

# Syllabus

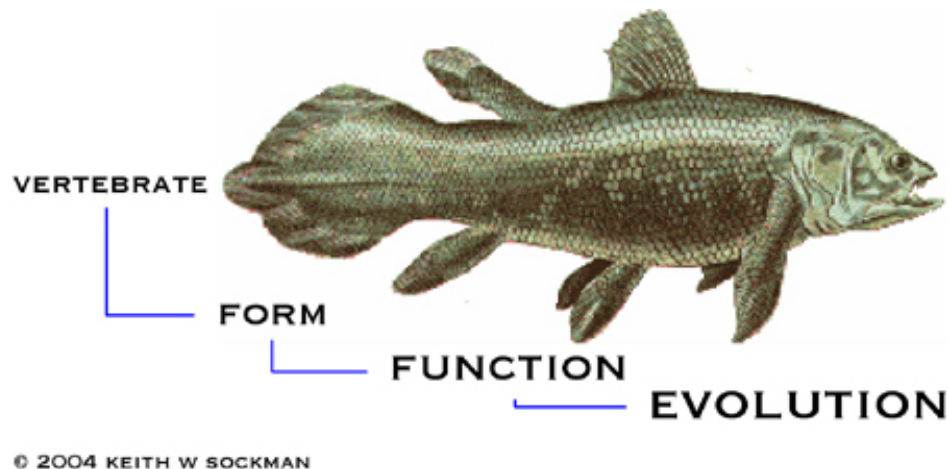
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## Biol 474: Evolution of Vertebrate Life

This syllabus will cover the following topics:

- Overview of the Course
- About the Instructor
- Course Structure, Material, Textbook, Assignments, and Tests
- Grading and Make-ups

### Overview of Biol 474



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 size and activity. Initially, 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.

Then we examine the evolution of the non-amniotic vertebrates, the "fishes" and amphibians; living in an aquatic environment; and the transition to living on land. We follow this with a focus on the Sauropsida, which includes turtles, Lepidosauers, and birds. We culminate with an examination of 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.

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## About the Instructor, Dr. Keith W. Sockman

### Teaching and Research

I have been teaching Evolution of Vertebrate Life at UNC Chapel Hill (BIOL 474, formerly BIOL 276) for approximately 16 years. I also teach Avian Biology (BIOL 476) and an occasional seminar course in ecology and behavior.

My research focuses on the ultimate and proximate factors controlling flexibility in reproductive decisions. Of particular interest is the study of life-history trade-offs, reproductive effort, and how songbirds adaptively regulate egg size, clutch size, and general aspects of family planning. I am also interested in courtship effort and mate-choice and how individuals integrate the ecological and social information that adaptively guides these decisions. Recently, I have begun to explore the relationship between long-distance migration and photoperiodism, as the multiple photoperiodic schedules to which long-distance migrants are exposed cannot be reconciled with current understandings of photoperiodic thresholds. For a more complete description of my research questions, approaches, and methodologies, visit [my lab website](#).



### Contact

For personal (i.e., private between you and me) issues please contact me by e-mail, and, in the event that I decide your issue is too complex for a quick reply, include in your message a detailed schedule of your availability for a live conversation. For non-personal issues, please post your question or comment on this site's Forum. I or your classmates will try to address Forum posts.

Email: [kws@unc.edu](mailto:kws@unc.edu)

## Course Structure, Material, Textbook, Assignments, and Tests

### Structure and Material

The course is divided into 21 lessons. To some extent, you can complete lessons at your own pace, however, each lesson does have an associated assignment that is due by a particular time. Additionally, there are three tests each taken on a particular day. The due date of each lesson's assignment corresponds approximately to an individual school day during regular summer sessions and to what would normally be the meeting days if the class were face-to-face (i.e., Tuesdays and Thursdays) for regular semester sessions. For the much more concentrated Maymester sessions, each school day corresponds to 2-3 lessons. [Thus, for Maymester, it is very important to note that there are multiple lessons per Maymester day, and because each lesson requires

submission of an assignment (see below), each Maymester day requires submission of assignments from multiple lessons.] In order to stay on top of completing assignments and tests on time, I recommend you use the Schedule tool, where you will see the schedule explicitly indicated. Because I define days as midnight-to-midnight, you might get confused by the Calendar tool, since it will show a deadline of midnight on some day, which some may interpret as the next day. For example, the deadline for the lesson-1 assignment is midnight Wednesday, August 12th, which is at the midnight BETWEEN Tuesday and Wednesday. So essentially, you should have the assignments for that lesson done by the end of that Tuesday.

Each lesson may include material (e.g, reading, video, exercises, etc.) for you to read, watch, or do. If the material contains information on which you may be tested, then I refer to it as required. Test questions will be drawn from only required material. If the material may help enhance your learning or provide additional information but does not uniquely contain information on which you will be tested, then I refer to it as optional. Each lesson also includes one assignment, described below.

## Required Text

The required text is Vertebrate Life, 10th Edition by F. Harvey Pough and Christine M. Janis. I will refer to this book as "the text." Due to significant changes in this latest edition, previous editions are not suitable for this course. It is imperative that you have the text before class begins, as you will complete your first assignment, due on the first day, using the text. You can purchase the text [here](#).

