

Biology 346
Vertebrate Zoology

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Earlham College, 2006

This course will involve a survey of the vertebrate groups with special emphasis on lower vertebrates (fishes, amphibians, reptiles) and mammals with lesser emphasis on birds. The evolution of vertebrates will be the central theme of the course and will be approached through the study of adaptive radiation in form and function.

TEXTS:

LECTURE: Readings passed out in class [No current textbook is adequate or timely enough for our work]
LABORATORY: To be provided

LABORATORY SCHEDULE (Lab in Stanley 124; Tuesday, 1-4): You will be quizzed over the material in a given week's lab at the beginning of the following week's lab.

Week 2 Introduction: Protochordates and Structure of Agnathans
Week 3 Structure of Fishes
Week 4 Classification of Fishes
Week 5 NO LAB (Exam week)
Week 6 Structure of Amphibia
Week 7 Structure of Reptiles
Week 8 Classification of Amphibians and Reptiles
Week 9 NO LAB (Exam week)
Week 10 Structure of Birds
Week 11 Classification of Birds
Week 12 Structure of Mammals [Note: scheduling of last four labs may chance with good weather]
Week 13 Classification of Mammals
Week 14 Last quiz; Field trip
Week 15 Field trip

FIELD TRIPS: In addition to those field trips during the lab period, impromptu evening or weekend amphibian trips will be scheduled when the weather (and the fauna) cooperates. Participation in extracurricular field trips will earn you the right to drop your lowest lab quiz score.

RESEARCH PROJECT: Each student (or pair) will prepare a research paper on a laboratory, field, or library project. Students will be expected to use the Web of Science to access pertinent literature; we will meet as a class with Sara Penhale early in the term to reinforce your searching skills. Joint papers (no more than two contributors) are possible for laboratory and field projects, but not library projects. Project subjects should be discussed with me by mid-February. A preliminary proposal outlining your proposed project and including a preliminary bibliography will be due Wednesday 22 February (week 7). Oral presentations on papers will be made during the last three weeks of class. Final papers are due Monday 17 April at 5 PM. It is presumed that grades on late papers will be lower than those submitted on time.

GRADING: Two hour exams (each cumulative) will cover the lecture and reading materials. Weekly laboratory exams (non-cumulative) will also be given. Seniors graduating in May who have an A or B average as of week 14 have the option of not taking the final.

Hour exam I	100 pts.	Lab exams (total)	200 pts.
Hour exam II	100 pts.	Research project	<u>200 pts.</u>
FINAL exam	200 pts.	TOTAL =	800 pts

COURSE POLICIES: If a deadline cannot be met or an exam cannot be taken during the scheduled time, you must inform me beforehand so that alternate arrangements can be made. Failing to comply with this requirement will result in a penalty by point reduction for that component of the course. Attendance will usually not be recorded, but will be essential if you are to gain a significant command of our knowledge of the biology of the vertebrates.

CLASS SCHEDULE

Jan 11	Introduction	Week 1
13	Geological time scale	
16	Systematics and taxonomy	Week 2
18	Invertebrate Ancestry	
20	Lower fishes	
23	Lower fishes	Week 3
25	Chondrichthyes	
27	Osteichthyes	
30	Osteichthyes	Week 4
Feb 1	Amphibians	
3	Review	
6	EXAM I (through fishes)	Week 5
8	Amphibians	
10	Reptiles	
13	Reptiles	Week 6
15	Reptiles	
17	No class (Midsemester break)	
20	Birds	Week 7
22	Birds (Project proposal due 5PM)	
24	Mammals	
27	Mammals	Week 8
Mar 1	Mammals	
3	Primate evolution	
6	Review	Week 9
8	EXAM II (through Mammals)	
10	Human evolution	
13	Human evolution	Week 10
15	Evolution of organ systems	
17	Evolution of organ systems	
	SPRING BREAK 18-26 March	
27	Zoogeography	Week 11
29	Distribution	
31	No class - Senior oral comps	
Apr 3	No class - John in Nebraska	Week 12
5	Distribution	
7	Reproduction	
10	Student papers	Week 13
12	Student papers	
14	Student papers	
17	Student papers (papers due 5 PM)	Week 14
19	Student papers	
21	No class - Butler Undergraduate Research Conference	
24	Student papers	Week 15
26	Student papers	
28	Review (last class)	

May 2 FINAL EXAM (over all material)