

Instructor: Dr. Lisa Belden

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Office hours: Wednesday 12-2, Thursday 1-3pm or by appointment

Email: belden@vt.edu [please type "Evolution" in the subject so I know the message is class related]

Instructor: Ms. Pamela Widder

Office: 4094 Derring Hall

Email: widder@vt.edu—please contact Ms. Widder with any questions regarding her lectures.

Course prerequisites: Biol. 1105, 1106 (or equivalent)

Required text: Evolutionary Analysis, 4th edition (2007) by Scott Freeman and Jon C. Herron

Other course materials: You will be able to download the lecture outline for each class from Blackboard, under the Course Materials tab, prior to the lecture [access Blackboard via <http://learn.vt.edu>]. I will post the outlines at least the day before the lecture (ie, Monday's lecture available Sunday night). It is your responsibility to print the outline and bring it to class so you can fill it in during lecture. Information on grading and other class policies is also posted on the course website—***you are responsible for all the information on the course website!***

What you should learn in this class:

CONCEPTS:

This course will provide an overview of the current field of evolutionary biology. By the end of this course you should have a basic understanding of the major topics in evolutionary biology, including: the theory of evolution by natural selection, the history of evolutionary thought, population genetics, sexual and kin selection, evolutionary trees/ phylogenies, how new species arise, and how scientists explain the origin of life on earth and human evolution. By "basic understanding", I mean that you should be able to explain the concepts correctly to your peers, even those with little or no scientific background. In addition, you should be able to see how evolution provides a framework for the broader field of biology and how evolutionary theory can be used to address some social issues.

SKILLS:

Read and interpret scientific figures/graphs
Distinguish primary scientific literature from secondary literature
Understand the structure of a scientific paper

Student evaluation:

EXAMS (~85% of your final grade)

Three midterms (100 pts each) and a comprehensive final exam (200 pts) will be used to evaluate your mastery of the concepts and skills taught in this course. That is a total of 500 points, which is approximately 85% of your final grade in this class.

You are responsible for all the information covered in lecture and assigned readings. The majority of information on exams will come from lectures, but I will also pull in important topics from the text and other readings that we may not have had time to cover in class. It is your responsibility to learn as much as you can in this course. If you are working very hard and still having problems, please come talk to me and we will discuss how you might be able to study more effectively.

Exam scores will be posted on Blackboard as soon as they are available. If you think that an error has been made in grading your exam, you must come to my office hours and talk to me prior to the next exam. For example, I will only make changes to the assigned grades for midterm #1 until midterm #2. You need to review all returned material carefully and punctually.

IN-CLASS QUIZZES AND ADDITIONAL ASSIGNMENTS (~15% of your final grade)

There will be approximately 100 points worth of in-class quizzes/participation points and additional assignments this semester. Of these, a maximum of 90 will be counted toward your grade. We will be

using i>clickers extensively in class (see information below). At the beginning of class, there will generally be a quiz question based on the prior lecture or assigned reading material. These quizzes will be worth 1 point for the correct answer and 0.5 points for any other answer (participation). Additional i>clicker questions presented during lecture will be worth 0.5 points each (participation). No make-ups will be allowed for in-class points. Additional assignments are described under the assignments tab in blackboard, along with due dates.

MISSING EXAMS AND ADDITIONAL ASSIGNMENTS

You must take exams and turn in the additional assignments as scheduled, unless you have an official excuse or a documented medical emergency. Make-up exams will likely be in an essay format. If you have more than 3 exams scheduled in your courses in a 24-hour period, you may reschedule provided you bring in your course syllabi showing the conflicts, or provide letters from your other instructors. This applies for mid-terms only. Requests to reschedule a final exam **MUST** be made through the Dean's Office. Please note that no in-class quizzes or participation points can be made up, regardless of the reason for missing class.

