

BIO 4430 - VERTEBRATE NATURAL HISTORY SPRING 2017

Instructor: Dr. Monte L. Thies

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Lecture: 8:00-9:20 TTh (LDB115)

Lab: 2:00-3:50 Tu and as arranged

Office hours: 11:00 - 12:00 TTh and by appointment

Course description: This course deals with the taxonomy, general anatomy, natural history and ecology of vertebrates. Laboratories emphasize the taxonomy and identification of Texas vertebrates, as well as basic comparative anatomy within the groups.

Course objectives: Students completing this course should have the ability to recognize most common vertebrates (fishes, amphibians, reptiles, birds, and mammals) found in Texas and have a general understanding of their anatomy, life history, and distribution. The student should also become familiar with the science of taxonomy (including fundamental concepts and limitations), general field identification methods, and appropriate handling and husbandry techniques where appropriate.

REQUIRED TEXTS AND FIELD SUPPLIES

Lecture text: Linzey, D. W. 2011. Vertebrate Biology. 2nd ed. Prentice-Hall.

Laboratory texts: A series of field guides will be required as references for completion of the laboratory and to support the lecture. The following are suggested but there are alternatives that you may prefer – just make sure that the books you choose are complete and will suit your needs for the course.

Fish: Page, L. W., and B. M. Burr. The Peterson field guide series No. 42: Freshwater fishes. Houghton Mifflin Co., Boston.

Herps: Conant, R., and J. T. Collins. The Peterson field guide series No. 12: Reptiles and amphibians: Eastern/Central North America. Houghton Mifflin Co., Boston.

Birds: Robbins, C. S., B. Bruun, and H. S. Zim. A guide to field identification: Birds of North America. Golden Press, NY.

Mammals:

(*Required*) Thies, M. L. 2016. A Key to The Skulls of North American Mammals, 4th ed. Kendall Hunt, Dubuque, IA

Reid, F. A. 2006 or comparable edition. Mammals of North America. The Peterson Field Guide Series, Houghton Mifflin Co., Boston.

Anatomical dissection guides and demonstration materials will be provided as needed, but each student will need to purchase a basic dissection kit containing at the very least a scalpel, forceps, sharp scissors, and blunt probe.

GRADE DETERMINATION FOR VERTEBRATE NATURAL HISTORY

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|--|-------------------|
| Two mid-semester lecture exams (100 points each) | 200 pts |
| Final exam | 150 pts |
| Lab practical – Fish Identification | 25 pts |
| Lab practical – Fish Anatomy | 50 pts |
| Lab practical – Herp Identification | 25 pts |
| Lab practical – Herp Anatomy | 50 pts |
| Lab practical – Bird Identification | 75 pts |
| Lab practical – Bird Anatomy | 50 pts |
| Lab practical – Mammal Identification | 75 pts |
| Lab practical – Mammal Anatomy | 75 pts |
| Herpetology Collection (Optional – this is your extra credit) | 20 pts maximum |
| Total Possible Points for Course | 795 pts |

| Final Grade Determination | |
|----------------------------------|----------------------|
| A | 675+ pts |
| B | 600 - 674 pts |
| C | 525 - 599 pts |
| D | 450 - 524 pts |
| F | < 450 pts |

This point distribution will not change.

Class Attendance Policy: Regular and punctual class attendance is expected of each student. To do well, you must be an equal and active participant in your education. Therefore, it is your responsibility to attend class. Most testing material will be based on class lecture, laboratory exercises and notes: to do well on tests **you must attend lecture and read the book!** Excessive absences (>6 lectures and 2 labs) may negatively influence your final grade for the course. This may amount to one letter grade for students on the borderline. If you are unable to come to class due to illness or unexpected circumstances, it is your responsibility to obtain the class notes. You may contact me in my office if you have specific questions about a lecture; however, I will not repeat lectures for students who have missed class.

Academic Honesty: The University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity in the academic experiences both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Furthermore, the University and its official representatives may initiate disciplinary proceedings against any student accused of any form of academic dishonesty including, but not limited to, cheating on an examination or other academic work which is submitted, plagiarism, collusion and the abuse of resource materials.

Exams:

- Each lecture exam will consist of multiple choice, True/False, matching, short answer, and essay questions and will cover material from lecture.
- The laboratory practicals will test your ability to identify vertebrate species and to identify anatomical structures on dissected specimens - these will include preserved specimens, live animals, pictures, and vocalizations.

- The Final Exam will be a comprehensive exam covering general material and concepts we discussed during the course of the semester.

I consider the recommended text and field guides as reference sources for material covered in class. Please use them as such. Periodic outside readings on significant topics may be assigned and may be covered on exams.

NO make-up exams will be given without notification prior to the exam by the student and approval from the instructor.

FINAL EXAM: TUESDAY, MAY 9, 8:00-10:00

HERPETOLOGY COLLECTION - EXTRA CREDIT - All specimens must be turned in prior to the final exam.

An optional live collection of amphibians and reptiles may be made by any student wishing extra credit for the laboratory grade in Vertebrate Biology. The specimens may be turned in any time until finals week. A fishing license is generally required to collect herps.

ALL SPECIMENS COLLECTED BY STUDENTS MUST BE CARED FOR IN ACCORDANCE WITH SHSU ANIMAL CARE AND USE GUIDELINES.

The purpose of this activity is to get the student out into the field to discover and learn about the diversity of herptiles and their habitats in the East Texas region. However, we do not want to unnecessarily harm or kill animals. Therefore, the collection will consist of live specimens properly identified to the species level. The specimens will be turned in to the instructor, who will then credit the student and in turn release the animals alive. To receive credit, the date, location, habitat, and species name along with the student's name must be typed on a 3 X 5 card and affixed to the container of the specimen being turned in. Each specimen will be worth two (2) points. No points will be given for poisonous snakes or endangered or threatened species (e.g., American Alligator). Only those species listed on the Walker County Checklist will be eligible.

Amphibians must be kept moist and cool. A jar with holes in the lid and a water-saturated paper towel works well for frogs and salamanders. Reptiles need to be kept cool - a snake or lizard in a cloth bag or jar left in a closed car will die quickly.

Specimens collected in adjacent counties are eligible only if they are listed on the Walker County Checklist. Only one LIVE specimen of each species is eligible for credit. Maximum points will be 40 (20 specimens).

GENERAL LECTURE OUTLINE

Part I.

What is a Vertebrate? – Characteristics

Overview of the Phylum Chordata

Part II.

Principles of Classification - Species Concept

General Vertebrate Ecology - Habitat, Niche, Distribution, etc.

Part III.

Survey of the Vertebrate Classes - includes morphological characteristics, classification, distribution, morphological and habitat, physiological adaptations, reproductive biology, behavior, economic importance, and misc. special topics.

A. Classes Myxini and Cephalaspidomorpha

Class Chondrichthyes

Class Osteichthyes

B. Class Amphibia

C. Class Reptilia

D. Class Aves

E. Class Mammalia

Laboratory Topics

Identification, dissection of representative preservation specimens, and study of East Texas vertebrates with emphasis on Walker County forms. These topics will incorporate the identification of representative vertebrates from preserved specimens, as well as dissection of anatomical structures characteristic of each vertebrate class. General morphological and anatomical features will also be presented.

A. Classes Myxini, Cephalaspidomorpha, Chondrichthyes, and Osteichthyes

B. Classes Amphibia and Reptilia

C. Class Aves

D. Class Mammalia