

Syllabus

Evolution by natural selection is the underlying theme that unites all fields of biology. This course provides an introduction to evolutionary biology. It covers the essentials of evolutionary theory, and illustrates concepts with numerous examples from empirical research. The questions we will address include:

- Where do organisms come from, and why are there so many different kinds?
- Why do organisms appear to have been designed to meet the challenges imposed by their environments and lifestyles?
- Why are females and males often strikingly different?
- What killed the dinosaurs?
- Are humans really descended from apes?
- Why do we age and die?
- Should we take control of our own evolutionary future?

Objectives

Our goal is to help students learn to think like evolutionary biologists. After taking this course, students will be able to:

- Ask good questions about evolution.
- Describe observations and/or experiments that might answer those questions.
- Prepare and interpret basic graphical displays of data.
- Critically analyze newspaper and magazine articles on evolution.
- Make informed personal and political decisions about evolutionary issues.

Meeting times

Tuesday/Thursday 12:30-1:20 132 Hitchcock Hall

Instructors

Jon C. Herron

Burke Museum Zoology Division, Room 205D, (206) 547-6330,
herronjc@u.washington.edu

Office hours: Tuesday/Thursday 2:00 to 4:00, or by appointment.

Note: The Burke Museum is at the northwestern corner of campus, near the intersection of 45th and 15th. Enter through the loading dock door at the back of the building (the side facing 15th). Ask the receptionist to call me at (206) 616-3953. I'm a bit hard to find; please don't let that make you think I don't want to talk to you.

Patricia Townsend

Kincaid Hall, Room 358, (425) 352-5410, ptownsen@u.washington.edu

Kincaid is the red brick building across the pedestrian bridge from Hitchcock.

Office hours: Tuesday/Thursday 11:30 to 12:30, or by appointment.

In-Class Problems: One reason you should come to class

In the past, students in this course have said, "I understand the material when you talk about it in class, but then when I try to answer the study or exam questions I can't do it." In an effort to fix this problem, we will set aside a few minutes of most meetings for in-class problems. We will not collect or grade the problems, but we will post answers on the course website (see below). If you still have questions after attending the class discussion and looking over the key, please come talk to one of us during office hours.

Computer-based tutorials

The best way to learn any skill is to practice. Doing science in general, and evolutionary biology in particular, is a skill. Five times during the quarter we will require you to complete virtual laboratories. These will involve using a custom software application called EvoBeaker to complete a tutorial exercise.

The first tutorial can be completed and turned in on a worksheet you can download from the course website and print. The remaining four tutorials must be turned in on EvoBeaker booklets purchased from the University Bookstore. This is a contractual arrangement with the publisher of EvoBeaker. By ensuring that all students who use their software share the cost, they are able to keep the price per student reasonable.

The tutorials will be graded on a credit/no credit basis. They will count for 20% of your course grade.

Lecture Notes

We will make lecture notes available via the course website (see below). We will post the notes for each lecture at least 24 hours before the lecture itself. Reading the notes will not be a substitute for coming to class, because there will be many blank spaces. We recommend that you get the notes before class, and bring them with you.

Course Website <http://courses.washington.edu/biol115/>

The course website will feature links to the tutorials and web quizzes, lecture notes, answer keys for in-class problems and exams, lists of additional suggested readings, links to other sites of interest, and more. We recommend that you check it often.

A username and password will be required to access most of the course materials. We will announce the username and password in class.

Texts

Required: Weiner, Jonathan. 1995. *The Beak of the Finch*. Vintage Books.

A Pulitzer prize-winning book about field research on the evolution of Darwin's finches in the Galápagos Islands. An excellent introduction to evolutionary biology.

Required: Simbiotic Software. 2006. *EvoBeaker*.

This package includes a software CD and a packet of tutorial booklets. It is available only from the university bookstore.

I will also post on the course website chapters from a book I'm working on, *Life 101*.

Grading

There will be a midterm exam and a final exam. The final will be comprehensive, but will emphasize the second half of the course. The exams may include essays, short answers, and multiple choice, and will cover material from lectures, required readings, in class problems, and computer labs. The midterm will be on Thursday 2 November during class; the final will be Thursday, 14 December from 10:30 to 12:20.

Grades will be calculated as follows: Midterm 40%, Final 40%, Computer labs 20%.

Students with Disabilities

If you have a disability, please speak with one or both of the instructors about how we can accommodate you during both lectures and exams.

Tentative Schedule of Topics & Readings

Day	Date	Topic	Readings*	
			BF	L101
Th	28 Sept	Why study evolution?	3-15	Ch 1
Tu	3 Oct	Where did Earth's organisms come from? (Pt 1)	17-36	Ch 4
Th	5 Oct	Where did Earth's organisms come from? (Pt 2)	37-48	Ch 4
Tu	10 Oct	What makes species evolve?	49-82	Ch 5
Th	12 Oct	Why do pine cones have spines?		Ch 6
Tu	17 Oct	Why are males and females different?	83-98	Ch 7
Th	19 Oct	How can altruistic behavior evolve?		Ch 8
Tu	20 Oct	What makes every individual unique?	99-114	Ch 9
Th	26 Oct	Why do offspring resemble their parents?	115-125	
Tu	31 Oct	A modern view of evolution: Genes in populations	126-156	
Th	2 Nov	Midterm Exam		
Tu	7 Nov	Are some ethnic groups genetically superior?	157-176	
Th	9 Nov	How does one species split into two?	177-212	
Tu	14 Nov	How can we reconstruct evolutionary history?	213-223	
Th	16 Nov	How did life on Earth get started?	224-235	
Tu	21 Nov	What killed the dinosaurs?	236-250	
Th	23 Nov	Thanksgiving		
Tu	28 Nov	Are humans really descended from apes?		
Th	30 Nov	Is evolution relevant to human health?	251-266	
Tu	5 Dec	What is the future of human populations?	267-303	
Th	7 Dec	To be announced.		
Th	14 Dec	Final Exam 10:30 to 12:20 Hitchcock 132.		

* BF = Beak of the Finch; L101 = Live 101.

Note: The readings are intended to give you a broader and deeper view of evolutionary biology than we can provide in 20 class meetings. Some readings are directly connected with the material covered in lectures; others foreshadow material that will be covered later; still others will give you related topics to think about.