

Biology 240 Ecology and Evolution Fall 2008
TuTh 12:00pm – 1:15pm Hoffberger Science Building 134

Instructors:

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Getting Help: We do not have offices on campus because we are primarily scientists at the Smithsonian. While this means you cannot drop by our office at any time, our goal is to ensure that you can get in touch with us when you need to. To this end, we will have “office hours” in Pearlstone Café every Tuesday after class. However, we will have a policy of leaving after half an hour if no one comes by. If you cannot make office hours, please schedule an appointment (by phone or email) with us; we will find a time on Tuesday or Thursday we can meet with you, or alternatively, you can ask any questions you have by email or phone.

Learning Objectives:

1. Understand science as a way of knowing:
 - Understand and explain the scientific method
 - Generate hypotheses and design specific tests
 - Interpret data and generate data driven conclusions
 - Apply scientific understanding to issues facing individuals and society
2. Know fundamental facts, concepts and theories in Ecology and Evolution
3. Effectively organize, communicate and use your knowledge of Ecology and Evolution. By the end of this class you will be able to:
 - Identify relationships among ecological and evolutionary concepts (organize)
 - Clearly write and speak about science for both a scientific audience and a general audience (communicate)
 - Interpret and evaluate your own scientific claims/knowledge, interpret and evaluate claims in the media and scientific press, and inform your decisions as citizens (use)
4. Understand how humans interact with ecological and evolutionary processes

The following required textbooks are available at the bookstore:

- Krohne, D.T. 2001. General Ecology, 2nd Ed. Thomson Learning, Inc.
- “The Beak of the Finch”, Jonathan Weiner, Vintage Books.

Supplementary text (optional, available at Amazon or other booksellers): Ricklefs, R.E. 2008. The Economy of Nature, 6th Ed. W.H. Freeman and Co.

Note that reading assignments not in Krohne or Beak of the Finch are available as PDFs on Blackboard

Attendance: We will be doing group activities in nearly every class period; therefore, for full participation credit, your presence is necessary. We recognize that crises do arise; please come talk to us if you do need to miss class. But realize that your participation grade depends on your attendance.

Late work: Unless specified otherwise, late work will be docked 10% of the overall grade for every day it is late. An assignment is late if it is not turned in by class time on the due date.

Electronic submission of work: Most assignments are due in paper copy at the beginning of each class. Occasionally, we may ask you to turn in a specific assignment electronically, either through email or by uploading to BlackBoard. We will make instructions clear for those pertinent assignments or exams that require or strongly recommend electronic submission.

Cell Phones: Please make sure you either turn off or silence your phone before entering class.

Web Resources: Lecture materials (PowerPoint files, pdf's, etc.) will be posted to the course BlackBoard web site.

Exams: There will be three take-home examinations. You may consult whatever textbook, papers, or notes you wish in answering exam questions, but you may not consult with your classmates on these exams. There is no cumulative final exam.

Long-term Assignments: There will be one review paper and one group presentation; details on these assignments will be handed out separately.

Assigned Reading: Your successful participation in class activities will require that you have read all of the assigned reading before coming to class. Note that assigned readings are **due on the day they are written down**; i.e., we expect you to read Krohne p 23-29 in advance of the second class period.

Academic Honor Code: Suspected violations of the Honor Code will be referred to the Academic Honor Board. For a full description of the code and what constitutes a violation of the code, refer to the Goucher Handbook or online at www.goucher.edu/x1292.xml

Grading Breakdown:

Take-Home Exam 1: 15%
Take-Home Exam 2: 15%
Take-Home Exam 3: 15%

Review Paper: 20% total

 Paper topics and preliminary citation list: 5%

 Peer Review: 5% (rubric provided, failure to turn in a first draft for the peer review assignment forfeits your Peer Review grade)

Final Draft: 10% (rubric provided)

Group Presentation: 10% (rubric provided)

Homeworks and Quizzes: 20%

Class Participation: 5%

Extra Credit: Extra percentage points can be earned by attending an Ecology and Evolution-related campus or community event (e.g., a lecture, and the event does not have to be Goucher-sponsored) and turning in a written description (no more than 1 double-spaced page) of the event with an explanation of how it relates to the class material. You may receive a maximum of 1% bonus credit per event for up to 3 events total (i.e., you can earn 3% extra credit towards your final grade). Appropriate events will be announced to the class as they arise; if you learn of an event that you wish to be considered please let us know in advance.

Class Schedule

Note that reading assignments not in Krohne or Weiner are available as PDFs on Blackboard

Date	Lead Instructor	Class Topic	Assignments IMPORTANT: these are due on the date given unless otherwise noted!
9/1	All instructors	Introduction	
9/3	Blakeslee	History of evolution; Natural selection (1) – adaptation & fitness; Rapid evolution	Online survey Blackboard readings: Seeley (1986); Ricklefs Ch 6, pp 113-121
9/8	Blakeslee	Natural selection (2) and variation; Phenotypic plasticity	Blackboard readings: Trussell & Smith (2000); Ricklefs Ch 6, pp 124-130 “Beak of the Finch” Chapters 1-7
9/10	Blakeslee	<i>Discussion: What goes into a review paper?</i> Population Genetics: mutation, alleles, genotype, phenotype, Hardy-Weinberg, inbreeding	Krohne: pp 18-20 Blackboard readings: Ricklefs Ch 13, pp 267-276 Review Paper Assigned
9/15	Blakeslee	Stochastic and non-stochastic process affecting evolution: migration and drift	Krohne: pp 20-23 Blackboard readings: Ricklefs Ch 13, pp 276-282 “Beak of the Finch” Chapters 8-14
9/17	Blakeslee	Sexual selection	Krohne: pp 31-33 Blackboard readings: Ricklefs, sexual selection, pp 175-176 In-class Quiz (includes ?’s from readings up to this point)
9/22	Blakeslee	‘Species’ concept; speciation; co-evolution; convergent evolution	Krohne: pp 27-28, 35 Blackboard readings: tba “Beak of the Finch” Chapters 15-20
9/24	Blakeslee	Parasitism, commensalism, mutualism; Anthropogenic impacts on evolution	Krohne: pp 36-40 Blackboard readings: tba Review Paper Topic Due Take Home 1 given out
9/29	Berke	<i>Discussion: Citation managers, plagiarism, and grading rubric for the paper</i> What do organisms need to survive? Maryland’s Blue Crabs	Take Home 1 due at beginning of class

