Comparative Vertebrate Anatomy: BIOE 134/L
Summer 2016
Lecture (71181): Wednesday, Thursday 9:00AM-12:30PM EMS B214
Lab (71182): Wednesday, Thursday 1:00-4:00PM Thimann Lab 217

Instructors: Dr. Rita S. Mehta, Dr. Vikram B. Baliga
Office: Thimann Lab 217 (Wednesday & Thursdays)
Office Hours: During lab hours (1:00-4:00pm) in 217 Thimann
We are also available by appointment at the Long Marine Lab.
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TAs: Benjamin Higgins (bahiggin@ucsc.edu)
Office Hours: Ben will be available during the labs. He may also be available by appointment.

Book: Your Inner Fish, by Neil Shubin- provided in PDF via eCommons
Lecture Material: Much of lecture material comes from select chapters from Comparative Anatomy, Function, Evolution. K. Kardong 7th Edition and original research from the PI's lab or the primary literature.

Course Objectives and Goals:

1. Understand basic concepts of evolutionary biology and classification of vertebrates.
2. Become familiar with form and diversity of the following systems: Skull, axial skeletal, and muscular system
3. Be proficient in anatomical dissection
4. Understand basic principles of functional morphology; in particular, how form contributes to different feeding and locomotor behaviors.

Grading:	**Points**
Lecture:	
2 Exams (100 pts each)	200
4 Quizzes (10 pts each)	40
Total possible points	**240**
Laboratory:	
2 lab practicals (100pts each)	200
2Mock Practicals (6 stations,12 questions)	(24)
Dissection/Participation	30
Total possible points	**230**

Letter Grades (based on %):

97-100 = A+	80-83 = B-
94-96 = A	77-79 = C+
90-93 = A-	74-76 = C
87-89 = B+	70-73 = C-
84-86 = B	60-69 = D

< 60 = F (no course credit)

Attendance/Participation: Required for all lectures and laboratories. Students must be punctual to class. Attendance and participation are components in your evaluation. Only rarely are course exams allowed to be made up, and then only with a written medical excuse from your physician.

It is imperative that you come prepared to lecture and laboratory. The laboratory reading assignments should be read **BEFORE** coming to lab with the exception of the first lab. All of these materials will be on eCommons.

Examinations: Students will not be allowed to leave the room during any examination. No make-up exams will be given with the exception of a legitimate medical excuse (must be doctor's written medical excuse).

Honor Code: There will be zero tolerance on infractions to the honor code. Please refer to http://deanofstudents.ucsc.edu/pdf/student-handbook.pdf (Pay special attention to the following sections: 102.011 Cheating, 102.012 Plagiarism, 102.013 **Furnishing false information in the context of an academic assignment, 102.014 Creating an improper academic disadvantage to another student or an improper academic advantage to oneself, 102.015 Interference with courses of instruction, and 102.016 Theft or damage of intellectual property).**

At the end of the course, students with continually improving grades **may** be given **some** additional consideration. An incomplete grade (I) is given only in accordance with university criteria (see http://registrar.ucsc.edu/navigator/section4/performance/incomplete%20.html; if criteria are met, a written contract must be signed both by instructor and student, it is not intended as an escape clause for poor performance).

How to learn anatomy:

Comparative Vertebrate Anatomy is not a course that can be easily learned in a few hours a week. The dissections take time and there is nothing that takes the place of spending the necessary time in the lab as allotted every Wednesday and Thursday. Additional open lab hours will be made available for the week before a practical.

To successfully learn the principles examined in this course, we encourage you to complete all readings and come to lectures. In addition, study groups with your fellow students will allow you to further explore the material by teaching each other. The most important thing is that learning biology does not involve osmosis. Instead you must actively review the material from the textbook, lecture, and laboratory. We are also available if you have any questions, concerns, or comments. We encourage you to review your notes and textbook if you have a question. If you are still unsure, feel free to contact us. Please refer to the syllabus for our availability.

Use of Animals

In this class we will be **dissecting** a number of different animals including a **lamprey**, **fish**, and **frog**. We expect that all animals will be dissected properly and respect be given to the animals. We use real animals for dissection because it provides greater learning than models or computer programs. To learn anatomy effectively, you must get your hands dirty (figuratively, we have gloves to keep your hands clean). If you have concerns with the dissections, please come to see me so we can discuss your concerns. Dissection is required and learning this subject matter will be much easier if you perform your own dissections whenever possible and work in teams.

Accessibility:

Students with disabilities are encouraged to speak to the professors about accommodations they may need to produce an accessible learning environment.

Syllabus for Comparative Vertebrate Anatomy Lecture and Lab

Week	Date	Lecture (9AM – 12PM)	Lab (1PM – 4PM)	Readings
1	Weds 7/27	Syllabus, Introduce Your Inner Fish *Lecture*: Survey of Vertebrate Diversity *Activity*: Building Phylogenies	Lamprey Dissection	Geological Time Periods; Chapters 1-2 of Inner Fish
	Thurs 7/28	*Discussion:* Chapters 1 & 2, Inner Fish *Lecture*: Survey of Vertebrate Diversity *Activity*: Build a fish skull Quiz 1: Building Phylogenies & Survey of Vertebrate Diversity	Fish Morphology & Musculature	Chapters 3-5 of Inner Fish
2	Weds 8/3	*Lecture*: Skull Diversity and Feeding *Activity*: Parts of the Mammalian Skull Quiz 2 (Material from Week 1 Lecture)	Frog Cephalic Musculature and Open Lab **Mock Practical**	Chapters 3-5 of Inner Fish
	Thurs 8/4	Quiz 3 (Chs 3-5 of Your Inner Fish) *Lecture*: Skull Diversity and Feeding *Discussion:* Chapters 3-5 of Your Inner Fish *Lecture*: Bone & Scaling	**First Lab Practical**	
3	Weds 8/10	**Midterm I** (Lectures + Your Inner Fish Chs 1-5) *Activity*: Tooth Diversity	Skull Diversity	Chapters 6-8 of Inner Fish
	Thurs 8/11	*Lecture*: Axial Skeleton *Discussion:* Chs 6-8 Your Inner Fish *Activity*: Vertebral Identification	Axial Diversity	Chapters 9-11 of Inner Fish
4	Weds 8/17	*Lecture:* Water to Land Transition *Discussion:* Chs 9-11 Your Inner Fish Quiz 4 (Chs 9-11 of Your Inner Fish)	Frog Limbs **Mock Practical**	
	8/18	Visit to CAS (no lecture)- This trip will take most of the day. We will leave SF at 2:30 pm. Bring money for lunch or pack a lunch.	Visit to CAS (no lab)	
5	Weds 8/24	**Lecture Final Exam- Begin at 10 am**	Open Lab	
	8/25	Office hours (Beginning at 9:30 am)	**Final Practical**	