

EEB 110 – Vertebrate Morphology

Fall 2008

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Office Phone: 310-825-4669
Office Hours: MW 10:00 - 11:00 am or by Appt., held in LS 5304

Lecture: MWF 11:00 - 11:50 am; Botany 325

TAs:	Name:	Stacey Sakai	Rie Takata
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	Office Hours:	Tu, Th 11:00 - 12:00 pm	W, F 9:30 - 10:30 am

Labs: 1A: Tu 1:00-5:50 pm; Young 2337
1B: W 1:00-5:50 pm; Young 2337
1C: Th 1:00-5:50 pm; Young 2337
1D: F 1:00-5:50 pm; Young 2337

Course Description:

This course examines vertebrate evolution from a morphological viewpoint, focusing on comparative vertebrate anatomy. Comparative anatomical features are examined in a phylogenetic, functional, biomechanical, developmental, and paleontological perspective. The Laboratory involves the study of selected vertebrates, and concentrates on comparative dissection. This is a **6 UNIT** course which contains three hours of lecture and five hours of laboratory time per week. Prerequisites: Life Sciences 1, 2, 3, 4.

Course Objectives:

1. Be able to recognize and identify all classes of vertebrates by their anatomical features.
2. Be able to explain the evolution and transformation of different organ systems in vertebrates.
3. Be able to explain the functional significance of these changes.
4. Be able to identify all organs and organ systems in a fish (shark), an amphibian (salamander), and a mammal (cat).
5. Be able to apply evolutionary concepts in understanding the anatomical features of vertebrates.

Textbooks:

Liem, K.F, W.E. Bemis, W.F. Walker, Jr., and L. Grande. 2001. *Functional Anatomy of the Vertebrates: An Evolutionary Perspective*. Harcourt College Publishers, Orlando, FL. 766 pp. ISBN 0-03-022369-5.

Fishbeck, D.W. and A. Sebastini. 2008. *Comparative Anatomy: Manual of Vertebrate Dissection, 2nd edition*. Morton Publishing Company, Englewood, CO. 454 pp. ISBN 0-89582-748-4

The preceding texts are required for this course. Readings for each week are listed in the course calendar. I highly recommend you read the chapters in your textbook. Familiarity with general topics will make things run much more smoothly.

Website: <http://www.lsic.ucla.edu/>

Your login name is your UCLA Login (used in MyUCLA and URSA); the default password is your Student ID #.

Course Construction:

This class consists of three 50 minute lectures and one 5 hour lab section per week. This is an intensive class and I plan use all of the time allotted. Prior to each lecture I will post my slides on the course website, but these are only an outline of what will be covered. You must pay attention and take your own notes to do well in this course. You are welcome (and encouraged) to tape any of my lectures. When studying, focus on what I covered in class. My lecture is telling you what material is the most important to learn.

Attendance: Absence is NOT the way to succeed in this class. The material is comprehensive, and you are expected to be present at all lectures and laboratories. You must play an active roll in learning; questioning the material and learning as you go.

Lab: Young 2337. Attendance at scheduled labs is mandatory. Lab space is limited, so there will be no make up if you miss your lab. Dissections are an important part of the lab for this course; there are no alternatives to dissections. The lab involves dissection of a sharks, salamanders, and cats. You will need your lab manual for the first week of lab. Read the appropriate sections of the manual before the lab session. You will also need a dissecting kit, including a scalpel, blunt probe, small scissors, large scissors and blunt forceps. In addition, you need to purchase disposable gloves (latex or nitrile) for use in the wet dissections. One to two boxes should be enough to last you through the quarter. These items are available at the bookstore or in Westwood Village at **Scrubs Unlimited, 10930 Weyburn Ave. Los Angeles, CA 90024; TEL: (310) 208 - 7669**. Lab coats are optional; however, lab can be rather messy, so either a lab coat or durable clothes that can be washed in hot water often are recommended. The use of eye protection (goggles) is not required, but recommended, as the fumes and liquids encountered in lab may be irritating to eyes. More laboratory information will be given to you in lab section.

Grading: The following is the point distribution for the class:

Lecture:	Midterm 1	150pts
	Midterm 2	200pts
	Final Exam	250pts (50 pts cumulative)
Lab:	Practical 1	150pts
	<u>Practical 2</u>	<u>200pts</u>
	TOTAL	1000pts

Grading Scale: The following scale will be used as a guideline to determine the final course grades based on the points earned (grading is not based on the “curve”).

- 90-100% = A
- 80-89% = B
- 70-79% = C
- 60-69% = D
- < 60% = F

Lecture Exams: These will be mostly short answer/essay, but may include multiple choice, true/false, matching, fill-in-the-blank, and problem solving. Exams will cover material from lectures and readings, strongly emphasizing the material covered in lecture. Note, the Final Exam will be about 20% cumulative, including major concepts from earlier in the course. Students who require special arrangements for taking exams must prepare for this with the Office of Students with Disabilities in advance, and let me know at least one week prior to the exam to assure that appropriate arrangements can be made. Exams are held during class time on 10/17 and 11/12, and on 12/09 during the scheduled final exam time. **There will be NO MAKEUP lecture exams unless the student can provide written verification of illness or family emergency.**

Practical Exams: Lab exams are scheduled for November 3rd and December 8th. These are given outside of class time on Monday evenings, so plan accordingly. Your TA will explain what a practical exam is and how it is run in lab. **There will be NO EARLY or MAKEUP lab practical exams under any circumstances** due to extensive setup and breakdown time required.

