

Biology 241, Evolution, Syllabus 2011

Ray Heithaus, 202 Higley (5393): Office Hours MW 10-11, TTh 9:40-11, and by appointment.

Text: *Evolution* by Douglas Futuyma, Second Edition. In addition, research papers will be assigned for analysis and comment.

OVERVIEW AND STUDENT RESPONSIBILITIES

This course is an introduction to the study of evolutionary processes. We will examine the basic mechanisms for evolution, including processes that are adaptive and neutral with respect to adaptation. Evolution will be examined at a variety of scales, from molecular to ecological, and from changes in populations over a few generations to patterns over millennia. Along with these topics we will explore the ways that questions about evolution are answered. You will be asked to read and evaluate original literature so that you have direct access to developments in the field of evolution. Your responsibilities include attending class and participating in discussions, checking your e-mail for communications about class, and completing assignments on time. If you do not wish to regularly check your Kenyon e-mail account, it is your responsibility to provide an e-mail address that you will monitor.

Grading in Biology 241 will be based on the following:

Percent	Component
45	Three Hour Tests
20	Weekly assignments. These will be short summaries and critiques of supplemental readings, brief reports on computer simulations, or written responses to discussion questions. The readings or assignments will be provided in class or online. Written work is to be submitted electronically (as an e-mail attachment) by midnight the night before class.
10	Presentation during the last two weeks of class, on a topic of your choosing but which addresses the integration of evolutionary principles into current issues about agriculture, conservation or human health.
10	Attendance and participation in class discussions. More than three unexcused absences will result in point deductions.
15	Final exam (optional). If you choose not to take the final exam, hour tests and weekly assignments will comprise 80% of your grade.

Policy on Extensions: No extensions will be granted for the assignments listed below on the basis of conflicts with assignments in other classes; look at all your syllabi now and plan ahead for the semester. The only exception is for medical problems serious enough that you are consulting with the College or other professional health services. If an absence is excused, College rules state that you are responsible for the work assigned for that day and class work from that day.

Policy for Students with Disabilities: If you have a disability and feel that you may have need for some type of academic accommodation in order to participate fully in this class, please feel free to discuss your concerns with me in private and also contact Erin Salva, Coordinator of Disability Services at PBX 5453 or via e-mail at salvae@kenyon.edu.

Schedule of Classes and Assignments

Date	Topic/Assignment	Text
8/25	What is "evolution"? - Five Scientific Theories	1
8/30	Phylogenetic Analysis - Patterns of Descent with Modification	2, handout
9/1	Maximum likelihood methods and challenges in phylogenetics	2
9/6	Patterns of change, adaptive radiation	3
9/8	The fossil record; punctuated equilibrium?	4
9/13	Evolution through deep time	5
9/15	The evolution of biodiversity	6, 7
9/20	Hour Test 1	
9/22	The origin of genetic variation	8
9/27	The nature of variation, single locus approach	9
9/29	The nature of variation; quantitative characters and subpopulations	9
10/4	Evolution through genetic drift	10
10/6	October Break	
10/11	Natural selection	11
10/13	The genetics of natural selection	12
10/18	Hour Test 2	
10/20	Selection on quantitative characters	13
10/25	The evolution of phenotypic plasticity	13
10/27	The nature of "species"	17
11/1	Process of speciation (Founders Day, note shorter class period)	18
11/3	Speciation, continued	18
11/8	Life History adaptations and sexual selection	15
11/10	Evolution of genomes	20
11/15	Evolution and development	21
11/17	Evolution and development, continued	21
11/29	Macroevolution, I	22
12/1	Macroevolution II , Take-home Test 3 due	22
12/6, 8	The Evolution of Cooperation – are humans inherently selfish?	16
12/13	FINAL EXAM 6:30-8:30 pm	