Date	Lead Instructor	Class Topic	Assignments IMPORTANT: these are due on the date given unless otherwise noted!
10/1	Berke	What do organisms need to survive? Blue Crab Threats	(1) Preliminary Citations for Review Paper Due (2) Chesapeake Bay Foundation Report: Bad Water and the Decline of Blue Crabs in the Chesapeake Bay (16 pp) (3) Chesapeake Bay Foundation State of the Bay Report, pages 6-14. (4) "Saving the Bay: Maryland's septic-tank law will help clean the great waterway" Washington Post 4/23/2009
10/6	Berke	How do populations grow and interact? The Logistic Equation	(1) Write a figure legend to describe your blue crab model (rubric provided) (2) Read Ricklefs Ch. 11
10/8	Berke	How do populations grow and interact? Predator-Prey Interactions	Read Ricklefs ch. 15
10/13	Berke	How do populations grow and interact? Wolves, willows, and elk	(1) Read Yellowstone Science 2005, volume 13 no. 1 pp 6-33 (2) Read The Ecology of Fear by Jeff Welsch
10/15	Berke	Global Patterns in Ecology Intertidal Zonation	(1) Read Laundré, J. W., L. Hernández, and K. B. Altendorf. 2001. Wolves, elk, and bison: reestablishing the "landscape of fear" in Yellowstone National Park, USA. <i>Canadian Journal of Zoology</i> 79:1401-1409. (2) Write 1 paragraph explaining how Laundre et al.'s data shed light on the indirect interactions between wolves, herbivores, and willows in Yellowstone.
10/20		No Class: Mid-Session Break	
10/22	Berke	Global Patterns in Ecology Intertidal Zonation / Biodiversity and Biogeography	(1) Read Nybakken & Bertness p266-306 (2) Read Ricklefs Ch. 21 Take Home 2 given out

Date	Lead Instructor	Class Topic	Assignments IMPORTANT: these are due on the date given unless otherwise noted!
10/27	Berke	The Biodiversity Crisis	Take Home 2 Due at beginning of class
10/29	Sutton-Grier	How does energy move through an ecosystem? Part I: Photosynthesis and respiration	Reading: Ricklefs Ch 22
11/3	Sutton-Grier	Part II: Food chains and food webs	Homework: Energy movement through ecosystems due
11/5	Sutton-Grier	How does Carbon move through an ecosystem and around the globe?	Reading: Krohne Ch 15
11/10	Blakeslee & Sutton-Grier	<i>Discussion: What makes a good/bad review?</i> How does Nitrogen move through ecosystems? (redox chemistry)	Review Paper Draft due at beginning of class Homework: Carbon and nitrogen movement through ecosystems due Study the Hubbard Brook Figure before class!
11/12	Sutton-Grier	How do communities change through time?	Read Ecology of Disturbance Assignment Last Name: A-M Read the Sousa Study and look at the figures. Last Name: N-Z Read the Lubchenco Study, look at the figures, and look at diversity indices in Krohne pgs:297-300
11/16		Monday—no class but Peer Reviews are due!!	Peer Reviews Due via email to partner and upload to Blackboard by 5 pm
11/17	Blakeslee & Sutton-Grier	<i>Discuss peer-review comments & how to respond to comments</i>	Group projects assigned
11/19	Sutton-Grier	How does disturbance affect communities, particularly species diversity?	Reading: Connell. Science. 1978. Diversity in Tropical Rain Forests and Coral Reefs.

Date	Lead Instructor	Class Topic	Assignments IMPORTANT: these are due on the date given unless otherwise noted!
11/ 24	Sutton-Grier	Can we facilitate ecological recovery of disturbed systems?	Research Paper Due Reading: At least 1 of the “Perspective” articles and 1 of the “News” articles from the special section in Science on Restoration Ecology Additional Reading: Society for Ecological Restoration Primer on Ecological Restoration
11/26		No Class: Thanksgiving	Eat Turkey or Tofurkey!
12/1	Sutton-Grier & Blakeslee	Human interactions with ecological processes: Habitat destruction and invasive species	Reading: Ricklefs Ch. 27
12/3	Sutton-Grier & Blakeslee	Human Interactions with ecological processes: Climate change	
12/ 8	Sutton-Grier & Blakeslee	Group Projects	
12/10	Sutton-Grier & Blakeslee	Group Projects	<i>Take Home 3 given out</i>
12/15		No Class, Finals week	Take home exam 3 due at noon (normal class time) in HS 134, or can be turned in earlier to the Bio240 mailbox in the Biology Department Office