

Bio 4330-Integrative Human Physiology I
Fall Semester 2019

Lecture: MW 10:00 – 10:50 AM; SH142

Lab: M or W 11:00 – 1:30 ASC La Kretz 343

Lecture Instructor: Katrina Yamazaki, Ph.D.

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Lab Instructor: Michael Chen, Ph.D.

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Office Hours: Monday 8:00 – 9:30 AM (by appointment)

Wednesday 8:00 – 9:30 AM (by appointment)

Course Website: canvas.calstatela.edu

Number of units: 3

COURSE DESCRIPTION: Biological Sciences 4330 is the 1st semester of a 2-semester physiology sequence designed for upper-division or graduate students in the life sciences, especially those interested in progressing to professional (medical, dental, pharmacy, etc.) or graduate (Ph.D., MS) school programs. This course takes a systems approach and covers the function of the mammalian nervous, muscle, and endocrine systems. This course will investigate these systems at the cellular level and progress to the whole animal level. We will also build in this course on basic skills, knowledge and biological concepts explored in the majors' core Biology courses, Biol Sci 3000, 3200, and 3400. Although, I will briefly review skills developed in those courses and in the laboratory sections of those courses, I will not cover too much detail nor will I provide much guidance in developing those skills as provided in these 3 courses. Biol Sci 4330 laboratory builds on the objectives for this course and is designed to further enhance your expertise with data interpretation and scientific communication of research results.

COURSE TEXTBOOK:

Lecture: Guyton, A.C., Hall, J.E., Textbook of Medical Physiology, 13th edition, Philadelphia, Elsevier Inc., 2010. This textbook will also be used in Biol Sci 4340 – Animal Physiology II.

COURSE ALIGNMENT WITH DEPARTMENT OF BIOLOGICAL SCIENCES UNDERGRADUATE STUDENT LEARNING

OUTCOMES: Biology 4330 is designed to help students meet the following undergraduate degree learning outcomes:

- 1 The student will acquire the following attitudes:
 - 1.1 Learning about both living micro and macro systems is relevant and essential for understanding life.
- 2 The student will be able to demonstrate that he/she is skilled at:
 - 2.1 Applying the processes and methods of scientific inquiry, including the search and retrieval of scientific information, the formulation of scientific hypotheses, the design and conduct of experiments, and the analysis and interpretation of data;
 - 2.2 Understanding and critically evaluating the scientific work of others;
 - 2.3 Communicating scientific information effectively using oral presentations and written reports;
 - 2.4 Performing laboratory techniques that are appropriate to the major, with an understanding of the principles of laboratory safety;
 - 2.5 Working collaboratively on group projects.
- 3 The biology student will be able to demonstrate knowledge of the following:

- 3.1 Molecular and cellular structure and function;
- 3.3 Basic principles of anatomy, physiology, and development;

OFFICE HOURS: For questions and assistance regarding class materials, please make an appointment with me in person or e-mail for one of my office hour slots. The times have been set aside for this class. Please make an appointment to see me during those times.

GRADING: Final course grades will be based on the following assessments worth:

Lecture	670 points 14 in class assessments (5 points): 70 points 6 lecture quizzes (25 points each): 150 points 3 midterm exams (100 points each): 300 points 1 cumulative final exam (200 points): 200 points
Lab	480 points 2 lab reports (100 points each): 200 points 9 Pre-lab assignments (5 points each): 45 points 7 lab worksheets (25 points): 175 points Class Participation/Attendance (5 points for each lab session) = 60 points

Each exam can be a combination of multiple-choice, matching, true/false, fill-in-the-blank, and short answer/short essay questions over lecture, laboratory, and reading materials. Laboratory reports will be graded according to the rubric handed out in class (also posted online). The grading distribution based on the total points earned in Lecture and Laboratory is as follows:

"A" = 90-100% of possible points	"C" = 70-79%	"F" <59% of possible points
"B" = 80-89%	"D" = 60-69%	

Within each grade range, the top 3% and the bottom 3% will receive "+" and "-" grades.

MAKE-UPS: Make-up exams or late lab reports will be allowed on a case-by-case basis at my discretion and are given in the event of an emergency, or other excused absence, that conflicts with a scheduled exam. Written documentation of the reason you missed the exam is a MUST. NO MAKE UP LABS ARE AVAILABLE.

DISABILITY STATEMENT: Reasonable accommodation will be provided to any student who is registered with the Office of Students with Disabilities and requests needed accommodation.

ACADEMIC HONESTY: Students are expected to read and abide by the University's Academic Honesty Policy, which can be found at

<http://www.calstatela.edu/academic/senate/handbook/ch5a.htm>. Students who violate this policy will be subject to disciplinary action and may receive a failing grade in the course for a single violation.

