

MCB 32: Introduction to Human Physiology, Fall 2018

Lectures: T/Th 12:30-2 pm, 155 Dwinelle

Instructor

Robin Ball, rball@berkeley.edu

Office hours: W 10:30-11:30am, Th 4-5pm 134 Life Sciences Addition (LSA)

Voluntary discussion section with Robin: Tues 3-4pm, 4051 VLSB

Graduate Student Instructors (GSI)

Albert Chin, a.chin@berkeley.edu

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Course description

This course is intended as an introduction to human physiology for non-MCB majors. We will start off the course reviewing basic cell biology, which will be necessary for understanding how the human body works. We will then 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.

Discussion sections

There are discussion sections once a week. Please attend the section you are enrolled in. Discussion sections will give you more opportunities to work through the material, form study groups and ask questions. Weekly quizzes will be administered in discussion sections.

| Section | Day/time | Location | GSI |
|----------------|-----------------|-----------------|------------|
| 101 | M 10am | 103 GPB | Dan |
| 102 | M 12pm | 130 Wheeler | Dan |
| 103 | Tu 11am | B51 Hildebrand | Krishna |
| 104 | Tu 2pm | 243 Dwinelle | Vanessa |
| 105 | W 1pm | 30 Wheeler | Patrick |
| 106 | W 3pm | 70 Evans | Krishna |
| 107 | Th 8am | 234 Dwinelle | Patrick |
| 108 | Th 9am | 79 Dwinelle | Nasima |
| 109 | Th 10am | 107 GPB | Nasima |
| 110 | F 12pm | 234 Dwinelle | Albert |
| 111 | F 1pm | 182 Dwinelle | Albert |
| 112 | F 2pm | 79 Dwinelle | Vanessa |

Recommended textbook

Cindy L. Stanfield, *Principles of Human Physiology*, Pearson, 6th edition

The textbook for this course is recommended, but not required. A new version of this textbook is available at the UC Berkeley bookstore. You may also buy used copies elsewhere. You may use the 5th or 4th editions, but my notes will refer to specific figures or pages from the 6th edition. The 5th edition is on reserve at Moffitt Library (not the Biosciences library).

The class schedule tells you which pages and chapters of the book to review for each lecture, but you do not need to know extra material in the textbook that was not discussed in lecture. Use the textbook to clear up confusing points from lecture and to review the figures.

Required material

iClickers: You will need an iClicker remote or the app for your smart phone or tablet. You should bring these with you to class every day. There is more information about the clickers on page 4 of the syllabus.

Course web site

<https://bcourses.berkeley.edu/> or find it via CalCentral.

Lecture notes will be posted in the “Files” section before class and slides will be posted after class.

You should check the course web site for announcements or have them automatically emailed to you.

It is up to you to check the course web site regularly.

Grades

| | |
|--------------------------------|----------------------|
| Quizzes (best 6 out of 9) | 60 pts (10 pts x 6) |
| Two midterms (best 2 out of 3) | 160 pts (80 pts x 2) |
| Final | 150 pts |
| Research paper | 20 pts |
| Homework (best 20 out of 23) | 40 pts (2 pts x 20) |
| <u>Lecture participation</u> | <u>20 pts</u> |
| Total | 450 pts |

We do not know in advance if we will curve the grades; it will depend on the final grade distribution. For information on how grades are determined, read the FAQ page on bCourses. Please read this before asking us questions about grades.

Quizzes: Quizzes will be administered in discussion sections by the GSIs. There will be 9 brief quizzes, given in discussion beginning Sept 4 and ending Nov 30 (GSIs will tell you about make-up quizzes for holidays). Each quiz counts 10 points and only the top 6 scores will be counted. There are no make-up quizzes.

Exams: Three midterms cover material immediately preceding these sections of the course. These exams are taken in class, 80 minutes duration. The exams will be a combination of multiple choice and short answer questions and are worth 80 points each. Your lowest score will be dropped, so if you miss an exam for whatever reason, it will not affect your grade.

There are no make-up exams. If you need to miss a midterm exam because you are going out of town or because you are sick, then that will be your dropped exam score.

The final exam is required and worth 150 points and covers material from the entire course.

