

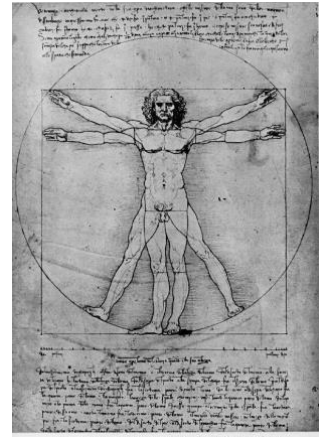
IB 132 Human Physiology Spring Semester, 2024

Lectures Tuesdays and Thursdays 9:30 to 11:00 am

245 - Li Ka Shing

Course description

From a basis in elementary theories of information and control, we develop an understanding of homeostasis of cellular composition, structure, and energy metabolism. We then study neural and endocrine signaling in humans, and develop the key concepts of control and homeostasis in all the major organ and multi-organ systems, including cardiovascular, respiratory, renal, metabolic, reproductive, and immune systems, growth and development, and sensory and motor systems.



Teaching Team

Instructors: Professor George A. Brooks (gbrooks@berkeley.edu) and Professor Annaliese Berry (abeery@berkeley.edu)

Teaching Assistants: Emily Lam (emily_lam@berkeley.edu), Elizabeth Piotrowski (epiotrowski@berkeley.edu), and Adam Osmond (adosmond@berkeley.edu).

Student Hours with the Instructors

George A. Brooks: Mondays and Wednesdays 8:00-9:00am, 5101 VLSB

Annaliese Beery: Mondays 1-2pm, 4098 VLSB; Wednesdays 1-2pm on zoom (<https://berkeley.zoom.us/my/abeery>)

Emily Lam: Thursdays 11am-12pm, VLSB 3019

Elizabeth (Liz) Piotrowski: Tuesdays, 11:00-12:00 pm, VLSB 3019

Adam Osmond: Fridays 11am-12pm, VLSB 3019

Student Learning Objective

To understand the mechanisms by which key physiological priorities are maintained in humans.

Course Materials

A) Textbook: Vander's Human Physiology (any edition)

Although most information to be tested is contained in the book, we present information in lectures that is not contained in the book, and there is often detail in the text that we will not test. Attending lectures allows you to judge how we will weight topics covered in the text, to learn material not covered in the text, and to interact with your classmates, instructors and GSIs. To prepare, please read the relevant chapters before class.

B) bCourses site

We will use bCourses to communicate with the class and distribute any relevant class materials. PDFs of Lecture Notes will be available on bCourses before lecture.

C) Online discussions

Online Discussions allow students to participate in an asynchronous conversation with a group or the entire class. We encourage you to use the bCourses built-in discussions tool to interact with your peers and instructors.

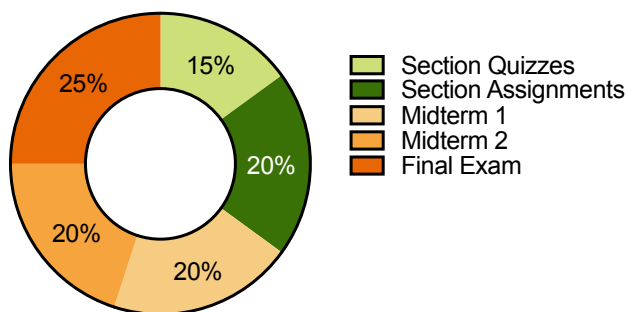
How to Succeed in this Course

We encourage you to attend and engage in all lectures and discussion sections and to come prepared by reading the corresponding book chapters before class. Print or download the lecture materials, take notes during class and review/curate your notes after class. Consult the book for further questions and attend Student Hours with the Instructors. *We enjoy interacting with you!*

Grade Distribution

All examinations will be closed book, closed notes. The course grade will be determined by scores on discussion section work, five in-class quizzes (administered during discussion), two midterm exams, and a final exam (cumulative, but predominantly focused on the last unit). The weighting of these components will be:

15%	In-class quizzes (administered during discussion)
20%	Discussion section work (case studies)
20%	Midterm 1
20%	Midterm 2
25%	Final exam (cumulative but focused on last unit)



Letter grades

≥ 95% A+	≥ 83% B+	≥ 73% C+	≥ 63% D+
≥ 90% A	≥ 80% B	≥ 70% C	≥ 60% D
≥ 87% A-	≥ 77% B-	≥ 67% C-	< 60% F

Class Policies

Remote instruction: please note that the class could transition to remote instruction at any time due to COVID or other emergencies in accordance to University policy.

Absences: if you cannot attend a lecture, discussion or examination due to illness or other circumstances beyond your control, please contact the Instructors and explain the circumstances **beforehand** (when possible). Please provide documentation of the circumstances (e.g., a doctor's note in the case of illness). There will be no makeup examinations but we will consider the possibility of alternative assessment under justified circumstances.

Accommodations: please contact the Instructors as soon as possible if you have a disability (see below), sports conflict or religious need, so that we can plan the necessary accommodations.

