

# OBEE 110: VERTEBRATE MORPHOLOGY WINTER 2008

**Instructor:** Dr. Peter J. Adam

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**Office Hours:** Mon. 1:00 – 1:50 PM and Tues. 1:00 – 1:50 PM (or by appointment)

**Lecture:** MWF 11:00 – 11:50 AM in Botany 325

**Lab:** TWF 1:00 – 5:50 PM in Young Hall 2337 (South Extension)

**TAs: Deborah Bird:** dbirdseed@gmail.com; (310) 825 – 4669

Office Hours: Mondays 2:00 – 4:00 in Young 2337

**Josh Olson:** jdolson@ucla.edu; (310) 825 – 4669

Office Hours: Tuesdays and Wednesdays 12:00 – 1:00 in Young 2337.

**Course Web Page Link:** <http://www.lsic.ucla.edu/classes/winter08/>

**Course Description:** This course examines vertebrate evolution from a morphological viewpoint, focusing on comparative vertebrate anatomy. Comparative anatomical features are examined in phylogenetic, functional, biomechanical, developmental, and palaeontological perspectives. Laboratory involves detailed study of selected vertebrates, and concentrates on comparative dissection and identification of anatomical features. This is a *6 UNIT* course that contains three hours of lecture and five hours of laboratory time per week. Prerequisites: Life Sciences 1, 2, 3, and 4. Note: If you are in your first trimester of pregnancy, we encourage you to take this course at another time. Formalin – used to preserve animals – may cause damage to the developing fetus.

### **General Course Objectives:**

1. Be able to recognize and identify all classes of vertebrates from anatomical features.
2. Be able to explain evolution and transformation of different vertebrate organ systems.
3. Be able to explain functional significance of these changes.
4. Be able to identify all organs and organ systems in various representative vertebrates.
5. Be able to apply evolutionary concepts in understanding vertebrate anatomical features.

### **Required Texts:**

Liem, K.F, W.E. Bemis, W.F. Walker, Jr., and L. Grande. 2001. *Functional Anatomy of the Vertebrates: An Evolutionary Perspective* (3<sup>rd</sup> edition). Harcourt College Publishers, Orlando, FL. 766 pp. ISBN 0-03-022369-5.

Homberger, D.G and W.F. Walker. 2004. *Vertebrate Dissection* (9<sup>th</sup> edition **ONLY!**). Thomson Learning, Belmont, CA. 468 pp. ISBN 0-03-022522-1.

**Other Required Materials:** You will need a *dissecting kit*, including *scalpel*, *blunt probe*, *small scissors*, *large scissors*, *blunt forceps*, and *rat-tooth forceps*. This kit can be purchased at a discount in Westwood Village at *Scrubs Unlimited* (10930 Weyburn Ave. Los Angeles, CA 90024; (310) 208 – 7669) or at the Medical School Bookstore (more expensive). In addition, you need to purchase one box of latex or vinyl disposable *gloves* (available at most pharmacies; latex is better) for wet dissections. *Lab coats* are optional; however, lab can be messy, so a lab coat or durable clothes that can be washed in hot water often are recommended. Use of eye protection (*goggles*) is not required, but recommended; fumes and liquids encountered in lab may be irritating to eyes. More information will be given in lab.

**Attendance Policy:** Absence is *NOT* the way to succeed in this class. Material covered is comprehensive, and you are expected to be present at all lectures and labs. You must play an active roll in learning; questioning the material and learning as you proceed. Note that only selected powerpoint slides will be posted on the course web page.

**Grading:** Grades will be assigned based on the tentative straight curve shown below. The scale may be shifted down to accommodate clear breaks in the distribution of overall class grades, but the scale will *NOT* be shifted up (therefore, you always know your current minimum grade); however, the minimum passing grade (51%) will not be shifted under any circumstance. Your final grade may also reflect improvement during the course. Grades are determined from a combination of lecture and lab practical exams, and a graded lab dissection. A passing grade must be achieved for *BOTH* lab and lecture components of this course – failure in either component will result in an overall grade of F.

**Grading Scheme:**

A - to A + = 86 - 100%  
B - to B + = 76 - 85%  
C - to C + = 61 - 75%  
D to D + = 51 - 60%  
F = 0 - 50%

**Grade Distribution:**

**Lecture component (55% overall value):**

Lecture Exam I (Jan. 28): 15%  
Lecture Exam II (Feb. 25): 20%  
Lecture Exam III (Mar. 20): 20%

**Lab component (45% overall value):**

Lab Practical Exam I (Feb. 11): 20%  
Lab Practical Exam II (Mar. 10): 20%  
Graded Dissection (Week 10 in lab): 5%

**Lecture Exams:** Lecture exams will be mostly (ca. 2/3 of exams) short answer, essay, and problem solving questions, but will also include multiple choice and true/false (ca. 1/3) questions. Two exams will be held on evenings (dates indicated below). The final exam, held during the assigned final exam period, will be similar to other exams and will be *CUMULATIVE*. Exams will cover material from both lectures (ca. 2/3) and assigned readings from both the text book and selected articles that will be made available (ca. 1/3). Please note that topics not covered in lecture but contained in assigned readings will be tested. Students who require special arrangements for taking exams must prepare for this with the Office of Students with Disabilities well in advance, and let the instructor know at least two weeks prior to the exam to assure that appropriate arrangements can be made. There will be *NO MAKEUP EXAMS* unless written verification of illness or family emergency is provided.

