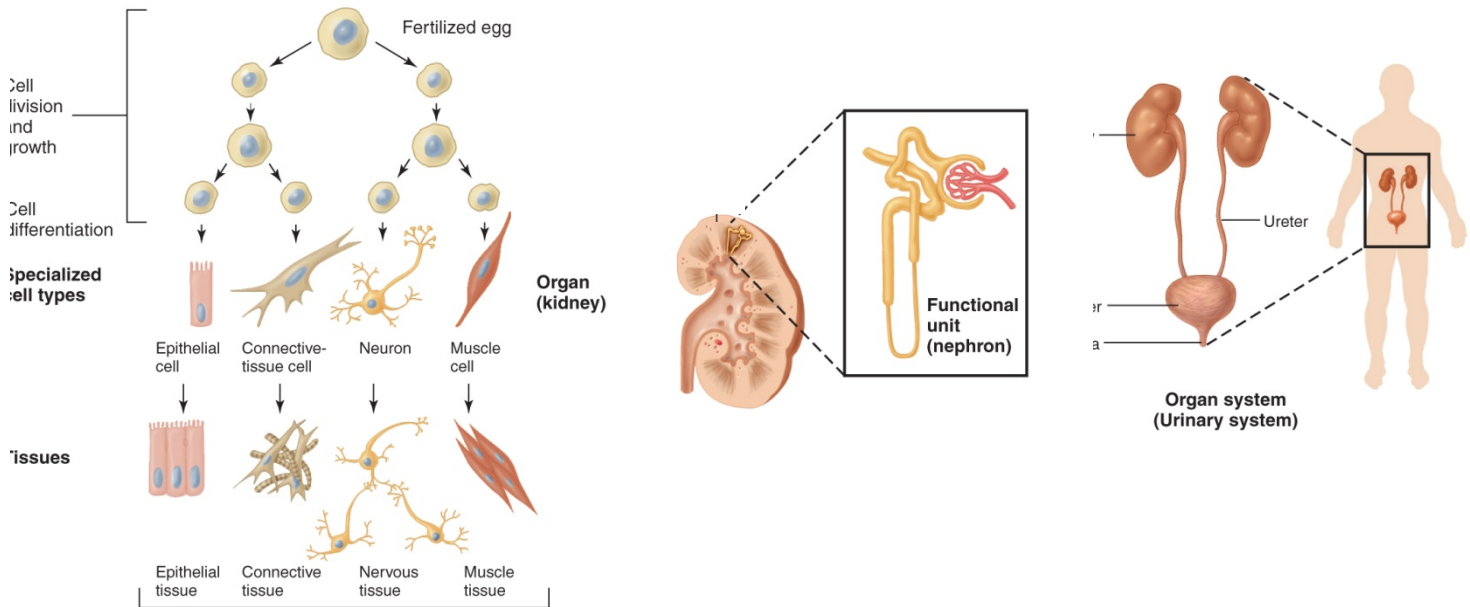


# MCB 136 Advanced Physiology

## Fall 2016 Syllabus



### **PROFESSORS**

#### Section 1:

Dr. Diana Bautista

dbautista@berkeley.edu

Office Hours: Monday 1-2pm 355 LSA

#### Section 2:

Dr. Polina Lishko

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Office Hours: Friday 2-4pm 125 LKS

#### Section 3:

Dr. Iswar Hariharan

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Office Hours: Friday 2-4pm 125 LKS

### **GSIs:**

Laura Craciun

Lcraciun4@berkeley.edu

Sections: 101-Monday 12pm; 103 -Wednesday 10am

Office Hours: Wednesday 2pm 448 LSA

Sarah Choo

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Sections: 102 -Monday 12pm,; 105 -Friday 9am

Office Hours: Friday 10am 105 GPB

Shinya Iguchi

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Sections: 104 – Wednesday 1pm; 106 – Friday 1pm

Office Hours: Friday 4pm 349 LSA

# MCB 136 Advanced Physiology

## Fall 2016 Syllabus

**TEXTBOOK:** "Vander's Human Physiology" or an equivalent physiology textbook are a good reference. Your most useful resource will be the information uploaded by your instructors on the bCourses website. 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. 29). Attendance is taken in discussion sections and counts towards your grade. To switch assigned discussion sections, find someone to swap with you and obtain written permission from the GSI of the section you want to attend.

### **LECTURE NOTES**

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

### **ADVICE FROM INSTRUCTORS:**

An important element in doing well in this class is keeping up to date. Reviewing the uploaded lecture notes before the next lecture and looking at the assigned reading the same day as the 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: 9/2, 9/9, 10/5, 10/12, 11/7, 11/21; There are no make-ups or re-grades for these quizzes. Calculators needed for all quizzes and exams. No cell phones.

**Problem Sets:** due in class: 9/19, 10/19, 11/28

**Exams:** Midterms in class: 9/26, 10/24, Final Exam: 12/12 11:30-2:30pm. Makeup Midterm tests will only be given at the discretion of the instructor and for extraordinary documented reasons that require advance notice before the original scheduled time of the test (with the exception of medical emergencies).

**GRADING:** Your grade will be based on a total of 300 points.

6 Quizzes\* 5 pts =30 total

Midterm 1=50 pts; Midterm 2=50pts; Final=170 pts.

Problem sets & Discussion: Discussion assignments and participation will be assigned a grade. A satisfactory grade "S" must be obtained for each problem set and discussion meeting.