Cheating and Plagiarism: Cheating will not be tolerated in any form (e.g. copying from a classmate, plagiarism, changing answers on graded exams). Any case of cheating will be immediately turned over to the Dean of Students for disciplinary action.

Guidelines and Advice:

- 1. Please ask me for help at any time.** I am here to help you learn and I want you to do well.
- 2. Take thorough lecture notes; these are your keys to success.** Note taking will help you concentrate in class and remember what you hear.
- 3. Make sure to read the assigned readings, they will complement my lectures and help you to learn.** If possible, you should do the readings before you come to lecture. That way you can focus on understanding the lecture content and not on unfamiliar topics or vocabulary.
- 4. Start studying sooner than later.** To do well on the exams, you cannot start studying the night before. The best way to learn is by studying a little each day.
- 5. Try to spend 3 hours studying out of class for every hour spent in class.** Your grade in this and any other course will reflect your study efforts.
- 6. Work together, form a study group.** Your grade is not curved and does not depend on anyone else. Working together will help you with difficult concepts or problems.
- 7. Be an active learner.** Don't just memorize information; integrate it into your existing knowledge base.

Lecture Schedule:

Week	Date	Topic	Chapter*
0	Sept. 26	Introduction; Course Overview and Concepts	Ch. 1
1	Sept. 29	Origin and History of Vertebrates, History of Vertebrates	Ch. 2, 3
1	Oct. 1	Diversity of Vertebrates	Ch. 3
1	Oct. 3	Development and Embryology 1	Ch. 3, 4
2	Oct. 6	Embryology 2	Ch. 4
2	Oct. 8	Integument	Ch. 6
2	Oct. 10	Bone and Biomechanics of Support Tissues	Ch. 5
3	Oct. 13	Head Skeleton 1	Ch. 7
3	Oct. 15	Head Skeleton 2	Ch. 7
3	Oct. 17	Exam 1	
4	Oct. 20	Axial Skeleton	Ch. 8
4	Oct. 22	Appendicular Skeleton	Ch. 9
4	Oct. 24	Muscles 1	Ch. 10
5	Oct. 27	Muscles 2	Ch. 10
5	Oct. 29	Functional anatomy 1: Running & Jumping	Ch. 11
5	Oct. 31	Functional anatomy 2: Digging & Climbing	Ch. 11
6	Nov. 3	Functional anatomy 3: Flying	Ch. 11
6	Nov. 5	Functional anatomy 4: Swimming	Ch. 11
6	Nov. 7	Digestion and Feeding 1	Ch. 16, 17
7	Nov. 10	Feeding 2	Ch. 16, 17
7	Nov. 12	Exam 2	
7	Nov. 14	Respiration	Ch. 18
8	Nov. 17	Circulation 1	Ch. 19
8	Nov. 19	Circulation 2	Ch. 19
8	Nov. 21	Excretory and Reproductive Systems 1	Ch. 20, 21
9	Nov. 24	Excretory and Reproductive Systems 2	Ch. 20, 21
9	Nov. 26	Nervous System 1	Ch. 13
9	Nov. 28	Thanksgiving Holiday	
10	Dec. 1	Nervous System 2	Ch. 14
10	Dec. 3	Sense Organs 1	Ch. 12
10	Dec. 5	Sense Organs 2	Ch. 12
Finals	Dec. 9th	Final Exam 8:00 - 11:00 am	

*Indicates chapter in Liem et al., 7th edition.

Laboratory Schedule:

Week	Topic	Chapter*
1	Protochordates; primitive vertebrates; concepts	Ch. 1 - 3, 14
2	Integument & Skeleton	Ch. 4, 5, 16, 25, 34
3	External Anatomy; Muscles I (shark and salamander)	Ch. 6, 15, 16, 17, 24, 26, 33
4	Muscles II (cat)	Ch. 6, 35
5	Body cavities; Digestive and respiratory systems	Ch. 7, 8, 18, 19, 27, 28, 36, 37
Nov. 3rd	Practical Exam 1 (Labs 1 - 5): 6:00 - 9:00 PM	
6	Locomotor and feeding adaptations	Handout/Lecture notes
7	Circulation I (shark and salamander)	Ch. 11, 21, 30
8	Circulation II (cat)	Ch. 11, 39
9	Urinary, reproductive systems	Ch. 9, 10, 20, 29, 38
10	Nervous systems and sense organs	Ch. 12, 22, 31, 40
Dec. 8th	Practical Exam 2 (Labs 6 - 10): 6:00 - 9:00 PM	

*Indicates chapter in Fishbeck and Sebastini, 2nd edition.