**Lab Practical Exams:** Lab practical exam format will be explained by your TA. *NO* makeup lab practical exams will be given due to the extensive setup and breakdown required.

**Field Trips:** There is a *MANDATORY* 3-4 hour field trip to the Page Museum (i.e., La Brea “Tar” Pits). Each student must attend *ONE* of the following: 1) Saturday, Mar. 1, 10:00 AM – 3:00 PM, or 2) Sunday, Mar. 2, 10:00 AM – 3:00 PM. Students will have to travel to the museum by public transport (details will be provided) or provide their own transportation. Students will also have to pay for their cost of admission to the museum (ca. \$4.50) and parking (\$6.00), if applicable.

**Policy on cheating:** Cheating will absolutely 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. Additional information on UCLA’s policies on cheating can be found in the 2005-2007 UCLA General Catalogue (pp. 593-595).

## TENTATIVE LECTURE AND EXAM SCHEDULE

DATE			TOPIC	READING
<b>JAN</b>	M	7	Introduction; course overview and concepts	Ch. 1
	W	9	Vertebrate origins and history	Ch. 2, 3
	F	11	Body organization/vertebrate embryology I	Ch. 4
	M	14	Vertebrate embryology II	Ch. 4
	W	16	Vertebrate diversity (guest lecturer: Josh Olson)	Ch. 3
	F	18	Histology/integumentary system	Ch. 6
	<i>M</i>	<i>21</i>	<i>HOLIDAY – NO CLASS</i>	
	W	23	Skeletal system/head skeleton I	Ch. 7
	F	25	Head skeleton II	Ch. 5, 7
	M	28	Axial Skeleton	Ch. 5, 7, 8
	<b>MON</b>	<b>28</b>	<b>LECTURE MIDTERM EXAM I, 6:00 – 8:00 PM</b>	
	W	30	Appendicular skeleton	Ch. 9
<b>FEB</b>	F	1	Muscles I	Ch. 10
	M	4	Muscles II	Ch. 10
	W	6	Functional anatomy I	Ch. 11 + PDF
	F	8	Functional anatomy II	Ch. 11 + PDF
	M	11	Functional anatomy III	Ch. 11 + PDF
	<b>MON</b>	<b>11</b>	<b>LAB PRACTICAL EXAM I, 6:00 – 9:00 PM</b>	
	W	13	Functional anatomy IV	Ch. 11 + PDF
	F	15	Digestion and Feeding I	Ch. 16, 17
	<i>M</i>	<i>18</i>	<i>HOLIDAY – NO CLASS</i>	
	W	20	Digestion and Feeding II	Ch. 16, 17
	F	22	Respiration I	Ch. 18
	M	25	Respiration II	Ch. 18
	<b>MON</b>	<b>25</b>	<b>LECTURE MIDTERM EXAM II, 6:00 – 8:00 PM</b>	
	W	27	Circulation I	Ch. 19
	F	29	Circulation II	Ch. 19
<b>MAR</b>	<b>S or Su</b>	<b>1 or 2</b>	<b>MANDATORY FIELD TRIP – PAGE MUSEUM</b>	
	M	3	Circulation III	Ch. 19
	W	5	Excretory and reproductive systems I	Ch. 20, 21
	F	7	Excretory and reproductive systems II	Ch. 20, 21
	M	10	Nervous system I	Ch. 12, 13
	<b>MON</b>	<b>10</b>	<b>LAB PRACTICAL EXAM II, 6:00 – 9:00 PM</b>	
	W	12	Nervous system II	Ch. 12, 13
	F	14	TBA	TBA
	<b>THU</b>	<b>20</b>	<b>FINAL LECTURE EXAM, 3:00 – 6:00 PM</b>	

**TENTATIVE LAB SCHEDULE (see lab handouts for additional details):**

<b>WEEK</b>	<b>TOPIC and READINGS IN HOMBERGER &amp; WALKER</b>
1	Skeleton I (Chapters 1-6)
2	Skeleton II (Chapters 1-6)
3	Muscles I (Chapters 3, 7)
4	Muscles II (Chapters 3, 7)
5	Digestive & respiratory systems (Chapter 10)
6	Functional Morphology (Handout)
7	Circulatory system I (Chapter 11)
8	Circulatory system II/Excretory & reproductive systems (Chapters 11, 12)
9	Nervous system (Chapters 8, 9)
10	Graded Dissection (Chapters 8, 9; Handout)