Participation: In most lectures there will be an element of discussion or participation. You will often be asked to talk to other students about questions.

We will also keep track of Clicker responses to track participation in class. We will use Clickers in 25 classes (including RRR week reviews) and you will get 1 point for answering more than 50% of the Clicker questions in a class period. The maximum points you can get for Clickers is 20 points. There are no make-up points for missing a class, even for an excused reason or if your Clicker is out of batteries or not functioning.

Homework: The homework assignments will be posted on bCourses in the Assignments section. There will be a homework assignment for most lectures. These will often involve watching an online video or animation and answering questions about them on bCourses. You will get two chances to get the correct answers and your highest score will be recorded in bCourses. The homework assignments are a good chance to practice and prepare for quizzes and exams. You will get no credit for late homework.

Homework is always due at 12:30pm on Tuesday and Thursday (i.e. the start of lecture). Note: HW 0 is related to the syllabus and FAQ page and it is due before the first exam.

Paper: You will write a two-page paper (double-spaced) about how a particular medication affects the body. You can choose any medication you are interested in, or choose from a list of common medications. You will research how the medication functions and affects human physiology in order to help the patient. The paper is your opportunity to apply all that you have learned to a real-world medical problem. The paper is due by Friday November 30 at 5pm, online through bCourses. We will give you more details about the assignment and potential medications later in the semester.

Extra credit: You can earn one extra credit point for going to office hours, the voluntary discussion section or a UGSI study session (you need to stay for at least 10 minutes and engage with instructor or other students). You can only earn one extra point total. There is no other extra credit available in this course.

How to succeed in MCB 32

1. Attend lecture and discussion section 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. Post and respond to questions on Piazza (available in bCourses).
4. Keep up with the material by doing the homework (try answering the questions without using your notes the first time).
5. Form study groups with friends or other students in your discussion section.
6. 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.
7. Attend the weekly UGSI study sessions. These are led by students who took the course last year. They will have a good idea of how to study for the course.
8. Make flash cards to review vocabulary and anatomy. Quiz yourself often.
9. 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.
10. Before the exams, actively study the lecture notes and slides again (just reading the notes is not going to help you). Redraw diagrams from memory. Do the practice problems from the slides, Clicker questions, quizzes and homework questions.

Clicker

We will be using the iClicker student response system in class this semester. iClicker helps me to understand what you know and gives everyone a chance to participate in class. We will keep track of iClicker usage in class, so this will count towards your participation grade.

You will need to purchase an iClicker remote from the bookstore. If you already have an iClicker from another class, this will work fine (original remote, iClicker+ or iClicker2 will all work).

Alternatively, you may use a smart phone or tablet as an iClicker remote. You can download the iClicker REEF app and register here: app.reef-education.com. Creating an account automatically starts a free 14-day trial subscription. Please use this trial period to make sure iClicker REEF will work for all of your iClicker classes before purchasing a subscription as it is not possible to receive a refund after you purchase a subscription.

Registering iClickers

In order for us to know you used your iClicker, you will need to register the remote in bCourses. Look for the iClicker menu on the left in our course site. Follow the directions for registering your remote.

If you are using REEF Polling, be sure that you've added your Student ID and your full official name to your profile to complete the registration process. At the start of class, log in to the iClicker REEF app and look for our class name (MCB 32 Fall 2018) or professor name. This will register your iClicker so we can keep track of your responses.

Clickers in class

Bring your iClickers to class on Aug 28 to check that they are functioning properly, and starting Aug 30 we will be keeping track of responses for participation credit. It is up to you to make sure your iClicker is working and has batteries. There are no make-up assignments for missing a day of Clicker questions. It is just one point and there are many opportunities to get participation points.

Accommodations

If you need disability-related accommodations in this class, if you have emergency medical information you wish to share with me, or if you need special arrangements in case the building must be evacuated, please inform me immediately. Please see me privately after class or email me.

Students who need academic accommodations (for example, a notetaker), should request them from the Disabled Students' Program, 260 César Chávez Center, 642-0518 (voice or TTY). DSP is the campus office responsible for verifying disability-related need for academic accommodations, assessing that need, and for planning accommodations in cooperation with students and instructors as needed and consistent with course requirements.