**Re-grading:** There is considerable care given to the design and grading of tests with close cooperation between the person who designed the question and the one person who grades it.

# MCB 136 Advanced Physiology

## Fall 2016 Syllabus

Therefore there is no re-grading for any test. Mistakes in adding points can be corrected. However, note that test papers are routinely photocopied before they are handed back. The Final cannot be handed back as it is part of your record, but can be examined on request in the presence of a GSI during the first week of the next semester.

### **COURSE POLICIES**

**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](mailto:ask_ophd@berkeley.edu), or go to <http://survivorsupport.berkeley.edu/>.

**DSP Students:** Inform your instructor of any accommodations needed during the 1st week of class.

**Cheating:** Cheating 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.

# MCB 136 Advanced Physiology

## Fall 2016 Syllabus

**Late Work Policy:** Be sure to pay close attention to deadlines—there will be no make up assignments or quizzes.

### **Letters of Recommendation**

Any of the three instructors may be approached for a letter of recommendation. We all are quite willing to provide a written evaluation for this purpose. So that we may prepare effective evaluations we ask that you follow the procedure outlined here. Be sure to attend at least 2 of the instructor's office hours. In addition, ask your discussion section GSI to write a brief note about your participation in section to the instructor. Sometime after the end of the course, request an interview with the instructor and bring a copy of your complete transcript, your CV and Personal Statement along with any recommendation forms that need to be filled in.

### **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.

# MCB 136 Advanced Physiology

## Fall 2016 Syllabus

Date	Topic	Lecturer	Activities
24-Aug-Wed	1 Intro to Physiology	Bautista#1	
26-Aug-Fri	2 Diffusion, osmosis, and membrane transport	Bautista#2	
29-Aug-Mon	3 Ion channels and transporters: principles of operation	Bautista#3	
31-Aug-Wed	4 Membrane Potential	Bautista#4	
2-Sep-Fri	5 Nernst/GHK	Bautista#5	Quiz 1
5-Sep-Mon	<b>Labor Day</b>		
7-Sep-Wed	6 Graded/Action Potential	Bautista#6	
9-Sep-Fri	7 Synaptic transmission	Bautista#7	Quiz 2
12-Sep-Mon	8 Techniques to study Neurobiology	Bautista#8	
14-Sep-Wed	9 CNS/Diseases	Bautista#9	
16-Sep-Fri	10 PNS	Bautista#10	
19-Sep-Mon	11 Sensory 1	Bautista#11	PS1 Due
21-Sep-Wed	12 Sensory 2	Bautista#12	
23-Sep-Fri	13 Channelopathies	Bautista #13	
26-Sep-Mon	14 <b>Midterm #1</b>	<b>Midterm #1</b>	
28-Sep-Wed	15 Somatic and autonomic nervous systems	Lishko#1	
30-Sep-Fri	16 Skeletal muscle (molecular basis of contraction)	Lishko#2	
3-Oct-Mon	17 Skeletal muscle (regulation and diseases)	Lishko#3	
5-Oct-Wed	18 Smooth muscle and cardiac muscle: differences and similarities	Lishko#4	Quiz 3
7-Oct-Fri	19 In a heartbeat. The heart: anatomy, physiology and regulation	Lishko#5	
10-Oct-Mon	20 Blood and blood vessels	Lishko#6	
12-Oct-Wed	21 Cardiovascular regulation part I	Lishko#7	Quiz 4
14-Oct-Fri	22 Cardiovascular regulation part II	Lishko#8	
17-Oct-Mon	23 Respiration anatomy, mechanics and ventilation	Lishko#9	
19-Oct-Wed	24 Gas exchange, transport and regulation of respiration	Lishko#10	PS2 Due
21-Oct-Fri	25 Reproduction: gametogenesis	Lishko#11	
24-Oct-Mon	26 <b>Midterm# 2</b>	<b>Midterm# 2</b>	
26-Oct-Wed	27 Reproduction: fertilization and development	Lishko#12	
28-Oct-Fri	28 Physiology of homeostasis	Hariharan#1	
31-Oct-Mon	29 GI: mouth to stomach	Hariharan#2	
2-Nov-Wed	30 GI: pancreas, liver and intestine	Hariharan#3	
4-Nov-Fri	31 GI: digestion and absorption	Hariharan#4	
7-Nov-Mon	32 Metabolism	Hariharan#5	Quiz 5
9-Nov-Wed	33 Appetite and fat storage	Hariharan#6	
11-Nov-Fri	<b>Veterans Day</b>		
14-Nov-Mon	34 Introduction to renal physiology	Hariharan#7	
16-Nov-Wed	35 Regulation of fluid and electrolytes by the kidney	Hariharan#8	
18-Nov-Fri	36 Systemic regulation of fluid balance	Hariharan#9	
21-Nov-Mon	37 Regulation of organismal pH	Hariharan#10	Quiz 6
23-Nov-Wed	<b>Thanksgiving break</b>		
25-Nov-Fri	<b>Thanksgiving break</b>		
28-Nov-Mon	38 Introduction to endocrinology	Hariharan#11	PS3 Due
30-Nov-Wed	39 Thermogenesis	Hariharan#12	
2-Dec-Fri	40 Diseases that affect homeostatic regulation	Hariharan#13	
5-Dec-Mon	RRR	Bautista Review	
7-Dec-Wed	RRR	Lishko Review	
9-Dec-Fri	RRR	Hariharan Review	
<b>12-Dec-Mon</b>	<b>Final EXAM</b>		