

# BIO 308: Comparative Anatomy

## Spring 2013

### Course Syllabus

**Instructor:** Dr. David Dilkes

**Office:** HS-158

**Research Lab:** HS-244

**Phone:** 920-424-3074

**Email:** dilkes@uwosh.edu

**Office Hours:** 1:00-2:00pm on Tuesday or by appointment.

### Course Web Site

[http://www.uwosh.edu/faculty\\_staff/dilkes/classes/BIO308\\_508/index.html](http://www.uwosh.edu/faculty_staff/dilkes/classes/BIO308_508/index.html)

### Introduction to Course

During the lectures and labs, we will explore the evolutionary history of selected organ systems of vertebrates. As we examine each organ system, we will draw upon information from the anatomy of living species, the steps during the development of organ systems and the fossil record. All of this information will be combined and placed within the context of the best-supported hypothesis of phylogeny. The basics of the currently accepted method, known as cladistics, for producing these phylogenetic hypotheses will be reviewed.

### Lecture Hours

Monday and Wednesday	HS-237	3:00-4:30
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### Lab Hours

Tuesday and Thursday	HS-261	3:00-5:00
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The instructor for labs will be Dr. Dilkes.

### Course Objectives

1. To be able to discuss the characteristic features of all vertebrates and know the broad pattern of the evolutionary relationships of vertebrates.
2. To know the relative contributions of modern anatomy, embryonic development and the fossil record to our understanding of the evolutionary history of the major organ systems of vertebrates.
3. To acquire skill and confidence for dissection, and be able to identify the major organs and their details in a vertebrate.

### How to get an A

1. Have lined paper or the printout of the Powerpoint lecture slides with you for the lecture. Make notes using whatever symbols or shorthand methods work best for you.
2. Find a quiet place later that same day and rewrite these notes. Write out fully any abbreviations in your notes and explain any symbols. If you remember any

additional information from the lecture, then include it. Fix or redraw any illustrations made during the lecture.

3. These clarified and expanded notes become your study notes for each lecture exam. Questions on the lecture exams will be based on information in the lectures so it is important to make your notes complete and accurate. If you're uncertain about some point in the lecture, ask another student or contact me.

4. Review your notes frequently, not simply the night before the exam! Don't forget to practice spelling of the many anatomical terms.

### Textbooks and Materials for the Course

#### Required Textbook

Liem, K.F., W.E. Bemis, W.F. Walker, Jr., and L. Grande. 2001. *Functional Anatomy of the Vertebrates. An Evolutionary Perspective*. 3rd edition.

Brooks/Cole, a division of Thomson Learning, Inc.

#### Required Lab Manuals

1. De Iuliis, Gerardo and Dino Pulerà. 2011. *The Dissection of Vertebrates. A Laboratory Manual*. 2<sup>nd</sup> Edition. Elsevier Inc.

2. Course Packet for BIO308/508.

#### Lab Equipment

Most of each lab period will be spent dissecting representative vertebrates. You will need to bring to each lab period your copy of the lab manual, a dissecting kit and a lab coat (or an old shirt). Your text will be useful, although not required. Rubber gloves will be supplied. The dissecting kit should contain a scalpel with replacement blades, a pair of small and large scissors, forceps and blunt and sharp probes. **No food or drinks are allowed in the lab.**

### Lecture Schedule for Spring 2013

<u>Lecture #</u>	<u>Date</u>	<u>Lecture Topic</u>	<u>Readings for Further Detail</u>
1	Monday January 28	Introduction to the Course	
2	Wednesday January 30	Chordata and the Origin of Vertebrates	Chapter 2
3	Monday February 4	Synopsis of Vertebrate History: Agnathans, Chondrichthyes, and Placodermi	Chapter 3 (pgs. 48-63)
4	Wednesday February 6	Synopsis of Vertebrate History: Osteichthyes and Amphibia	Chapter 3 (pgs. 63-84)
5	Monday February 11	Synopsis of Vertebrate History: Reptilia (including Aves) and Mammalia	Chapter 3 (pgs. 84-113)
6	Wednesday February 13	Embryology: Cleavage, Gastrulation, and Neurulation	Chapter 4 (pgs. 131-142, 146-147)
7	Monday February 18	Inside Nature's Giants: The Great White Shark Review for Lecture Exam 1	
	<b>Wednesday February 20</b>	<b>LECTURE EXAM #1</b> <b>Lectures 2-7 including The Great</b>	

