

Spring 2011
VERTEBRATE ZOOLOGY
(BIOS/NRES 386)

Professor: Patricia W. Freeman, 428 Hardin Hall, EC or W504 Nebraska Hall, CC
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COURSE DESCRIPTION: Vertebrate Zoology (BIOS/ NRES 386) (4 cr – lec3/lab1). Prereq. 8 hrs BIOS; Vertebrate Zoology may include field trips outside of normal class time.

LOCATION:

BIOS 386 Lecture: T-Th 9:30-10:45A, 241 Walter Scott building (aka SEC) Freeman
BIOS 386L 151 Vert Zoology Lab 0230-0520P M 109 Manter TA Matt Adams
BIOS 386L 152 Vert Zoology Lab 0230-0520P T 109 Manter TA Malcolm Rosenthal
BIOS 386L 153 Vert Zoology Lab 0230-0520P W 109 Manter TAMalcolm Rosenthal
Lab instructors:
Matt Adams, RAdams13@huskers.unl.edu, office 4C Manter Hall, CC
Malcolm Rosenthal, Malcolm.Rosenthal@gmail.com, office 325 Manter Hall, CC

TEXT AND CLASS MATERIALS: Vertebrate Life (ed 8) by Pough, Janis, and Heiser. Prentice Hall. You will be responsible for the chapters assigned in class, so expect some questions on the test that come directly from the book and may not have been covered in my lecture. Read the book. I will post on blackboard the overhead images that I show in class before class period. Some of you may want to download them for lecture. I do not post the actual lecture. Lecture is complemented by the book and is not identical.

LECTURE EXAMS AND QUIZZES: 2 midterms and a cumulative final that counts double are the majority of your grade. I do give unannounced pop quizzes to make sure you are reading the book and coming to class. Accumulation of quiz points can contribute up to 3 points on your lecture exam **average**.

LAB AND FIELD TRIPS: Lab exams and attendance on field trips count the same as a single lecture exam. It represents about one fifth of your grade. Your TA will give you more details. Field trips are weather dependent. A field trip to trap mammals will occur toward end of semester. These will be done on a Monday, Tuesday and Wednesday afternoons. Each lab must pick up the traps early the next morning from 6 to 8 am.

ATTENDANCE: I do not take roll, but I do give pop quizzes depending on how well you are keeping up with the material. You must try to go on field trips. If you cannot make it your TA will give you a replacement assignment.

GRADE: Your grade is made up of 5 parts: the 2 lecture exams though the term, a final exam that is that counts double and a lab grade. Pop quizzes are wild cards and I handle them differently every year depending on how many are given. These relate to how well you are attending, reading and understanding.

Course grade = (Lecture1 + Lecture2 + Lab + Cumulative Final (x 2)) / 5

Scale:

A+	A	A-	B+	B	B-	C+	C *	C-	D+	D	D-	F
100 to 97	96.99 to 93	92.99 to 90	89.99 to 87	86.99 to 83	82.99 to 80	79.99 to 77	76.99 to 73 *	72.99 to 70	69.99 to 67	66.99 to 63	62.99 to 60	59.99 & less

*must have a C for Pass /No Pass

GOALS OF VERTEBRATE ZOOLOGY 386:

This course is about biological diversity of whole vertebrate animals, their morphology, and their evolutionary history. I use vertebrates as a springboard to discuss important fields of biology such as systematics, evolution, physiology, and functional anatomy. Third and most important, I would like to get you to begin to think as a scientist. This last goal is clearly the most difficult and many students never make the transition from simply learning facts to really thinking about biological problems. How vertebrates make the transitions from filter feeding to swimming, to walking on land, to flying, to digging and running and walking bipedally are what I want you to be thinking about and the evidence that supports these transitions.

Vertebrate zoology is valuable to those students interested in studying vertebrates as whole organisms or in understanding more about the diversity of life. The course can serve as a basic component of a student's zoological training as well as a supporting component for students interested in ecology, evolution, wildlife, environmental issues, and conservation biology. It is also a good foundation from which to build more knowledge of birds, mammals, amphibians, reptiles, and fishes

GENERAL OUTLINE OF THE COURSE.