Students with Disabilities: UC Berkeley is committed to creating a learning environment that meets the needs of its diverse student body including students with disabilities. If you anticipate or experience any barriers to learning in this course, please feel welcome to discuss your concerns with the Instructors. If you have a disability, or think you may have a disability, you can work with the Disabled Students' Program (DSP) to request an official accommodation. DSP is the campus office responsible for authorizing disability-related academic accommodations, in cooperation with the students themselves and their instructors. You can find more information about DSP, including contact information and the application process at <https://dsp.berkeley.edu/>. If you have already been approved for accommodations through DSP, please contact José Vázquez-Medina to develop an implementation plan.

Class materials: ALL class materials are the property of the Instructors. **They shall not be posted on Course Hero or any other website.**

Collaboration and Independence: reviewing lecture materials and studying for exams can be enjoyable and enriching things to do with fellow students. This is recommended. However, assignments should be completed independently and all materials submitted should be the result of one's own independent work.

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". You are required to abide to the Code of Student Conduct at all times. Please refer to this link for more resources: <https://conduct.berkeley.edu/code-of-conduct/>

Academic Integrity: 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 will receive a failing grade and will be reported to the University Center for Student Conduct. To guarantee that you are not suspected of cheating, please keep your eyes on your own materials and do not converse with others during quizzes and exams. Cheating is a common example 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.

Discussion sections (3019 VLSB): You need to be enrolled and attending one of the nine discussion groups. Discussion section consists on a small group review of key concepts presented in lecture, quizzes and hands-on work on case studies. We will have 5 quizzes and 6 case studies throughout the semester; 5 case studies will be used to compound your discussion grade (20%); 5 quizzes will be used to compound your quiz grade (15%). Discussion sections will start during the second week of class.

DIS 101	W 10:00-11:00 AM (Adam Osmond)
DIS 102	W 11:00 AM-12:00 PM (Adam Osmond)
DIS 103	TH 12:00-1:00 PM (Emily Lam)
DIS 104	TH 1:00-2:00 PM (Emily Lam)
DIS 105	TH 2:00-3:00 PM (Emily Lam)
DIS 106	TU 12:00-1:00 PM (Liz Piotrowski)
DIS 107	TU 1:00-2:00 PM (Liz Piotrowski)
DIS 108	F 9:00-10:00 AM (Liz Piotrowski)
DIS 109	F 10:00-11:00 AM (Adam Osmond)

Quizzes: we will have 5 in-class quizzes distributed throughout the semester. Quizzes will consist of 5 multiple-choice questions and are worth 15% of your final grade. Quizzes will be administered during discussion.

Examinations: examinations will be in-person and will consist of 50 multiple-choice questions. We will have 2 midterm examinations and a final exam (not comprehensive).

Labs: IB 132L, the laboratory course corresponding to IB 132, is synchronized with the lecture, and is best taken concurrently. However, lab enrollment is limited by constraints on space, equipment and GSI time. If you are one of those with a seat in a lab, please make use of it, or drop the lab early in the semester so that another student has the opportunity. Lab grades are determined by work in the lab, and are independent of lecture class grades. The labs will start during the second week of class.

IB 132 Human Physiology Spring 2024-Class Schedule

<u>Topic and Lecture #</u>	<u>Chapter</u>	<u>Week</u>	<u>Date</u>	<u>Lecturer</u>
1. Homeostasis and Control in Physiology (L1)	1	1	1/16	GB
ATP homeostasis (L2)	2, 3	1	1/18	GB
2. Signaling, Homeostasis And Control In The Human				
Membranes (L3)	4, 5	2	1/23	AB
Nervous System (L4-5)	6	2/3	1/25, 1/30	AB, AB
Sensory Physiology (L6-7)	7	3/4	2/1, 2/6	AB, AB
Brain & Behavior (L8-9)	8	4/5	2/8, 2/13	AB, AB
Muscles (L10)	9	5	2/15	GB
Motor Control (L11)	10	6	2/20	GB
-----MT 1 Material Delineation-----				
3. Endocrine Control Systems				
Hormone function and regulation (L12-13)	11	6,7	2/22, 2/27	AB, AB
MIDTERM 1		7	2/29 (Thursday)	
4. The blood (L14)	12	8	3/5	GB
Blood Pressure Control: Heart and Circulation (L15-17)	12	8,9	3/7, 3/12, 3/14	GB, GB, GB
5. Control of Blood O ₂ , CO ₂ and pH (L18-19) (Respiratory Physiology)	13	10	3/19, 3/21	GB, GB
SPRING BREAK		11	3/25-3/29	
6. Control of Body Water and Ion Composition (Renal Physiology) (L20-21)	14	12	4/2,4/4	AB, AB
-----MT 2 Material Delineation-----				
7. Nutrition, Digestion, Energy Balance (L22)	15, 16	13	4/9	GB
MIDTERM 2			4/11 (Thursday)	
9. Homeostasis of the Self: Reproduction	17	14		
Male Reproductive Physiology (L23)			4/16	AB
Female Reproductive Physiology (L24)			4/18	AB
10. Homeostasis of the Self: Immune Response	18	15		
Innate Immune System (L25)			4/23	JVM guest lecture
Adaptive Immune System (L26)			4/25	JVM guest lecture
FINAL EXAMINATION			5/8 Exam Group 10 (11:30-2:30pm)	

*Assigned Readings are in Vander's HUMAN PHYSIOLOGY, any edition, McGraw-Hill

Closing words: This class will provide you with a foundation to understand how the human body works. **We are very excited to share this learning experience with you!** We sincerely encourage you to interact with your fellow students, the GSIs and the Instructors.