ASSIGNMENT OF FINAL GRADES

Grading will be done on a modified curve. The top ten scores in the class (out of the 590 possible points) will be averaged. Based on this average score, A>95% of the average score, B>85%, C>65%, D>55%, F<55%. The percentages may be adjusted downward depending on class performance, but will not be adjusted upward. This formula may seem a little strange, but it has the advantage of being based on the performance of the class and yet there is no limit to the number of students that can achieve high grades.

i>clicker information and registration: You are required to purchase an i>clicker remote for in-class participation. They are available in the bookstore near the course textbook. i>clicker is a response system that allows you to respond to questions I pose during class, and you will be graded on that feedback and/or your in-class participation. To receive this credit, you will need to register your i>clicker remote online by January 23rd. You must come to class at least once and vote on at least one question to complete this registration properly. Once you have voted on a question in my class, go to <http://www.iclicker.com/registration>. Complete the fields with your first name, last name, student ID, and remote ID. Your student ID is your 9-digit hokie passport number. The remote ID is the series of numbers and sometimes letters found on the bottom of the back of your i>clicker remote. i>clicker will be used every day in class, and you are responsible for bringing your remote daily. If you forget your remote, or miss class, you will not be able to make-up the in-class points.

Honor code: The University honor code is in effect for all exams and quizzes. Any attempt to give or receive information to/from another student on an exam or to use unauthorized material during an exam will be reported to the University Honor System. If you are having problems with the material or need help studying, please come and talk to me or start a study group with other class members. Sharing class information and helping each other learn is strongly encouraged at all times **except during exams and quizzes**. Please note that the use of another student's i>clicker during class is considered a violation of the honor code by both the student to whom the i>clicker is registered and by the student using it in class, and will be treated as such.

Evolution and religion: This is a science course. The content of the course is based on information currently accepted by the scientific community. This course is not designed to challenge your personal belief system in any way and you should not feel threatened by the information presented if it does not mesh with your system of beliefs. Regardless of your beliefs, you are responsible for learning the material presented in the course and for understanding why scientists have arrived at the conclusions they have in the field of evolutionary biology, even if you personally disagree with those conclusions.

Special Accomodation:

If you need any special accommodations in class, please contact me as soon as possible.

TENTATIVE SYLLABUS

DATE	TOPIC	READINGS
21 January	Intro to the course, how science works	
23	Anatomy of scientific paper	Readings #1 and #2
26	HIV: case study in evolution	Chapter 1
28	HIV cont.	Chapter 1
30	History of evolutionary thought (Widder)	Readings #3 and #4
2 February	Evidence for Evolution	Chapter 2
4	Natural selection	Chapter 3
6	Natural selection, cont.	Chapter 3
9	MIDTERM #1	
11	Current topics: crop selection and food resources	Reading #5
13	Current topics: crop selection and food resources, cont.	
16	Mendelian genetics: introduction	Chapter 5
18	Mendelian genetics: selection and mutation	Chapter 6
20	Mendelian genetics: selection and mutation, cont.	Chapter 6
23	Mendelian genetics: drift, migration, nonrandom mating	Chapter 7
25	Quantitative genetics	Chapter 9
27	In-class problem solving	
2 March	Current topics: evolution and conservation	Reading #6
4	MIDTERM #2	
6	Mid semester review- what have we learned so far?	
9-13 March	SPRING BREAK	
16	Species and speciation	Chapter 16
18	Species and speciation, cont.	Chapter 16
20	Phylogenetic analysis	Chapter 4
23	Phylogenetic analysis, cont.	Chapter 4
25	Origins of life on earth/Precambrian evolution (Widder)	Chapter 17
27	Cambrian explosion (Widder)	Chapter 18
30	Patterns in macroevolution	Chapter 18
1 April	Human evolution	Chapter 20
3	Human evolution, cont.	Chapter 20
6	Current topics: Evolution of language	
8	MIDTERM #3	
10	Current topics: evolution and human/wildlife health	Chapter 14, sec. 1-3
13	Current topics: evolution and human/wildlife health, cont.	
15	Studying adaptation (Widder)	Chapter 10, reading #7
17	Experiments in adaptation (Widder)	Chapter 10
20	Evolution of sexual reproduction (Widder)	Chapter 8 sec.3, Chap. 11
22	Sexual selection (Widder)	Chapter 11
24	Kin selection, social behavior and altruism (Widder)	Chapter 12
27	Trade-offs in life history characteristics (Widder)	Chapter 13
29	Co-evolution (Widder)	
1 May	Co-evolution, cont. (Widder)	
4	Evolution and development (Widder)	
6	Review (Widder)	
9 MAY	FINAL EXAM 10am-12pm	