

Ecology & Evolution (BIOS207 sect 591)

Summer 2016, Cedar Point Biological Station

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TA: none

Lectures: typically 1:30 pm -4:30 pm

Labs: typically 8:00 am – 12:00 pm

The syllabus will be updated as the course progresses. The current copy will always be available on Blackboard (my.unl.edu). To be successful in this class you will need to use blackboard to receive lecture information, download handouts, check on grades, and submit manuscripts.

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Objectives

This course has a number of objectives, some of which are specific to the topics in this course, but many of which are general to a well-rounded education. Instruction will be provided and you will be evaluated on the following:

1. Familiarity with basic *concepts* in Ecology and Evolution
2. *Critical* and creative thinking about major concepts in Ecology and Evolution
3. Understanding of how a *quantitative* framework can be used in Ecology and Evolution
4. *Written* communication skills in the discipline of Ecology and Evolution

Prerequisites

The prerequisite for this course is LIFE 120 Fundamentals of Biology I and LIFE 121 Fundamentals of Biology II. While not required, students will be well served to have had MATH 106 Calculus I or MATH 106B Calculus I for Biologists as well as a course in Statistics.

Attendance

The format of this course is very compact because of the structure at Cedar Point Biological Station. Each day at Cedar Point covers the equivalent of a week in a regular semester-based course. Therefore, attendance is critical for successful completion of the course and is a part of your Participation grade (see Overall Grades below).

Contact Information and Office Hours

I do not have formal office hours at Cedar Point, but I will be readily available to meet with you individually or in groups. The easiest thing to do is find me at during class times or meal times to make an arrangement.

Disability Assistance

Students with disabilities are encouraged to contact the instructor for a confidential discussion of their individual needs for academic accommodation. It is the policy of the University of Nebraska-Lincoln to provide flexible and individualized accommodation to students with documented disabilities that may affect their ability to fully participate in course activities or to meet course requirements. To receive accommodation services, students must be registered with the Services for Students with Disabilities (SSD) office, 132 Canfield Administration, 472-3787 voice or TTY.

Lectures/Discussion

The basic plan is to meet from 1:30pm to 4:30pm for lecture/discussion. You should have read the assigned reading, or completed the assigned SimUText before the afternoon classroom time.

Readings are indicated by the chapter title and sections from the program SimUText (see Texts below). For example, Pop Growth (sect 2) indicates section 2 of the Population Growth chapter in the electronic SimUText. The chapters from *SimUText need to be completed before that class period* to receive credit for that section of the grade.

Lectures are ordered based on a few organizing ideas. 1) We will switch back and forth between ecology and evolution throughout the course, with a focus on topics that integrate the two disciplines in the latter half of the course. 2) Topics generally increase in scale across the course, starting at the population level, to the community level, to the ecosystem level. 3) In the first half we will spend a greater portion of our time on basic principles in ecology and evolution, so that in the second half we can spend more time on integrative concepts and applications.

Day	Date	Theme	Time	Topic	Reading
Sun	17-July	Introduction	6:00 pm	Ecology & Evolution	BD Ch 3.1
M	18-July	Population Growth	2:30 pm	Exponential and Logistic growth	Pop Growth (sect 2,3) Competition (sect 2)
Tu	19-July	Population Genetics	1:30 pm	Fitness, selection, mutation/selection balance	BD Ch 7.3-7.7
W	20-July	Population Genetics	1:30 pm	Drift	BD Ch 8.1, 8.3-8.5
		Human Interface	6:30 pm	I.D./Creationism and the case for Evolution	
Th	21-July	Quantitative Genetics	1:30 pm	Multi-locus, heritability, breeder equation	BD 9.1-9.4
F	22-July		10:30 am	Exam #1	
M	25-July	Life History Evolution	1:30 pm	Trade-offs; Cole's Paradox Senescence	Life History (sect 1 & 4) BD Ch 20.5
Tu	26-July	Behavior	1:30 pm	Sexual selection	BD Ch 16.4-16.6
W	27-July	Competition	1:30 pm	Characterizing competition L-V competition models	Competition (sect 1, 3, 4)
		Human Interface	6:30 pm	Evolutionary medicine & Disease coevolution	
Th	28-July	Speciation	1:30 pm	Speciation	BD Ch 14
F	29-July		10:30 am	Exam #2	
M	1-Aug	Exploitation	1:30 pm	Predation and L-V model Functional responses Disease-Host models	Predation, Herbivory, and Parasitism (sect 2,3,4)
Tu	2-Aug	Community Ecology	1:30 pm	Food webs, trophic cascades, stability Mutualisms at CPBS	Community Dynamics (sect 2,3,4)
W	3-Aug	Biogeography	1:30 pm	Historical Biogeography & Theories on Tropical Diversity	Biogeography (sect 3)
		Human Interface	6:30 pm	Global carbon cycle; climate change	
Th	4-Aug	Ecosystems	1:30 pm	Energy Flow	Ecosystem Ecology (sect 1,2,4)
F	5-Aug		10:30 am	Exam #3	

*BD is from Bergstrom and Dugatkin. Evolution. 2016.

