BI 145A: TISSUE and ORGAN PHYSIOLOGY

Submit problem sets: to your TAs

Instructor: C. Chace Tydell, DVM **E-mail**: chacetyd@caltech.edu

Class Hours: 7 – 8:30 p.m. Mondays and Wednesdays in 151 Braun

Dr. Tydell's Office Hours: By appointment

Grad TA: Rebecca Rojansky rrojansk@caltech.edu

Undergrad TA: May Hui mhui@caltech.edu

Grading: 40% Weekly Problem Sets. 10% Presentation 25% Midterm. 25% Final.
Participation that enhances the learning environment could elevate course grade.

Required Text: **HUMAN PHYSIOLOGY** by Fox. 12th or 13th edition

WEEK	DATE	TOPIC	READING	MOST CRITICAL PAGES
1	September 28	Intro/Homeostasis/Metabolism	Chapters 1-6	6-9, 52
	September 30	Tissues & organs HAND OUT PROBLEM SET 1	Chapter 1	10-20
2	October 5	Biomolecules & communication	Chapter 2 & 6	129-153
	October 7	Endocrine	Chapter 11	312-345
3	October 12	Endocrine	Chapter 11	
	October 14	Endocrine *PROBLEM SET 1 DUE 10/14* HAND OUT PROBLEM SET 2	Chapter 11	
4	October 19	ANS (also pp182-8, p191, pp225-7)	Chapter 9	
	October 21	ANS	Chapter 9	
5	October 26	Reproductive Physiology	Chapter 20	702-706
	October 28	Reproductive Physiology	Chapter 20	702-706
6	November 2	MIDTERM *PROBLEM SET 2 DUE 11/2*		
	November 4	Bone Physiology HAND OUT PROBLEM SET 3	Chapter 20	702-706
7	November 9	Muscle Physiology	Chapter 12	356-369
	November 11	Muscle Physiology	Chapter 12	356-369
8	November 16	Digestive Physiology	Chapter 18	613-636
	November 18	Digestive Physiology HAND OUT PROBLEM SET 4 *PROBLEM SET 3 DUE 11/18*	Chapter 18	641-647
9	November 23	Digestive Physiology	Chapter 18	
	November 25	Digestive Physiology	Chapter 18	
10	November 30	Presentations		
	December 2	Presentations *PROBLEM SET 4 DUE 12/2*		
11	December 7	Study period		
	December 9	FINAL EXAM		

Bi 145A – Tissue and Organ Physiology

Course Policies, 2015

Class: Bi 145 (3-0-6) Tissue and Organ Physiology
Prerequisites: Bi 8, 9, 12, 110. Bi 110 may be taken concurrently. Bi 114 and Bi/CNS 150 may be useful but is not required. (Target audience – Junior / Senior)

Course Overview: Bi 145A is a lecture and discussion course on anatomy and physiology. The course aim is to connect the information from core Caltech biology classes (predominantly molecular and cellular) to the basic structure and function of the human body. Although it is intended to satisfy prerequisites for both medical school and medical scientist training programs, the course is not the canonical course offered at such institutions. Rather, the course will focus on key topics and principles of physiology.

The term will begin with reviews of cell biology, cell-cell interactions and histology. Then, topics will include, in a system-based fashion, skeletal, digestive and urinary physiology.

Most issues can be handled by your TA. Their office hours are the convenient time to discuss questions related to homework wording, possible errors in a problem, or questions about the material itself. In the event that you identify a problem the day before a problem set is due, you may attempt to email one of us, but if there is an error in the problem set you will not be penalized even if it discovered late.

Your TA can address administrative concerns such as quality or timing of office hours, errors during "point totaling", specific conflicts, and issues related to the course instructor (which you don't feel like discussing with her). Although you are encouraged to route your concerns through the TA, you may also discuss concerns with Chace Tydell directly. Beyond that, the usual means of redress of concern (Dean's office, etc.) are available.

The only issue that must be directly discussed with Chace Tydell are homework extensions. Extensions will only be granted by Chace Tydell, and only with approval **prior** to the due date of the homework.

Office hours / Availability: I don't have a Caltech office conducive to comfortable office hours. Therefore, I will arrange office hours by appointment. In addition, I will always be available after class. TA office hours will be determined by the TAs. All office hours are optional attendance; there will be new material presented only at the interest of the attendees and that material will not appear on homework (unless it appears again in class at a later time). Since office hours are often used to discuss homework, please review the problems prior to coming to maximize your time. It is not the TA's responsibility to watch you read the questions, nor is it their responsibility to tell you if you are "Right" or "Wrong".