## Assignments

Assignments are items that are graded and therefore affect your course grade but which are not tests. There is one assignment per lesson, which must be submitted no later than the close of the lesson's day (before midnight). Please see the Schedule tool to see the day on which each lesson's assignment is due. Assignments, if available, may be submitted earlier than the due date. Thus, beginning on the first day of this course, you should expect regular submission of assignments (approximately two per week for regular semester sessions, every school day for regular summer sessions, and from multiple lessons per day for Maymester) that affect your course grade. The assignment each lesson is to answer the question(s) based on the required material. Each lesson's assigned question(s) have a due date corresponding to the end of the day (before midnight) of the day's lesson, with the first coming on the first day of the course. The question(s) are "open book." You must submit your answers on Sakai by the deadline and your answers must be entirely correct in order to receive full credit for completing the assignment. If answers are not entirely correct or submitted on time, you receive no credit for the assignment. There is no partial credit on these assignments. These same or similar questions may appear on tests. However, full-credit test answers may sometimes differ from your answers, depending on other assigned material for the lesson, which may sometimes provide nuance, alternative answers, or additional complexities.

## Tests

There will be three tests, each on which you will be graded. Test 1 covers material from lessons 1-7. Test 2 covers material from lessons 8-14. Test 3 (the final) covers material mostly (~3/4) from lessons 15-21 but will also have some material (~1/4) from any lesson. The tests will be short answer and will test a range of levels of understanding, from factual recall to the ability to apply your knowledge to novel scenarios requiring synthesis of material. Test material will be drawn from any of the required material. You will have 45 minutes to complete each of tests 1 and 2 and 60 minutes to complete test 3. Tests are "open book," but **answers** must be in your own words. You will need to complete tests rapidly in order to answer all the questions fully.

**must be in your own words.** You will need to complete tests rapidly in order to answer all the questions fully. Thus, although tests are "open book," do not go into a test assuming you will have time to look up answers. You should know the relevant material thoroughly ahead of time and write your answers rapidly and efficiently.

## Grading and Make-ups

Assessment	% Course Grade
Discussion Questions	20
Exam 1	25
Exam 2	25
Exam 3 (cumulative)	30

### Grading policy

I will assign grades based on the definitions of permanent grades provided in the [UNC Chapel Hill Undergraduate Catalog](#) and based on what you earn, not on what you want or need. This does not mean that I'm unwilling to work with individual students who are facing extenuating circumstances that interfere with their ability to participate fully in class. Any such situations need to be brought to my attention at their inception. *Any delay to do so will limit my ability to assist you.*

If at any point you feel you were not evaluated fairly, you must submit a written description of your concern to me within 48 hours of receiving the notice of the grade. You must explain why you believe you deserve a different grade than the one you initially received. Concerns expressed after the 48-hour deadline will not be considered.

### Making up exams and assignments

I will offer make-ups for assignments and tests that are missed due to University-authorized travel, family emergency, or urgent, acute illnesses (e.g., emergency room visit) that can be verified with official documentation. If such an incident arises, the student must contact me by email as soon as possible. Make-up tests may be essay format. For the final test, a make-up will be given only if an official "Examination Excuse" is granted by the Dean's office (see Undergraduate Bulletin).



<b>Due Date</b>	<b>Action</b>	<b>Title</b>
Tuesday, August 11, 2020	Lesson 1	Origin of Vertebrates and Introduction to Some Basic Evolutionary Principles
Thursday, August 13, 2020	Lesson 2	What Is and Is Not a Vertebrate
Thursday, August 20, 2020	Lesson 3	Geography and Ecology of the Paleozoic; Living in Water
Tuesday, August 25, 2020	Lesson 4	The Jawless Vertebrates and Origin of Jawed Vertebrates
Tuesday, September 1, 2020	Lesson 5	Chondrichthyes
Thursday, September 3, 2020	Lesson 6	Radiation and Diversification of Osteichthyes
Tuesday, September 8, 2020	Lesson 7	Extant Osteichthyes
Thursday, September 10, 2020	Test 1	
Thursday, September 17, 2020	Lesson 8	Living on Land, Ectothermy
Tuesday, September 22, 2020	Lesson 9	Tetrapods
Thursday, September 24, 2020	Lesson 10	Amphibians
Tuesday, September 29, 2020	Lesson 11	Synapsids and Sauropsids
Thursday, October 1, 2020	Lesson 12	Lepidosaurs
Tuesday, October 6, 2020	Lesson 13	Turtles
Tuesday, October 13, 2020	Lesson 14	Conditions of Mesozoic, Crocodylians
Thursday, October 15, 2020	Test 2	
Tuesday, October 20, 2020	Lesson 15	Mesozoic Diapsids: Dinosaurs and Others
Tuesday, October 27, 2020	Lesson 16	Endothermy, Origin and Radiation of Birds
Thursday, October 29, 2020	Lesson 17	Extant Birds
Thursday, November 5, 2020	Lesson 18	Conditions of Cenozoic, Synapsids and Evolution of Mammals
Tuesday, November 10, 2020	Lesson 19	Extant Mammals
Thursday, November 12, 2020	Lesson 20	Sociality and Ecology of Mammals
Tuesday, November 17, 2020	Lesson 21	Primates and Humans
Friday, November 20, 2020	Test 3	