 8-9
Final examinations:	Dec 10-15
Last day to file an Incomplete w/ documentation:	Dec 15

Semester Holidays

Labor day: Sep 7

Thanksgiving holidays: Nov 25-27

Academic works proceeds up to the date and hour of the beginning of holidays and semester breaks and resumes promptly at the end of such breaks at the time specified in the academic calendar. Students are accountable for any work missed by absence from classes.

Incomplete Policy

An incomplete is assigned when students have completed 2/3 of the total class assignments but are unable to complete the remainder. An incomplete must be changed to a completed grade within one semester. Should the student fail to complete the course within the time period designated, that is, by no later than the end of the semester following the term in which the course was taken, or graduation, whichever occurs first, the incomplete will be converted to an F.

Academic Dishonesty

Academic dishonesty occurs when a student attempts to show a level of knowledge that they do not possess. Cheating is unauthorized copying or collaboration, or the use, or *attempted* use, of unauthorized materials. Fabrication is falsifying experimental data or results, inventing laboratory data for work not done, or falsely claiming sources not used. Plagiarism is representing someone else's words, ideas, artistry or data as one's own, including copying another person's work without appropriately referencing. This includes working jointly on a project and submitting it as one's own. Assisting includes completing an assignment for someone else and inappropriately distributing exam information to other students.

All work is taken with the understanding that the Mills College Honor Code is in effect. Any instance of academic dishonesty may result in the student receiving an F for the course. The student will also be reported to the Dean of Students and Provost.

Mills College Mission Goals

Mills College educates students to think critically and communicate responsibly and effectively, to accept the challenges of their creative visions, and to acquire the knowledge and skills necessary to effect thoughtful changes in a global, multicultural society.

Biology Program & Course Goals

The Biology Department has a number of desired learning outcomes for its majors which are met in this course. More details can be found online under "Course Descriptions" and "View Course Goals" link for this class.

Mills College Semester Course Credit

A one semester course credit at Mills College meets for 150 minutes per week for 14 weeks, and requires a minimum of 9 hours of outside work per week.

Inclusive Excellence

Mills College has individuals from many different cultures and all societies, ethnicities, lifestyles, and affiliations. Our goal is to promote a positive learning environment for all students. In particular, if you would prefer that we use a specific pronoun, then please let us know during class introductions or approach us privately via email or during office hours.

Student Access & Support Services (SASS)

Every effort will be provided to make this class universally accessible. Students that need alternate learning materials or strategies should contact SASS in the Cowell Building by calling 510.430.2130 in order for those accommodations and services to be arranged promptly. Students must adhere to the guidelines outlined by SASS, particularly in regard to exam accommodations. Failure to do so will mean the student must take the exam with the class at, and for, the designated time. Accommodations for extended assignment deadlines will be discussed with the individual requesting student.

Center for Academic Excellence

Mills offers an intellectual environment for rigorous study and lively debates. Students are eligible for up to three hours of free tutoring per subject each week. Peer tutoring is located in the Center for Academic Excellence in the Aurelia Reinhardt Building, B wing, on the hill to next to Founders. Call 510.430.3360 or email cae@mills.edu

F. W. Olin Library

The library has a number of resources including 280 study & workstations, a listening-viewing room with fully equipped audiovisual stations, and a seminar room. Reference librarians are also available to assist with your work. Many of the libraries resources can also be accessed through MINEVRA on the internet. <http://library.mills.edu>.

Caveat

The information contained in the syllabus is subject to change. You will be responsible for knowing any announced changes.

Biology 153, Human Physiology, Fall 2015 Class Schedule

Date	Day	Lecture Topic	Reading	Assignments	Presentations
Aug 26 Lec 1	W	Introduction and homeostasis	Ch.1		
Aug 28 Lec 2	F	Review of biomolecules, cells, cellular respiration and tissues	Review Ch. 2-4		Top 5 paper choices due
Sept 2 Lec 3	W	Membrane transport	Ch.3 p. 65-69 Ch. 5	Quiz 1 (1-2)	
Sept 4 Lec 4	F	Intercellular signaling	Ch. 6	HW 1 due	Lim 2004 – vasopressin in voles (example presentation)
Sept 9 Lec 5	W	Endocrine system	Ch. 7	Quiz 2 (3-4)	
Sept 11 Lec 6	F	Reproductive system	Ch. 26	HW 2 due	
Sept 16 Lec 7	W	Nervous system overview Resting membrane potential	Ch 8 p. 238-250, Ch 5 p.160-166	Quiz 3 (5-6)	
Sept 18 Lec 8	F	Action potentials Synaptic transmission and integration	Ch 8	HW 3 due	DiGiulio 2015 – vaginal microbiome during pregnancy
Sept 23	W	Finish Lec 8 and Review			Kasthuri 2015 – reconstruction of mouse cortex
Sept 25	F	Midterm I (Lec 1-8) 60 pts			
Sept 30 Lec 9	W	Central nervous system Sensory systems (focus on touch)	Ch 9 p.293-308 Ch 10 p. 326-341		
Oct 2 Lec 10	F	Autonomic nervous system Somatic motor system	Ch 11		Leipold 2013 – loss of pain perception
Oct 7 Lec 11	W	Skeletal muscle	Ch 12 p. 399-420 Ch 13	Quiz 4 (9-10)	
Oct 9 Lec 12	F	Intro to cardiovascular system The heart	Ch. 14 p. 463-486	HW 4 due	Trappe 2015 – muscle fibers in sprinter
Oct 14 Lec 13	W	Cardiac cycle	Ch. 14 p. 486-501	Quiz 5 (11-12)	

Date	Day	Lecture Topic	Reading	Assignments	
Oct 16 Lec 14	F	Blood vessels Regulation of blood pressure	Ch. 15	HW 5 due	D'Souza 2014 – exercise and heart rate
Oct 21 Lec 15	W	Blood Cardiovascular diseases	Ch. 16 Ch. 15 p. 534-537	Quiz 6 (13-14)	
Oct 23	F	Review		HW 6 due	Nathwani 2014 – Factor IX gene therapy for hemophilia
Oct 28	W	Midterm II (Lec 9-15) 60 pts			
Oct 30 Lec 16	F	Zombie physiology			
Nov 4 Lec 17	W	Respiratory system - Ventilation	Ch. 17		
Nov 6 Lec 18	F	Gas transport and exchange	Ch. 18		Yarova 2015 – CaSR antagonists improve asthma
Nov 11 Lec 19	W	Urinary system	Ch. 19 p. 627-646	Quiz 7 (17-18)	
Nov 13 Lec 20	F	Osmoregulation	Ch. 20 p. 658-681	HW 7 due	Song 2013 – bioengineered kidney
Nov 18 Lec 21	W	Gastrointestinal system	Ch. 21	Quiz 8 (19-20)	
Nov 20 Lec 22	F	Metabolism	Ch. 22 p. 739-765	HW 8 due	Nie 2015 – panda metabolism
Nov 25	W	No class: Thanksgiving			
Nov 27	F	No class: Thanksgiving			
Dec 2 Lec 23	W	Exercise Physiology	Ch. 25 Ch. 22 p. 765-770	HW 9 due	Madsen 2015 – high intensity interval training improves diabetes
Dec 4	F	Midterm III (Lec 17-22) 60 pts			
Dec 12	Sat	Final exam (cumulative) 2-5 pm 100 pts			