Honor code

The student community at UC Berkeley has adopted the following Honor Code: “As a member of the UC Berkeley community, I act with honesty, integrity, and respect for others.” The hope and expectation is that you will adhere to this code.

Cheating: A good lifetime strategy is always to act in such a way that no one would ever imagine that you would even consider cheating. Anyone caught cheating on a quiz or exam in this course will receive a failing grade in the course and will also be reported to the University Center for Student Conduct. In order to guarantee that you are not suspected of cheating, please keep your eyes on your own materials and do not converse with others during the quizzes and exams.

We consider bringing a fellow student's iClicker to class to be cheating and a violation of the University Honor Code. If you are caught with a remote other than your own or have votes in a class that you did not attend, you will forfeit all Clicker points and may face additional disciplinary action.

Plagiarism: To copy text or ideas from another source without appropriate reference is plagiarism and will result in a failing grade for your assignment and usually further disciplinary action. We will check your papers for plagiarism, so please be careful about this. For additional information on plagiarism and how to avoid it, see, for example:

<http://www.lib.berkeley.edu/instruct/guides/citations.html#Plagiarism>
<http://gsi.berkeley.edu/teachingguide/misconduct/prevent-plag.html>

Academic Integrity and Ethics: Cheating on exams and plagiarism are two common examples of dishonest, unethical behavior. Honesty and integrity are of great importance in all facets of life. They help to build a sense of self-confidence, and are key to building trust within relationships, whether personal or professional. There is no tolerance for dishonesty in the academic world, for it undermines what we are dedicated to doing – furthering knowledge for the benefit of humanity.

Your experience as a student at UC Berkeley is hopefully fueled by passion for learning and replete with fulfilling activities. And we also appreciate that being a student may be stressful. There may be times when there is temptation to engage in some kind of cheating in order to improve a grade or otherwise advance your career. This could be as blatant as having someone else sit for you in an exam, or submitting a written assignment that has been copied from another source. And it could be as subtle as glancing at a fellow student's exam when you are unsure of an answer to a question and are looking for some confirmation. One might do any of these things and potentially not get caught. However, if you cheat, no matter how much you may have learned in this class, you have failed to learn perhaps the most important lesson of all.

Safe, Supportive, and Inclusive Environment

Whenever a faculty member, staff member, post-doc, or GSI is responsible for the supervision of a student, a personal relationship between them of a romantic or sexual nature, even if consensual, is against university policy. Any such relationship jeopardizes the integrity of the educational process. Although faculty and staff can act as excellent resources for students, you should be aware that they are required to report any violations of this campus policy. If you wish to have a confidential discussion on matters related to this policy, you may contact the Confidential Care Advocates on campus for support related to counseling or sensitive issues. Appointments can be made by calling (510) 642-1988.

The classroom, lab, and work place should be safe and inclusive environments for everyone. The Office for the Prevention of Harassment and Discrimination (OPHD) is responsible for ensuring the University provides an environment for faculty, staff and students that is free from discrimination and harassment on the basis of categories including race, color, national origin, age, sex, gender, gender identity, and sexual orientation. Questions or concerns? Call (510) 643-7985, email ask_ophd@berkeley.edu, or go to <http://survivorsupport.berkeley.edu/>.

Services for Students Encountering Food and Housing Insecurity

If you are in a situation where you are facing challenges in gaining access to nutritious, affordable food during the semester, you can find help by going to the UC Berkeley basic needs program at <http://basicneeds.berkeley.edu/> or the UC Berkeley Food Pantry at <https://pantry.berkeley.edu/>. You may be eligible for the CalFresh program as well.

A list of important resources for all students is on our bCourses page listed in the left menu as “Student Resources”. You will find links for mental health, medical needs, sexual harassment, the Gender Equity Resource Center, emergency food/cash/housing needs, legal support and disability accommodations. Please use these resources whenever you need them.



