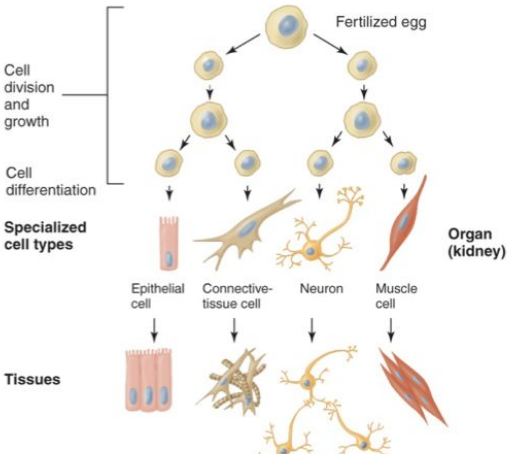
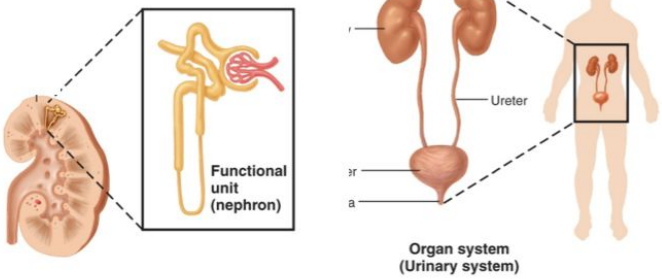
MCB 136 Advanced Physiology

Fall 2018 Syllabus





PROFESSORS

Section 1:
Dr. Diana Bautista
Email: dbautista@berkeley.edu
Office Hours: Wed 4:00-5:00 pm 125 LKS

Section 2:
Dr. Polina Lishko
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Section 3:
Dr. Iswar Hariharan
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GRADUATE STUDENT INSTRUCTORS

Sophia Friesen
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Sections: W 9-10, F 9-10
Office Hours: Wednesday 2-3pm, 349 LSA

Danielle Spitzer
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Sections: M 12-1pm, M 1-2pm
Office Hours: Monday 10-11am, 349 LSA

Carrie Whitaker
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Office Hours: Wednesday 10-11am, 349 LSA

Danielle Yi
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Sections: F 1-2, F 2-3
Office Hours: Thursday 9-10 am, 349 LSA

Melody Yu
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Sections: Th 11-12, Th 12-1
Office Hours: Tuesday 3-4pm, 349 LSA

TEXTBOOK: "Vander's Human Physiology" 13th or other Editions are a good reference. Your most useful resource will be the information uploaded by your instructors on the bCourses website: https://bcourses.berkeley.edu/. Please note that the emphasis in this course is on the material covered in lecture AND in the lecture notes.

DISCUSSION SECTION: Sections start meeting during the second week of classes (Aug. 27). Attendance is taken in discussion sections and counts towards your grade-you need to attend 10 of the 14 discussions to pass MCB136. To change your assigned discussion section, find someone to swap with you and obtain email permission your current GSI and the GSI of the section you want to attend.

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LECTURE NOTES
Lecture notes are available on bCourses in folders within the **Files** area.

ADVICE FROM INSTRUCTORS:
A key element in doing well in this class is attending lecture. It is also imperative you keep up to date with your studying. Looking at the assigned reading the same day as the lecture and reviewing the uploaded lecture notes after lecture has proven to make an enormous difference in the final result. Do not hesitate to ask the instructors questions. **Each lecture in turn uses the material in previous lectures.** It is easy to get left behind if you do not master the material previously presented. **Also, there are regular small quizzes in class and these points count.**

Please ask questions in section and office hours. We will be happy to answer them. The best time to ask them is after reviewing your notes - hopefully you will be doing so sometime soon after each lecture. Email should only be used for administrative purposes, not for questions on course content.

COURSE MECHANICS:
Quizzes: In class, 10 min: 9/10, 10/15, 11/14. There are no make-ups or re-grades for these quizzes. Calculators needed for all quizzes and exams. No cell phones.

Exams:
Midterm I: 9/24; Midterm II: 10/22; Midterm III and Final exam: 12/11 7:00pm
Midterm exams will be held during the normal class time. An overflow room will be assigned.
Makeup Midterm tests will only be given for graduate school interviews and other extraordinary documented excuses with advance notice (with the exception of documented medical emergencies).

Grades:
Your grade will be based on a total of 300 points. A curve will be applied if it helps you.
3 Quizzes* 10 pts = 30 total
Problem Sets = pass/no pass
Midterm 1=50 pts; Midterm 2=50pts; Final=170 pts.

COURSE POLICIES
Accommodations
Submit all requests through the DSP office and email the faculty during the first week of the course to make alternative plans.

Late Work Policy
Be sure to pay close attention to deadlines—there will be NO make-up quizzes or exams.

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. Collaboration and Independence: Reviewing lecture and reading materials and studying for exams can be enjoyable and enriching things to do with fellow students. This is recommended. However, unless otherwise instructed, homework assignments are to be completed independently and materials submitted as homework should be the result of one's own independent work.

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/.

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 can 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.

Cheating
Cheating and plagiarism will not be tolerated. UC Berkeley's cheating policy (http://bulletin.berkeley.edu/academic-policies/#studentconductappealstext) will be followed. Test papers are routinely photocopied before they are handed back and answers are analyzed using plagiarism detection software. In fairness to students who put in an honest effort, students that copy another's answers during an exam, use a smartphone, plagiarize, or use other forms of cheating, will automatically be assigned a zero for that entire test and the Office of Student Conduct will be notified. A good lifetime strategy is always to act in such a way that no one would ever imagine that you would consider cheating. 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.