		<b>White Shark episode</b>	
8	Monday February 25	Integument: Scales, Hair, and Feathers	Chapter 6
9	Wednesday February 27	Skull: Basics of Chondrocranium, Dermatocranium, and Splanchnocranium & Handout on Mineralized Tissues	Chapter 7 (pgs. 233-267)
10	Monday March 4	Axial Skeleton	Chapter 8
11	Wednesday March 6	Appendicular Skeleton	Chapter 9
12	Monday March 11	Muscular System I: Muscle Actions, Muscle Homology, Axial and Appendicular Muscles	Chapter 10 (pgs 318-319, 321-322, 327-330, 337-345)
13	Wednesday March 13	Inside Nature's Giants: The Leatherback Turtle Review for Lecture Exam 2	
	<b>Monday March 18 and Wednesday March 19</b>	<b>NO LECTURES: SPRING BREAK</b>	
14	Monday March 25	Muscular System II: Branchiomic Meric Muscles <b>Submit Essay Draft to Instructor and Essay Partner</b>	Chapter 10 (pgs. 331-337)
	<b>Wednesday March 27</b>	<b>LECTURE EXAM #2 Lectures 8-13 including The Leatherback Turtle episode</b>	
15	Monday April 1	Digestive System <b>Submit Comments on Essay Partner's Essay to Instructor and Essay Partner</b>	Chapter 4 (pgs. 159-164), Chapter 16 (pgs 534, 551-553) and Chapter 17
16	Wednesday April 3	Respiratory System – Principles of Diffusion of Gases, Cutaneous Respiration, Gills, and Lungs	Chapter 18 (pgs. 575-600)
17	Monday April 8	Circulatory System – Pathways of Blood Flow, the Heart, & Venous System	Chapter 19 (pgs. 608-611, 612-622)
18	Wednesday April 10	Nervous System – Central	Chapter 14 (pgs. 474, 477-490)
19	Monday April 15	Inside Nature's Giants: The Giraffe Review for Lecture Exam 3	
	<b>Wednesday April 17</b>	<b>LECTURE EXAM #3 Lectures 14-19 including The Giraffe episode</b>	
20	Monday April 22	Nervous System – Peripheral <b>Essay Final Due</b>	Chapter 13 (pgs. 438-443, 450-466)
21	Wednesday April 24	Sensory Organs – Eyes	Chapter 12 (pgs. 424-433)
22	Monday April 29	Sensory Organs – Ears	Chapter 12 (pgs. 411-422)

23	Wednesday May 1	Urinary and Reproductive Systems	Chapter 20 (pgs. 633-641)
24	Thursday May 2 *This special viewing time will occur during the normal two hour lab period between 3-5pm. Please note the <u>new</u> room location.	Inside Nature's Giants: The Elephant and The Racehorse <u>or</u> The Sperm Whale	Video (HS ???)
	<b>Monday May 6</b>	<b>LECTURE EXAM #4</b> <b>Lectures 20-24 including The Inside Nature's Giant episode(s) from Lecture 24</b>	

### Lab Schedule for Spring 2013

<u>Lab #</u>	<u>Date</u>	<u>Lab Topic</u>	<u>Readings</u>
1	Tuesday January 29	Introduction to Lab, Body Regions, Directional Terms, Planes of Section	The Dissection of Vertebrates – pgs. xvii-xix
2	Thursday January 31	Exercise in Cladistics	Cladistic Analysis – part of lab manual. Functional Anatomy of the Vertebrates Reading – pgs. 10-18 <b>READ BEFORE LAB!</b>
3	Tuesday February 5	Histology <b>Lab Quiz 1:</b> body regions, directional terms, planes of section, and cladistics	BIO308/508 lab manual. Read the sections in Chapter 6 of Functional Anatomy of the Vertebrates on the Integument.
4	Thursday February 7	Skeletal System: Skulls and Vertebrae	Skeleton in Chapters 2, 3, 5, 6, 7, 8, and 9 of The Dissection of Vertebrates
5	Tuesday February 12	Dentition, Skeletal System: Postcranium <b>Lab Quiz 2:</b> histology and skulls	Skeleton in Chapters 2, 3, 5, 6, 7, and 9 of The Dissection of Vertebrates
6	Thursday February 14	Form and Function of Vertebrates on Land and Water	
7	Tuesday February 19	External Morphology, Skinning <b>Lab Quiz 3:</b> dentition, postcranium, and form and function of vertebrates	External Anatomy in Chapters 2, 3, 5, 6, and 7 of The Dissection of Vertebrates
8	Thursday February 21	Skinning (continued), Superficial Muscles	Musculature in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
9	Tuesday February	Superficial Muscles (continued)	Musculature in Chapters 2,