SYLLABUS DISCLAIMER STATEMENT: Serious effort and consideration were used in formulating the course syllabus. While viewed as an educational contract between Dr. Yamazaki and student, unforeseen events may cause changes to the scheduling of lectures, exercises, examinations, etc. Every effort will be made NOT to change scheduled items. Nonetheless, Dr. Yamazaki reserves the right to make any changes deemed necessary to best fulfill the course objectives. Students registered for this course will be made aware of any changes in a timely fashion using reasonable means (i.e. through campus email or course website). This disclaimer does not abrogate any student rights as described by University rules and regulations.

BIOL 4330 Schedule:

Date	Week	Lecture Topic	Lab Topic	Lab Report Due
21-Aug	1	Course Introduction-Lecture and Lab Course Syllabus;	No Lab This Week	
26-Aug	2	Membrane Physiology-Transport of Substances through Cell Membranes	EH & S Training	Complete Training Quiz
28-Aug		Lecture Quiz		
2-Sep	3	No Class - Labor Day	No Lab This Week	
4-Sep		Membrane Potentials and Action Potentials		
9-Sep	4	Membrane Potentials and Action Potentials	Lab Exercise 1: Experimental Design	No Lab Report Complete lab worksheet
11-Sep		Lecture Quiz		
16-Sep	5	Skeletal Muscle Physiology	Lab Exercise 2: Membrane Transport	No Lab Report Complete lab worksheet
18-Sep		Skeletal Muscle Physiology		
23-Sep	6	Smooth Muscle Physiology	Lab Exercise 4: Neuromuscular Junction Activity	Lab Report 1 Due 10/21 or 10/23
25-Sep		Lecture Quiz		
30-Sep	7	EXAM 1	Lab Exercise 5: Data Analysis – NMJ Activity	Work on Lab Report
2-Oct		<u>Hormones</u> (pre-class reading quiz)		
7-Oct	8	<u>Endocrine System</u> (pre-class reading quiz)	Lab Exercise 6: Electromyography	No Lab Report Complete lab worksheet
9-Oct		<u>Endocrine System</u> (pre-class reading quiz)		
14-Oct	9	<u>Endocrine System</u> (pre-class reading quiz)	Lab Exercise 7: Smooth Muscle	Lab Report 2 Due 11/18 or 11/20
16-Oct		Lecture Quiz		
21-Oct	10	EXAM 2	Lab Exercise 8 Data Analysis on Smooth Muscle Activity	Work on Lab Report
23-Oct		Organization of the Nervous System		
28-Oct	11	<u>Brain and Spinal Cord</u> (Pre-Class intervention Group Assignment) (Post-Class Quiz)	Lab Exercise 3 Endocrinology - Blood Glucose Regulation	No Lab Report Complete lab worksheet

30-Oct		Motor System and Reflexes (Post-Class Quiz)		
4-Nov	12	Autonomic Nervous System (Pre-Class intervention) (Post-Class Quiz)	Lab Exercise 9: Reflexes	No Lab Report Complete lab worksheet
6-Nov		Lecture Quiz		
11-Nov	13	No Class - Veteran's Day	No Lab This Week	
13-Nov		Special Senses (Post-Class Quiz)		
18-Nov	14	Special Senses (Pre-Class intervention) (Post-Class Quiz)	Lab Exercise 10: Sensory Physiology Cutaneous	No Lab Report Complete lab worksheet
20-Nov		Lecture Quiz		
25-Nov	No Class - Thanksgiving Break		No Lab This Week	
2-Dec	15	Exam 3	Lab Exercise 10: Sensory Physiology Hearing and Vision	No Lab Report Complete lab worksheet
4-Dec		Review Day		
		CUMULATIVE FINAL	No Lab This Week	

BIOL 4330 Lab:

Lab: Mon (Section 2) 11:00 am – 1:30 pm; ASCL 343
Wed (Section 4) 11:00 am – 1:30 pm; ASCL 343

Class Attendance – 5 points each *12 = 60 points: based on active participation in the lab exercises and completion of lab exercises

Lab Report = 100 points each * 2 = 200 points

Students will work in the same groups throughout the semester, and work together to complete the lab experiments and analyze the data. All lab reports will be written like a scientific paper (Abstract, Introduction, Methods, Results, and Discussion – See Rubric). **EACH student will be responsible for submitting their own lab report. A group must not submit the exact same lab report. Each student needs to do their own writing. The rubric is in the BIOL 4330 Lab Manual.**

Pre-Lab Assignments = 5 points each * 9 = 45 points. you must complete the pre-lab assignments for every lab before the lab so you have an understanding of what will be done in lab that day.

Lab Worksheets = 25 point each * 7 = 175 points: three labs will require a worksheet to be submitted not a lab report.

As mentioned above, there will be NO MAKE-UP LABS AVAILABLE. Roll will be taken each lab period. Complete absence from one will result in a deduction of 35 points from the overall grade.

Laboratory Manual: download from canvas

Students will work in the same group of 2 throughout the term, and work together to complete the lab experiments, analyze the data or answer the questions. EACH student will be responsible for submitting their own lab report. A group must not submit the exact same lab report. Each student must do his/her own writing.