Letters of Recommendation
Any of the three instructors may be asked for a letter of recommendation. So that we may prepare effective evaluations we ask that you do the following: Be sure to attend the instructor's office hours. Ask your GSI to co-write the letter based on your discussion section participation. Provide both the GSI and Professor a copy of your transcript, CV and finalized personal statement, along with a waiver form for the Letter Service or AMCAS. Only confidential letters will be provided.

Day	Date	Lecture#		Instructor	Activities	Related Reading
Wed	8/22/2018	1	Intro to Physiology, Membrane Transport	Bautista #1		4.1 diffusion; 4.2 Mediated Transport; 4.3 Osmosis; Lecture 1 folder
Fri	8/24/2018	2	Diffusion, membrane transport and channels	Bautista #2		4.1 diffusion; 4.2 Mediated Transport; Lecture 2 folder
Mon	8/27/2018	3	Ion channels and transporters: principles of operation	Bautista #3		6.5 Basic principles of electricity; 6.6 The resting potential
Wed	8/29/2018	4	Membrane Potential/Nernst/GHK	Bautista #4		Lecture 4 folder
Fri	8/31/2018	5	Nernst/GHK	Bautista #5		6.7 Graded Potentials & Action Potentials
Mon	9/3/2018		Labor Day-no class			
Wed	9/5/2018	6	Graded/Action Potential	Bautista #6		6.7 Graded Potentials & Action Potentials
Fri	9/7/2028	7	Action Potential/Synaptic transmission	Bautista #7		6.8 Functional Anatomy of Synapses; 6.9 Mechanisms of NT release;
Mon	9/10/2018	8	Synaptic transmission	Bautista #8	Quiz 1 (Lectures 1-6)	6.13 Neurotransmitters & Neuromodulators
Wed	9/12/2018	9	Neuroanatomy/techniques	Bautista #9		6.15 CNS; 6.16 PNS; Lecture 9 folder
Fri	9/14/2018	10	Sensory I	Bautista #10		7.5 Somatic Sensation
Mon	9/17/2018	11	Sensory II	Bautista #11	PS#1 due (Lectures 1-10)	7.7 Hearing
Wed	9/19/2018	12	Sensory III	Bautista #12		7.6 Vision
Fri	9/21/2018	13	Journal Club	Bautista #13		Lecture 13 Folder
Mon	9/24/2018		**Midterm 1 (Lecture 1-11)**	ALL		
Wed	9/26/2018	14	Somatic and Autonomic Nervous Systems	Lishko #1		
Fri	9/28/2018	15	Skeletal Muscle (Molecular Basis of Contraction)	Lishko #2		
Mon	10/1/2018	16	Skeletal Muscle (Regulation and Disease)	Lishko #3		
Wed	10/3/2018	17	Smooth Muscle and Cardia Muscle: Differences and Similarities	Lishko #4		
Fri	10/5/2018	18	In a Heartbeat. The Heart: Anatomy, Physiology and Regulation	Lishko #5		
Mon	10/8/2018	19	Blood and Blood Vessels	Lishko #6	PS#2 due (Lectures 14-18)	
Wed	10/10/2018	20	Cardiovascular Regulation Part I	Lishko #7		
Fri	10/12/2018	21	Cardiovascular Regulation Part II	Lishko #8		
Mon	10/15/2018	22	Respiration Anatomy, Mechanics and Ventilation	Lishko #9	Quiz 2	
Wed	10/17/2018	23	Gas Exchange, Transport and Regulation of Respiration	Lishko #10		
Fri	10/19/2018	24	Reproduction: Gametogenesis	Lishko #11		
Mon	10/22/2018		**Midterm 2 (Lecture 14-22)**			
Wed	10/24/2018	25	Reproduction: Fertilization and Development	Lishko #12		
Fri	10/26/2018	26	Physiology of Homeostasis	Hariharan # 1		
Mon	10/29/2018	27	GI: Mouth to Stomach	Hariharan # 2		
Wed	10/31/2018	28	GI: Pancreas, Liver and Intestine	Hariharan # 3		
Fri	11/2/2018	29	GI: Digestion and Absorption	Hariharan # 4		
Mon	11/5/2018	30	Metabolism	Guest -Titov		
Wed	11/7/2018	31	Energy homeostasis	Hariharan # 5	PS#3 due (Lectures 26-30)	
Fri	11/9/2018	32	Introduction to Renal Physiology	Hariharan # 6		
Mon	11/12/2018		Veteran's Day-NO class			
Wed	11/14/2018	33	Regulation of Fluid and Electrolytes by the Kidney	Hariharan # 7	Quiz 3	
Fri	11/16/2018	34	Systemic Regulation of Fluid Balance	Hariharan # 8		
Mon	11/19/2018	35	Regulation of Organismal pH	Hariharan # 9		
Wed	11/21/2018		Thanksgiving Holiday-no class			
Fri	11/23/2018		Thanksgiving Holiday-no class			
Mon	11/26/2018	36	Introduction to Endocrinology	Hariharan # 10		
Wed	11/28/2018	37	Homeostatic regulation by hormones	Hariharan # 11		
Fri	11/30/2018	38	Disorders of homeostasis	Hariharan # 12		
Mon	12/3/2018		RRR-Review Session 1	Bautista		
Wed	12/5/2018		RRR-Review Session 2	Lishko		
Fri	12/7/2018		RRR-Review Session 3	Hariharan		

EXAM

TUESDAY 12/11/2018 **7-10pm** **Final Exam: 170 points (Lecture 1-38)**