	26	Deep Muscles <b>Lab Quiz 4:</b> external morphology and superficial muscles	3, 5, and 7 of The Dissection of Vertebrates
10	Thursday February 28	Deep Muscles (continued)	Musculature in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
11	Tuesday March 5	Digestive System	Digestive system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
12	Thursday March 7	Respiratory System <b>Lab Quiz 5:</b> deep muscles and digestive system	Respiratory system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
13	Tuesday March 12	Review for Lab Exam 1	
	<b>Thursday March 14</b>	<b>LAB EXAM #1</b> Histology, Skeletal System, External Morphology, Muscles, Digestive System, and Respiratory System	
	<b>March 19 &amp; 21</b>	<b>NO LAB:</b> <b>SPRING BREAK</b>	
14	Tuesday March 26	Circulatory System: Heart and Arterial System Review for Lab Exam 1	Circulatory system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
15	Thursday March 28	Circulatory System (continued) <b>Lab Quiz 6:</b> respiratory system, heart, and arterial system	Circulatory system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
16	Tuesday April 2	Circulatory System: Venous System	Circulatory system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
17	Thursday April 4	Urinary and Reproductive Systems	Urinary and Reproductive Systems in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
18	Tuesday April 9	Urinary and Reproductive Systems (continued)	Urinary and Reproductive Systems in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
19	Thursday April 11	Nervous System <b>Lab Quiz 7:</b> venous system, urinary system, and reproductive system	Nervous system in Chapters 2, 3, 5, and 7 of The Dissection of Vertebrates
20	Tuesday April 16	Nervous System (continued) Sensory System	Nervous and Sensory systems in Chapters 2, 3, 5,

			and 7 of The Dissection of Vertebrates
21	Thursday April 18	<b>Lab Quiz 8:</b> nervous and sensory systems Review for Lab Exam 2	
	<b>Tuesday April 23</b>	<b>LAB EXAM #2</b> Circulatory System, Urinary and Reproductive Systems, Nervous System, and Sensory System	

### Grading Scale

Percentage	Grade	Grade Points
100-92	A	4.0
91-89	A-	3.67
88-86	B+	3.33
85-82	B	3.00
81-79	B-	2.67
78-76	C+	2.33
75-72	C	2.00
71-69	C-	1.67
68-66	D+	1.33
65-63	D	1.00
62-60	D-	0.67
<60	F	0.00

### Marking Scheme for 308

#### Lecture

Lecture Exam #1	13%
Lecture Exam #2	13%
Lecture Exam #3	13%
Lecture Exam #4	13%
Essay Comments	2%
Essay Draft	4%
Essay Final	8%

#### Lab

Lab Exam #1	10%
Lab Exam #2	10%
Quizzes (7 X 2% each)	14%
<b>Total</b>	<b>100%</b>

### Lecture Exams (52% of your total course grade)

Lecture Exams 1-4 will consist of a short answer questions and essay questions. Each lecture exam is scheduled during a regular lecture period and will take no more time than allotted normally for a lecture.

### Quizzes (14% of your total course grade)

Eight quizzes will be held during the scheduled lab periods. Each quiz will consist of short answer questions and labeling of drawings, and take up no more than 10-15 minutes of a lab. The quizzes will be based upon lab topics. **The lowest quiz mark will be dropped.**

### **Lab Exams (20% of your total course grade)**

Lab exams 1 and 2 will follow the format of a “bell-ringer” exam where you will be asked to identify labeled structures on dissected animals, skeletons, and tissue slides. The goal of a “bell-ringer” lab exam is to test your ability to identify those structures that you learned in lab and your understanding of their form and function based upon your observations of materials in front of you. Each lab exam is scheduled during a regular lab period.

### **Important Notes Regarding Lab Exams**

1. The second lab exam will **not** be comprehensive and will include **only** material learned since the first lab exam.
2. BIO211 (Human Anatomy) will use our lab room (HS261) during the week of March 4 – 8 for a lab exam. This room will not be available during this week outside of our scheduled lab periods.

### **Essay (14% of your total course grade)**

You will be required to write a short essay on a topic in comparative anatomy. A separate set of pages has been prepared to discuss the essay. If you do not select one of the topics listed in the set of pages, then I must approve your essay topic. A late penalty of 0.5% per day (including weekends) will be deducted from the value of the draft or final essay.

