

EVOLUTION OF VERTEBRATE LIFE

BIOL 276 2009 Spring
2:00-3:15 pm T Th
Wilson 107

Dr KW Sockman
Wilson G43
3:15-4:15 pm T Th

TEXT

Pough FH, Janis CM, Heiser JB. 2009. Vertebrate Life, 7th or 8th ed. Upper Saddle River, San Francisco: Pearson.

WEBSITE

You can access the course website through Blackboard.com:
https://blackboard.unc.edu/webapps/portal/frameset.jsp?tab=courses&url=/bin/common/course.pl?course_id=_293904_1

COURSE DESCRIPTION

This course presents an evolutionary history of the vertebrates, with emphasis on the anatomical, physiological, and behavioral adaptations accompanying major transitions, such as the move from water to land and the development of complex integrating systems coinciding with the evolution of increased activity. The course is divided into four segments. In the first, we review fundamental concepts in anatomy and evolution; the evolution of life forms that eventually gave rise to the vertebrates; the diversity and phylogenetic history of the vertebrates themselves; basic vertebrate structure; and the evolution of a significant innovation, the vertebrate jaw. In the second segment, we will examine the evolution of the non-amniotic vertebrates, the "fishes" and amphibians; living in an aquatic environment; and the transition to living on land. The third segment focuses on the Sauropsida, which includes turtles, Lepidosaurs, and birds. This segment includes a brief examination of another remarkable evolutionary innovation and model system for the study of brain and language evolution, the avian song system. We culminate with the fourth segment, in which we examine the evolution of the Synapsida, which includes mammals, and the eventual evolution of humans. This segment closes with a brief look at how our own evolution has affected vertebrate diversity.

GRADING

I will give four mid-term exams, three during the regular semester and a fourth as part of the final exam. I will exclude the mid-term on which you receive the lowest grade and then count each of

the remaining three as 25% of the semester grade. The remaining 25% of your grade will come from the other part of the final and will cover material from the entire semester. There are no make-up exams. If you miss an exam, you will receive a 0% on it.

I will design exams and assign grades based on the definitions of permanent grades provided in the UNC Undergraduate Bulletin (<http://www.unc.edu/ugradbulletin/>). If you feel your exam was not evaluated fairly or a mistake was made, you must submit a typed, hard copy (not by e-mail) letter requesting that I re-grade the entire exam. If there are any aspects to this grading policy that you do not understand, contact me.

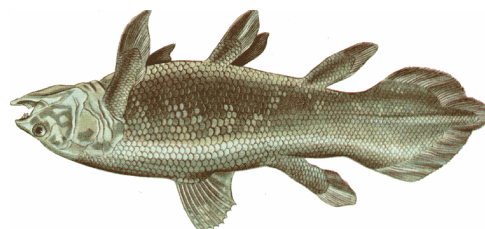
CONDUCT AND RESPONSIBILITY

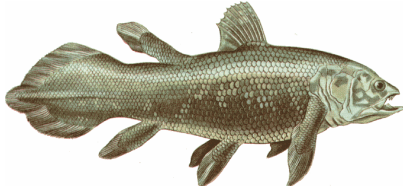
Before asking a question about general aspects of this course, look here in the syllabus for the answer. I will not answer e-mailed questions that are clearly answered in this syllabus. During lecture, I encourage questions or comments directed at me on subject matter relevant to the course. You are free to vocalize *reasoned* exception to the viewpoints. That is, comments or questions must be based in fact, not faith. Moreover, this freedom does not absolve you of your responsibility to learn the content of the course.

You and I are required to abide by the UNC honor code (<http://honor.unc.edu/>) in all it subsumes, including issues of cheating and classroom disruption. To that end, mobile telephones and any other electronic or noise-making device must be silent during lecture and off and stowed out of sight during exams. Because it is disruptive, you should not arrive late to or leave early from class. Other than a pencil and the exam itself, all material (including but not limited to notes, books, or electronic devices) must be stowed out of sight during exams. During an exam, if you appear to use or handle anything other than a pencil and the exam itself, if you appear to communicate with anyone other than me or an exam proctor, if you appear to look at another's test or other potential sources of information, or if you appear to receive assistance from or give assistance to anyone or anything, you may be in violation of the UNC honor code, and I will be obliged to report the incident. You may not wear a hat or dark glasses during the exam unless I first grant you permission to do so.

Lectures and reading are designed to complement one another and are both essential elements of the course. Should you miss a lecture, you should immediately obtain, copy, and study notes from a trusted and studious classmate. Additionally, I will deliver lectures under the assumption that you have done the reading before class and thus already know the material to some extent. One of the goals of my lectures will be to emphasize information from the reading, as well as information not in the reading, that I expect you to know and on which you may be tested. I will not state explicitly what will be on any exam. Instead, it is your job to divine possible exam material from lecture emphases.

I will communicate with you by e-mail. Therefore, you should check your e-mail daily. You should also check daily the course website for class material and information. The material I provide on the website is not a surrogate for reading or for lecture attendance.



**EVOLUTION OF VERTEBRATE LIFE**

BIOL 276 2009 SPRING DR KW SOCKMAN

LECTURE	DATE	READING*	LECTURE TOPIC
1	13-Jan		Introduction to course and to the evolution of vertebrate life
2	15-Jan	1	Diversity and classification of vertebrates, general principles of evolutionary relationships
3	20-Jan	2	General vertebrate structure and relationships to other animals
4	22-Jan	3	Early vertebrates and the origin of jaws
5	27-Jan	4	Sensory and physiological aspects of living in the aquatic environment
6	29-Jan	5	The Chondrichthyes: sharks, skates, rays, and relatives
7	3-Feb	6	The major radiation of fishes: bony, ray-finned, and lobe-finned fishes
	5-Feb		Midterm 1
8	10-Feb	7,8	Conditions of the Paleozoic and the evolution of terrestrial life
9	12-Feb	9	Evolution of tetrapods: from origin to amniotes
10	17-Feb	10	Amphibian diversity
11	19-Feb	11	Synapsids, Sauropsids, and their different approaches to terrestrial life
12	24-Feb	12	Turtle evolution
13	26-Feb	13	The Lepidosaur: tuatara, lizards, and snakes
	3-Mar		Midterm 2
14	5-Mar	14, 15	Ectothermy; Conditions of the Mesozoic
	10-Mar		Spring Break, no lecture
	12-Mar		Spring Break, no lecture
15	17-Mar	16	The Diapsids: dinosaurs, crocodylians, and birds
16	19-Mar	17	Avian diversity: structure, flight, feeding, and sensory systems
17	24-Mar	TBA	Bird song, bird brains, and the evolution of vocal learning and language in humans
18	26-Mar	18,19	Origin of Synapsida and mammals; Conditions of the Cenozoic
19	31-Mar	20	Diversity of mammals
	2-Apr		Midterm 3
20	7-Apr	21	Mammalian reproduction, feeding, locomotion, and evolution of an aquatic lifestyle
21	9-Apr	22	Endothermy
22	14-Apr	23	Sociality and ecology of mammals
23	16-Apr	24	Evolution of primates
24	21-Apr	25	On humans, extinction, and conservation
25	23-Apr		Catch-up and/or review
	30-Apr		Midterm 4 and Final at 4:00 p.m.

* Chapter(s) to be read before the lecture. From: Pough FH, Janis CM, Heiser JB. 2009. Vertebrate Life, 7th or 8th ed. Upper Saddle River, San Francisco: Pearson.