Texts

Text 1 (required)

McMillan, Victoria E. 2012. Writing Papers in the Biological Sciences, 5th Edition. Bedford/St. Martin's Press, Boston. ISBN 0-312-64971-1.

Text 2 (required)

SimUText Ecology by SimBiotic. Online interactive text. Purchase instructions are posted as an announcement on Canvas. The cost is \$63 per student. Our customized course includes the following chapters:

1. Population Growth
2. Competition
3. Life History
4. Predation, Herbivory and Parasitism
5. Community Dynamics
6. Biogeography
7. Ecosystem Ecology

Text 3 (required)

Bergstrom, Carl T. and Lee Alan Dugatkin. 2016. Evolution. W.W. Norton & Company. ISBN 978-0-393-93793-0 (hardcover) or ISBN 978-0-393-60103-9 (paperback).

At the publisher website <books.wwnorton.com>, you can purchase an eBook version. You can also purchase a 180 day online version for a reasonable price.

Labs

Day	Date	Time	Topic	Reading
M	18-July	8:00 am	Statistics: Regressions, Contingency Tables, and ANOVA	McMillan: Ch 2 & Ch 3
Tu	19-July	8:00 am	Behavior I: Observe ant foraging and generate hypotheses	
		11:00 am	Writing Workshop: Reading as a Writer <i>Due:</i> Published Paper Summary	Paper on Blackboard; McMillan: Introduction, pages 21-23, & 87-103
W	20-July	8:00 am	Behavior II: Ant foraging experiments	
Th	21-July	8:00 am	Population Ecology I: Collect duckweed in the field; design and setup duckweed experiments (Vehicles)	
F	22-July	8:00 am	unstructured writing/study time	
		3:30 pm	Writing Workshop: The Big Picture <i>Due:</i> Behavior Draft	McMillan: Ch 4
M	25-July	7:30 am	Community Ecology I: Plan and start diversity research projects in groups	
		12:00 pm	<i>Due:</i> Behavior Final	McMillan: Ch 6
Tu	26-July	8:00 am	Community Ecology II: Continue data collection for group diversity projects	
W	27-July	8:00 am	Population Ecology II: Collect and analyze data from duckweed experiments	
Th	28-July	8:00 am	Community Ecology III: Analyze data	
F	29-July	8:00 am	Field trip hike to NutNet plot	
		3:30 pm	Writing Workshop: Types of Science Readers <i>Due:</i> Population Ecology Draft	McMillan: pages 144-155
M	1-Aug	8:00 am	Evolution I: Collect goldenrod galls (Vehicles)	pdf from Zimmer Ch 8.4
		12:00 pm	<i>Due:</i> Population Ecology Final	
Tu	2-Aug	8:00 am	Evolution II: Analyze data for goldenrod	
W	3-Aug	8:00 am	Field trip to see Prairie Dogs (Vehicles)	
Th	4-Aug	8:00 am	unstructured writing/study time	
		11:00 am	Writing Workshop: Sentence-level Review <i>Due:</i> Evolution or Community Ecology Draft	McMillan: pages 155-171 & Ch 8
F	5-Aug	8:00 am	unstructured writing/study time	
		5:00 pm	<i>Due:</i> Manuscript on evolution or community ecology (your choice)	

Published Paper Summary

You will be submitting a “Published Paper Summary”. This is simply a short 1 to 2 page summary of a published scientific paper that will be assigned to you. First, list **10-20 questions about the science of the paper**. In other words, questions about things you didn’t understand,

questions about the implications of the study, questions about the assumptions of the study. Each of these are questions you could raise during a class discussion.

Second, what are your **views on the writing of the paper**. In other words, we will ask you to read the paper “as a writer”. What writing techniques did the authors use? How did they structure the paper? What lessons can you take from their writing to improve your technical writing skills?

This assignment will be included in the “Draft Manuscripts” section of the overall grade.

Lecture Assignments

On a regular basis I will be asking you to turn in written responses during lecture in response to questions. These will be graded on effort and participation—obviously blank or cursory answers will not receive credit but all other answers will receive full credit.

Grading of Exams

Numerical grades for exams will be based on individual criteria established for each question. Following each exam, a translation table will relate your numerical grade to a letter grade. Letter grades for exams will be based on the following criteria.

Letter Grade	Criteria
A	Synthesizes material, understands implications of assumptions, and demonstrates critical thinking.
B	<i>Consistently</i> demonstrates competence in the basic material presented in class and in the readings
C	Demonstrates competence in a <i>majority</i> of the basic material
D	Demonstrated serious lack of understanding of basic material
F	Little to no demonstrated understanding of basic concepts

Some exam questions will award points based solely on logic. Is a completed logical argument presented or are there missing or extraneous pieces of information presented? In addition, some questions will include a point for composition. Is the question presented in clear paragraph form, conform to the principles of the English language, and written without randomly inserted or unnecessary information?