### **Policy for Late Assignments and Missing Exams and Quizzes**

All exams and quizzes will be conducted during a scheduled lecture or lab time. Please note the dates as shown in each timetable and be certain to attend these times. Each lab quiz will be given during the first 15 minutes of the lab. If you are late, then you will not be allowed to write a make-up quiz.

The only valid reasons for submitting a late assignment or missing a quiz or exam (that will be acceptable for a make-up exam) are:

1. Illness. A valid doctor’s note will be required. This note must be on official stationary with the name, address and phone number of the doctor (photocopies will not be acceptable). It must state clearly that you were unable to attend the lecture/lab exam on the date of the exam and have the doctor’s signature. Once the validity of the note has been verified, you will be allowed to write a make-up exam.
2. Death in the family. Documentation such as a letter from the funeral home or hospital will be required.
3. An officially approved absence from the university. In the case of a sporting event, a signed letter from your coach is required and must be received by Dr. Dilkes at least 7 days prior to the exam.

It is the student’s responsibility to contact Dr. Dilkes within 72 hours of missing an exam. A student can make up a missed lab only with signed permission from Dr. Dilkes.

**Important Note on Make-up Exams**

Please be aware that a make-up exam will not be the same as the regularly scheduled exam and can, at the discretion of Dr. Dilkes, consist of only essay questions. It is strongly recommended that you make every effort to attend each scheduled exam. If you miss a make-up exam, then you will receive a grade of zero for that exam.

**Changing of Grades in Exams or Quizzes**

**Clerical Error** – If you discover an addition error on your exam or quiz, then return it immediately to Dr. Dilkes for correction.

**Corrections in Grading** – Regrading of an exam will only be considered if a written explanation of the problem accompanies the exam. Any lecture notes or text readings that support regrading must be included with the explanatory note. I will only discuss possible regrading in my office and not during a lecture or lab period. Please note that regrading of an exam will not necessarily result in additional marks. The exam grade may increase, decrease or stay the same.

**Academic Misconduct**

A university is a community of individuals who have come together to instruct and learn. Of the many academic and personal goals to be achieved at university, included is the ability to think independently and creatively, hone your written and oral skills for the communication of your ideas and grow as an individual with confidence in your abilities. For the university, it strives continually to improve its ability to instruct effectively and instill in each of its students the self-confidence, skills and knowledge to be successful. Academic misconduct such as cheating and plagiarism harms both the student and university by defeating these goals. A student who cheats fails to acquire the skills, knowledge and self-confidence needed for success, and the university will acquire an undesired reputation. Elimination of cheating and plagiarism is the responsibility of both the university and each student.

The University of Wisconsin Oshkosh is committed to a standard of academic integrity for all students. The system guidelines state: "Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors." (UWS 14.01, Wisconsin Administrative Code).

Students are subject to disciplinary action for academic misconduct, which is defined in UWS 14.03, Wisconsin Administrative Code. Students on the UW Oshkosh campus have been suspended from the University for academic misconduct.

Students are encouraged to review the procedures related to violations of academic honesty as outlined in Chapter UWS 14, Wisconsin Administrative Code. The system guidelines and local procedures are printed in the University of Wisconsin Oshkosh Student Discipline Code 2003-2004 and can be found on the Dean of Students website at [www.uwosh.edu/dean/conduct.htm](http://www.uwosh.edu/dean/conduct.htm).



Specific questions regarding the provisions in Chapter UMW 14 (and institutional procedures approved to implement Chapter UMS 14) should be directed to the Dean of Students Office.

Below are the details of UWS 14.03.

**UWS 14.03 Academic misconduct subject to disciplinary action.**

(1) Academic misconduct is an act in which a student:

- (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
- (b) Uses unauthorized materials or fabricated data in any academic exercise;
- (c) Forges or falsifies academic documents or records;
- (d) Intentionally impedes or damages the academic work of others;
- (e) Engages in conduct aimed at making false representation of a student's academic performance; or
- (f) Assists other students in any of these acts.

(2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

**Cheating will not be tolerated in BIO 308.** No aids of any type will be allowed during a lecture exam, a lab exam or a lab quiz. Every answer that you submit for grading must reflect your own knowledge and thoughts. Any instance of academic misconduct may result in an academic penalty such as a failing grade on the exam or quiz, a failure in the course or possible expulsion from the university.