We will follow the book fairly closely and go straight through much of it. However, I will refer you to relevant topics in different parts of the book when I am not in sequence. You should read and consider this material carefully. It may mean reading some parts twice. In some cases I may cover a topic not mentioned in the book, or the book may have material I do not cover in lecture. You are still responsible for all the information. More often you will find that Pough et al. and I are covering the same topic in slightly different ways. Use this to your advantage; if you do not understand lecture, go to the book and if you do not understand the book, look at your lecture notes. I also recommend forming study groups. Students in past classes have said that it helps quite a bit. This is an information-rich course with many terms and scientific names. Please pay attention to emboldened words in the book, to figures and figure legends.

Get started immediately by reading the first three chapters. Chapter 2 should be a review. If it is not, you will need to take more time with it. You will greatly increase your chances of following and enjoying lecture if you have read the book beforehand. Do not fall behind in the readings. I have tried to give titles of lectures/topics on the class/lab schedule that follows.

SCHEDULE

WEEK 2010	VERTEBRATE ZOOLOGY LECTURE	CHAPTER	VERT. ZOO. LAB
10 January	How to build a vertebrate; adaptive zones; motility Vertebrate relationships, phylogeny, classification Design for living in water; basic body plan and body systems	1, 2	Adaptations of vertebrates. Trip to Elephant Hall.
17 January	Early vertebrates and jawless fishes Jaws: the Gnathostomes; Class Chondrichthyes; jaws in action Diversity in design and locomotion in the wet world	3, 4	Non-vertebrates: Urochordates, Cephalochordates. (Monday lab must try to attend Tues or Wed lab or arrange with TA)
18 January	<i>Last day to drop/add</i>		
24 January	Class Osteichthyes: the dominant fishes; Age of Fishes Respiration and gas guts <i>Chapter 2 quiz</i>	5, 6	Fish anatomy and diversity
31 January	Regulation of water, ions, and body fluids Zoogeographic history of the world and continental fragments - Paleozoic	7	Teleostei diversity
7 February	Design for land life; early tetrapods, the non-amniotes Surface area to volume ratio and the effects of gravity	8	Sarcopterygians: lobe-finned fishes
14 February	Amphibians; characteristics that make them derived Jumping frogs, slithering salamanders, burrowing worms <i>Lecture Exam around this time</i>	9, 10	Fish test
21 February	Amniotes: Derived characteristics and systems; respiration, locomotion, the pump and circulation, excretion, reproduction	8, 11, 14	Amphibians and reptiles anatomy and diversity
28 February 4 March	Ectothermy and low-cost living; modern reptiles and phylogeny; legless locomotion and digging, ballistic tongues <i>Last day to change to or from "Pass/No pass"</i>	12, 13, 15	Amphibians and reptiles anatomy and diversity
7 March	The Mesozoic; The Jumbo Creatures; Reptile radiations: Sauropsids, Synapsids, and ancestral problems with birds;	16	Amphibians and reptiles
14 March	Endothermy and diversity Reptilian adaptations to life in the air: Pterodactyls Modern birds		Amphibian and reptile test
21 March	SPRING BREAK	17, 22	
28 March <i>registration for Fall 2011</i>	Flight in Birds; wing designs; diversity; digestion without teeth Origins of mammals; derivations from reptiles Procuring prey with bony ears and jaws of death	18, 19	Dinosaurs and bird anatomy/diversity. Major groups of birds
4 April 8 April	Running and digging locomotion <i>Lecture Exam around this time</i> <i>Last day to withdraw</i>	20	Identify birds by sight and sound
11 April	Ecology of the Cenozoic and The Great American Interchange Brain and sensory mechanisms, social behavior in vertebrates	21, 23	Major mammal groups Trapping mammals (special schedule)*
18 April	The Human machine Design for two feet	24	Birds and Mammals
25 April Dead week	Versatile hands, opposable thumbs Big brains and weak knees		Bird and mammal test
3 May	Tuesday, 10:00-12:00 Final	1-24	Cumulative

* Field trips are weather dependent and schedules can change at the last minute.