

Biology 365, Fall 2014

Vertebrate Biology

Course Description: (3-2) Cr. 4. *Prereq.: Biol 212, 212L.* Evolution, ecology, and classification of fish, amphibians, reptiles, birds, and mammals. Emphasis on a comparative analysis of the structure and function of organ systems and their integration across systems. Laboratory exercises concentrate on morphology and identification of orders of vertebrates.

Reading Materials: Pough et al. 2013. 9th edition. *Vertebrate Life*, Benjamin-Cummings Publishing Company. Scientific journal articles.

Course Objective:

- Understand the evolutionary relationships among the major groups of vertebrates and the processes leading to speciation and extinction of vertebrates
- Become familiar with the structure and function of the muscular, integumentary, circulatory, respiratory, endocrine, immune, and nervous systems of the various vertebrate groups
- Recognize the principal behavioral processes and adaptations that influence the lives of vertebrates, including mechanisms of locomotion, geographic use of space, migration, and navigational methods
- Understand the importance of sexual reproduction and sexual behavior in the ecology of vertebrates
- Learn how physiological constraints and adaptations influence the functioning of vertebrates in various environments
- Understand the processes involved in population ecology and the major challenges that vertebrate populations face in our fast changing environment
- Become familiar with the way scientific findings are transmitted through scientific journal articles
- Learn how discussion and collaboration with peers are essential components of scientific work
- Become familiar with the process of asking meaningful questions about scientific topics

BlackBoard:

Most course information for this class can be found on Blackboard. There you will be able to view this syllabus, lecture notes, description of assignments, special materials supplied by the instructor, and your grades.

Grading: Grading for Biol/ AECl 365 will be based upon work in both the lecture and the laboratory. The lecture will count for 75% of the final grade (maximum of 450 points), and the laboratory will count for 25% of the final grade (**scaled** to a maximum of 150 points). See lab syllabus for details of lab grading. Grading for the lecture will be based upon three exams, one comprehensive final and additional class activities.

Exams: Three lecture exams are scheduled during regular lecture periods, and the comprehensive final will be given during the final exam period. Exams will consist of a combination of short answer, multiple choice, and discussion questions. **NOTE: the instructor has a strict policy of no make-up exams. Any concerns with the grading of questions must be brought to the instructor within 1 week following each exam.**

Journal Articles: Three journal articles will be discussed in small groups during regular lecture periods. Students should read the articles in advance and come to class ready to discuss them with peers and answer questions prepared by the instructor. There will be no make-ups for class activities as part of the purpose is to monitor class participation and presence.

Research Seminar write-up: Students are also required to attend at least one research seminar on some topic relevant to vertebrate biology. To receive credit, students must email Dr. Adams prior to attending the seminar, and **submit on Blackboard a 1-page summary of the seminar and the student's thoughts on the seminar within 1 week of attending the seminar (see brief guidelines for summary on WebCT).**

Seminars in the EEOB Department (Thursdays 3:45 pm, 210 Bessey) or the NREM Department (Fridays 3:00 pm, 164 E Lago) can be used for this assignment (contact Dr. Adams for an alternative assignment if you have a schedule conflict).

Grades will be assigned based on the number of points earned out of a possible 600 points, 450 from the lecture and 150 from the lab. A “curve” will be used to determine grades, but breaks between major grade groups (A, B, etc.) will probably be close to 90%, 80%, etc. The plus/minus grading system will be used.

There will be no extra credit. Any questions regarding the grading of lecture exams should be addressed to Dr. Adams within 1 week of the time that the exams are returned to students.

Points for Lecture Activities

Activity	Points	Percent (%) of Lecture Grade
Exam 1	100	22.5%
Exam 2	100	22.5%
Exam 3	100	22.5%
Final Exam	100	22.5%
Journal Articles (3)	35 total (for 3)	7%
Seminar Write-Up	15	3%

Supplemental Instruction: Supplemental Instruction (SI) is offered for this course. SI sessions are group study opportunities scheduled three times per week. For information about the days, times, and locations for SI sessions, refer to the SI website: www.si.iastate.edu or contact the SI leader after the class period.

Academic Dishonesty: The class will follow [Iowa State University's policy on academic dishonesty](#). Anyone suspected of academic dishonesty will be reported to the Dean of Students Office.