Course Objectives: The objective of the course is to cover the topics listed in the schedule. By the end of the course, students will possess a basic understanding of the physiology of the systems covered. They will be able to use standard terminology to describe the major organs, including the ***anatomy and histology*** of those organs when it is relevant to understanding the physiology. Student will be able to summarize the function of the organ in organism homeostasis, and will be able to discuss some of the molecular and cellular mechanisms that produce that function. These

goals will be evaluated through problem sets and exams, and grades will reflect successful achievement of these objectives.

Course Philosophy: I've put lots of effort into the lectures, to try to maximize their efficacy, but I encourage class participation in several ways. One of those is the presentation assignment. As a veterinarian (yes, dogs and cats) and former research scientist, my physiology perspective is medical. I generally approach the class with everyone having a blank slate, and the more you participate the more you learn. Your TA's are both MD/PhD students at Caltech and will enhance the class with their perspective as med students.

Resources

Required Text: **HUMAN PHYSIOLOGY** by Fox. 12 th or 13th edition. This book is the primary resource for the class.

Class Web Site: All the handouts, homework assignments and PowerPoint presentations will be available at appropriate times via the class web page: https://courses.caltech.edu

Due to space restrictions, it may not be feasible to have all of the PowerPoint files available on the web at once.

Supplemental Resources: There are a plethora of useful resources in anatomy and physiology but please recognize that there is no independent peer review process for web pages. Thus, the information may be out of date or incorrect. Points may be deducted if you cite Wikipedia. Wikipedia is not a real resource. I would much rather you use PubMed or Google Scholar if you feel that the internet will help you.

Student Responsibilities and Evaluation

Attendance: As the class format attempts to be more interactive and less didactic, attendance is viewed as a gauge of commitment to the class but there is no penalty for absence. If a student's class percentage is at the cut-off for a grade, class participation that has enhanced the learning environment for other students could raise that student's grade. Behavior that interferes with the learning environment may lower a student's grade.

Homework: There will be four problem sets. Due dates are listed on the course schedule. Late homework receives a grade of **zero** unless prior arrangements are made. It is the student's responsibility to contact Chace Tydell before they miss an assignment. Each set is worth 10% of the course grade. Homework assignments are to be submitted electronically to the appropriate TA by 7 PM on the due date in Word Document or PDF format. If you would like handwritten grading notes, you may also submit a paper copy of the problem set but electronic versions are **required**.

Generally, we will grade over one to one and one half weeks, and return the problem sets within two weeks. Extensions (only for good reasons) will generally be for one week. If an extension needs to be for longer than one week, it will generally be in the setting of an ongoing or active issue. In this setting, you will need to make arrangements with Chace Tydell (and potentially a Dean) in order to arrange what your homework will be. This is to allow us to return graded problem sets to active students. Unfortunately, every year several sets are delayed by active extensions. If extensions become particularly problematic, a person granted an extension may be asked to complete *alternate homework* problems of similar difficulty.

Collaboration and Resource Policy: All assignments are open book, open notes, open internet, and open collaboration unless specified in the problem itself. Each student is responsible for writing or typing his/her own answer for each problem. ***No plagiarism from collaborator/ text / notes / or internet is allowed*** – this includes "cutting and pasting" with reference; write it in your own words. Identical sounding answers between students are considered plagiarism. If a problem asks you to draw a structure; this must be done by hand (no cut-and-pasting of jpeg/gif from the internet – five points will be removed). We are not evaluating your artistic ability, but your understanding.

Exams: There will be an IN-CLASS midterm and an IN-CLASS final exam. These exams will combine short answer and essay questions. They will be closed-book and will require knowledge of some anatomy as well as physiology.

Grading: Requests for re-grading any exam or problem set **must be made within 5 days** of receiving the grade for that work. **NO EXCEPTIONS WILL BE MADE.** In my experience, the total points attained by students demonstrate a bimodal distribution. Thus, at midterms, a "points to letter grade" mapping is produced, generally producing A (+/0/-) for the upper mode and B (0/-/C+) for the lower mode. In the past, this has produced 60-80% A, 15-35% B, and 5% C/Pass. In the event that this mapping is too severe, the number of points required for a grade may be decreased. In addition, final grades may be elevated by classroom participation that improves the learning environment for your peers.