Grading of Manuscripts

Manuscripts are graded for overall composition with a focus on the criteria listed below. While the details need to be in place, do not lose sight of the big picture.

We will provide feedback on all final manuscripts (except the last manuscript). The first 2 manuscripts can be **revised and re-submitted within 2 days** of receiving the instructor's comments.

A completed manuscript includes all of the following:

1. An electronic copy submitted on SafeAssignment
2. A paper copy submitted to your TA with the following attached
 - a. Your "author's notes" for *rough draft* (notes to your reviewer's about what area in particular you are looking for comments or assistance).
 - b. Draft manuscripts with reviewers' comments (and reviewer's names on each)
 - c. Your peer review workshop "Notes" worksheet
 - d. Final manuscript
 - e. If this is a re-submission also include:
 - i. Cover letter stating what has changed
 - ii. Revised final manuscript for re-submission

The grade for Draft Manuscripts will be assigned based on the appropriate inclusion of all of the above. Author's notes, complete Peer Review Workshop Notes, and a fully completed draft must be submitted to receive full credit. By submitting incomplete or partial drafts you ultimately reduce your chances of submitting a quality final draft and you undermine the peer-review process. The grade for Peer Feedback will be based primarily on the written comments you write on other's drafts.

Manuscripts will be graded on how well they meet the following criteria:

1. *Motivate* study in the Introduction and set-up issues for the discussion.
2. Presentation of the *essential* methods such that the study could be reproduced by someone who completed Ecology and Evolution with an A at another university.
3. *Clear* and concise presentation of results with appropriate statistics and figures.
4. *Originality* and *synthesis* in the discussion.

As well the above criteria, general writing principles such as proper paragraph and sentence structure, and the inclusion of all necessary components such as an appropriate abstract and references will factor into your grade.

Letter grade	Effective grade for Blackboard	Criteria meet
A	95%	All major criteria clearly meet.
B	85%	Most criteria met, but still minor deficiencies in more than one area.
C	75%	Criteria partially met, but major improvement needed in one of more of the criteria.
D	65%	Attempts have been made to meet criteria, but serious deficiencies exist.
F	55%	Criteria not met or acknowledged

Manuscripts will be assigned letter grades, however the effective percent grades will be entered into blackboard for the sake of numerically combining grades. In addition, grades may be adjusted by +/- .

All final drafts are to be submitted via *SafeAssignment*. Assignments are not considered submitted until they have been submitted to safe-assignment. Safe-assignment will check for overt plagiarism issues. You are encouraged to pre-submit your assignments to the “draft check” feature on blackboard before submitting your final paper. The report that draft check gives you will be the very same report your instructor sees. Our goal is to make you aware of plagiarism issues beforehand and prevent the submission of final papers with plagiarism issues.

You should be aware that SafeAssignment retains an electronic copy of your writing for six years following submission. The software uses that copy to check against future submissions for plagiarism. Your paper may also be used for within-UNL statistics on writing. Only final submissions are retained in the database, not draft submissions. You may object without penalty at any time to having your writing retained in the SafeAssignment database.

Late drafts will not be accepted. *Late final manuscripts* will be accepted but the grade will be reduced according to the following schedule. For each day late, one +/- will be subtracted from the final grade. Weekday and weekend days count in this penalty. For example, a paper that would have received an A had it been turned in on time would receive a A- if it was one day late and a C- were it a week late. Half of the late penalty will still apply to revised/regraded manuscripts even if the resubmission is turned in by the resubmission due date.

Overall Grades

Grades will be posted on blackboard throughout the course. Letter grades will be based on a translation table determined at the end of the course. The translation table is guaranteed to be no higher than the following scale of cut-offs, in other words 90% or higher is guaranteed an A-.

Letter	F	D-	D	D+	C-	C	C+	B-	B	B+	A-	A	A+
Min %		60%	63%	67%	70%	73%	77%	80%	83%	87%	90%	93%	98%

Cumulative grade percent will be determined using the following weighting by category.

Percent	Category
42%	Exams (3)
42%	Final Manuscripts (3)
4%	Draft Manuscripts & Peer Feedback
10%	Participation
2%	SimUText

Total points within each category will be summed and weighted by the percent contribution to the cumulative grade. Each exam will focus on material covered during that period of the course. Integrative questions may address broad concepts from previous sections of the course.

Participation includes points for attendance because of the importance of helping to conduct research projects. It will also include a peer assessment of your role in group work.

Note, *plagiarism or cheating* will not be tolerated in this class. Plagiarism will be rewarded with an F for the course and your case will be forwarded to the University Judicial Board.