Disability Accommodation: Iowa State University complies with the Americans with Disabilities Act and Sect 504 of the Rehabilitation Act. If you have a disability and anticipate needing accommodations in this course, please contact the instructor to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need. Before meeting with the instructor, you will need to obtain a SAAR form with recommendations for accommodations from the [Disability Resources Office](#), located in Room 1076 on the main floor of the Student Services Building. Their telephone number is 515-294-7220 or email disabilityresources@iastate.edu. Retroactive requests for accommodations will not be honored.

Dead Week: This class follows the Iowa State University Dead Week policy as noted in [section 10.6.4 of the Faculty Handbook](#). No course assignments shall be due on the Dead Week and most course assignments except the final project will be due before the Dead Week. The final project is due by noon on the day of the final exam.

Harassment and Discrimination: Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact his/her instructor, [Student Assistance](#) at 515-294-1020 or email dso-sas@iastate.edu, or the [Office of Equal Opportunity and Compliance](#) at 515-294-7612.

Contact Information: If you are experiencing, or have experienced, a problem with any of the above issues, email academicissues@iastate.edu.

Lecture Schedule

Wk	Date	Lecture	Reading Assignment (pages in Pough et al, 2013)
1	25 Aug	What is science? Vertebrate & chordate characteristics	Chapters 1; 2
	27 Aug	Systematics & vertebrate evolution	Chapters 1
	29 Aug	Origin of vertebrates, primitive fish	Chapter 3
2	1 Sept	Labor Day Holiday	
	3 Sept	Origin of tetrapods	Chapter 9; 10.1
	5 Sept	Origin of reptiles	12.1; 13.1-13.3; 16.1-16.5
3	8 Sept	Origin of birds	16.7; 17.1
	10 Sept	Origin of mammals	Chapter 18
	12 Sept	Skeletal system	109-112; 129-131; 8.1; 11.1; 291-294; 414-415; 491-493
4	15 Sept	Muscular system	(with skeletal system above)
	17 Sept	Flying Vertebrates (speciation/extinction)	Journal Article
	19 Sept	Circulatory system	37-39; 8.5; 238-240; 11.3; 294-296; 498
5	22 Sept	Respiratory system I	35-37; 4.1; 8.4; 10.4; 11.1-11.2; 296-298; 498
	24 Sept	Respiratory system II	
	26 Sept	Exam I	
6	29 Sept	Integument	10.5; 17.2; 493-496; 23.5
	1 Oct	Endocrine system	10.3
	3 Oct	Digestive System I	13.4 (part 1); 17.5
7	6 Oct	Digestive System II	
	8 Oct	Water Physiology & Urinary System	4.3-4.4; 8.7; 10.4; 11.5; 498
	10 Oct	Nervous System	282-284
8	13 Oct	Sensing the Environment I	4.2; 8.6; 11.6; 17.6; 499-500
	15 Oct	Sensing the Environment II	
	17 Oct	Reproduction	113-115; 6.5; 8.3; 10.2; 335-338; 17.8-17.10; 21.1-21.3
9	20 Oct	Aquatic locomotion	6.4
	22 Oct	Aerial locomotion	17.3
	24 Oct	Terrestrial locomotion	17.5; 319-321; 21.5
10	27 Oct	Behavior I	215-217; 299; 23.6
	29 Oct	Behavior II	
	31 Oct	Exam II	
11	3 Nov	Spatial Patterns	23.3; 568-569
	5 Nov	Migration & Dispersal	303-306; 17.11-17.12; 22.5
	7 Nov	Navigation	Journal Article
12	10 Nov	Coloration	10.5; 432
	12 Nov	Communication	229-231; 331-335; 432-433
	14 Nov	Life History Strategies & Sexual Ecology	
13	17 Nov	Metabolic Allometry	4.6
	19 Nov	Thermal Physiology	Journal Article

	21 Nov	Thermal Physiology and Adaptations	4.5; 8.8; 11.4; 298-299; Ch. 14; Ch. 22
14	24-28 Nov	Thanksgiving Holiday	
15	1 Dec	Behavioral Adaptation to Environments	13.5
	3 Dec	Feeding Ecology	109-113; 128-131; 8.2; 214-215; 321-331; 17.5; 21.4
	5 Dec	Exam III	
16	8 Dec	Population Dynamics	
	10 Dec	Extinction and Conservation	6.7; 7.5; 10.7; 12.7; 15.4; 19.4; Ch. 25
	12 Dec	no class - study time!!	
17	16 Dec	Comprehensive Final (7:30-9:30 a.m.)	