LECTURE SCHEDULE (subject to change)

| Date | Lec | Subject | Quiz/HW | Chapter |
|----------|-----|--|----------|---------|
| Week 0 | | | | |
| Th 8/23 | 1 | Introduction to human physiology | | 1 |
| Week 1 | | | No quiz | |
| Tu 8/28 | 2 | Homeostasis and negative feedback | | 1 |
| Th 8/30 | 3 | Chemistry review, biomolecules, energy, enzymes | HW 1 due | 2, 3 |
| Week 2 | | | Quiz 1 | |
| Tu 9/4 | 4 | Cells, organelles and tissues | HW 2 | 1-3 |
| Th 9/6 | 5 | Membrane transport | HW 3 | 4 |
| Week 3 | | <i>Wednesday Sept 12 is last day to add/drop classes</i> | Quiz 2 | |
| Tu 9/11 | 6 | Intercellular signaling | HW 4 | 5 |
| Th 9/13 | 7 | Endocrine regulation: Pituitary and cortisol | HW 5 | 6, 21 |
| Week 4 | | | No quiz | |
| Tu 9/18 | | EXAM 1 (Lec 1-7) | HW 0 | |
| Th 9/20 | 8 | Reproductive system | | 22 |
| Week 5 | | | Quiz 3 | |
| Tu 9/25 | 9 | Nervous system: Membrane and action potentials | HW 6 | 4, 7 |
| Th 9/27 | 10 | Nervous system: AP conduction, synaptic transmission | HW 7 | 7, 8 |
| Week 6 | | | Quiz 4 | |
| Tu 10/2 | 11 | Central nervous system | HW 8 | 9 |
| Th 10/4 | 12 | Sensory physiology: Touch | HW 9 | 10 |
| Week 7 | | | Quiz 5 | |
| Tu 10/9 | 13 | Autonomic nervous system and somatic motor system | HW 10 | 11 |
| Th 10/11 | 14 | Skeletal muscle: Contraction and force generation | HW 11 | 12 |
| Week 8 | | <i>Monday Oct 15 is the last day to register to vote in CA</i> | No quiz | |
| Tu 10/16 | 15 | Skeletal muscle: Spinal reflexes and voluntary control | HW 12 | 9, 12 |
| Th 10/18 | | EXAM 2 (Lec 8-14) | | |
| Week 9 | | <i>Friday Oct 26 is last day to change grading options</i> | Quiz 6 | |
| Tu 10/23 | 16 | Cardiovascular system: Heart and blood vessels | HW 13 | 13, 14 |
| Th 10/25 | 17 | Cardiovascular system: Cardiac cycle | HW 14 | 13 |

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|----------|----|---|---------|--------|
| Week 10 | | | Quiz 7 | |
| Tu 10/30 | 18 | Cardiovascular system: Regulation of blood pressure | HW 15 | 13, 14 |
| Th 11/1 | 19 | Respiration: Ventilation | HW 16 | 16 |
| Week 11 | | <i>Tuesday Nov 6 is Election Day. Don't forget to vote!</i> | Quiz 8 | |
| Tu 11/6 | 20 | Respiration: Gas exchange and transport | HW 17 | 17 |
| Th 11/8 | 21 | Renal: Kidney anatomy and function | HW 18 | 18 |
| Week 12 | | | No quiz | |
| Tu 11/13 | | EXAM 3 (Lec 15-21) | | |
| Th 11/15 | 22 | Renal: Osmoregulation and control of blood pressure | | 19 |
| Week 13 | | | No quiz | |
| Tu 11/20 | 23 | Gastrointestinal system | HW 19 | 20 |
| Th 11/22 | | THANKSGIVING HOLIDAY | | |
| Week 14 | | | Quiz 9 | |
| Tu 11/27 | 24 | Metabolism and pancreatic hormones | HW 20 | 21, 24 |
| Th 11/29 | 25 | Exercise physiology | HW 21 | |
| F 11/30 | | PAPER DUE Friday Nov 30 5pm on bCourses | | |
| Week 15 | | | No quiz | |
| Tu 12/4 | | Final review Lec 1-13 (RRR WEEK) | HW 22 | |
| Th 12/6 | | Final review Lec 14-25 (RRR WEEK) | | |
| Final | | | | |
| F 12/14 | | FINAL EXAM | | |
| 8-11am | | Final covers material from entire course (cumulative) | | |

Still have questions?

Check the Frequently Asked Questions section on bCourses.