

BIOLOGY 354 -- Ecology and the Environment

Spring 2009 Syllabus

Prof.:	Dr. Lee McClenaghan
Office:	PS 257
Hours:	11:00-11:50 M-Th, or by appt.
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If the scheduled office hours are not convenient for you, please arrange an appointment. **The best way to reach me is by e-mail**, but feel free to talk with me after class or phone me at my offices. Please recognize that I have other responsibilities besides Bio 354 and that these responsibilities often take me out of my office. If you are having problems in class, please see me as soon as possible. I will do everything I can to help, but don't wait until mid-semester or right before exams.

General Course Information

Prerequisites: Bio 201, Bio 215, and Math 122. You are required to have passed those courses before taking this course.

Class: MW 12:00-12:50, SS 1500

Friday Discussion Sections and Teaching Assistants:

Sec 1	schedule # 00402	8:00-8:50 F	LS 134	Allison Steele
Sec 2	schedule # 00403	9:00-9:50 F	LS 134	Allison Steele
Sec 3	schedule # 00404	10:00-10:50 F	LS 134	Sara Paddock
Sec 4	schedule # 00405	11:00-11:50 F	LS 134	Sara Paddock
Sec 5	schedule # 00406	12:00-12:50 F	LS 134	Rommel Zuleta

TA	Office	Phone	E-mail	Office Hours
Allison Steele	LS 212	(619) 594-0457	asteele.lemmon@gmail.com	TBA
Sara Paddock	PS 157	(619) 594-8698	snp22@cornell.edu	1100-1200 and 1500-1600 M
Rommel Zuleta	PS 251	(619) 594-6379	zuleta@mail.sdsu.edu	1100-1200 M; 1300-1400 W

Up-to-date course materials, schedules, notices, grades, etc. will be available on the course's Blackboard site (<https://blackboard.sdsu.edu>)

Course Materials

*Text Book (required):

Krebs, Charles J. 2009. Ecology: The Experimental Analysis of Distribution and Abundance. 6th Edition. Benjamin Cummings. We will use most parts of this text. From time to time I will indicate what sections you should be studying, but the whole text will enhance your understanding of ecology.

EcoBeaker lab manual/workbook (Montezuma publishing): Each student must purchase their own copy from the Aztec Bookstore. The entire workbook will be handed in periodically, graded by the TA, and returned to you.

* Articles for discussion and other course materials will be available on the Internet or the Library Reserve Room.

Scantrons (required) -- available at the Aztec bookstore -- you must have the correct forms. You'll need one large green scantron form (form 882-E) and a #2 pencil for each exam. Small scantron forms (#815 or #815E) are required for in-class activities. The #815 forms come in packs of 15; **bring them to each class meeting.**

Since this course includes an extensive writing component, an additional text I suggest you obtain is the Elements of Style by Strunk and White. This is one of the best books on English usage ever written, and should be one of the most important books you will buy and read as a student. **Note:** if you want to access a web-based version of this book for free **go to:** <http://www.bartleby.com/141/index.html>.

Course Goals & Objectives

This class provides an introduction to the science of ecology and the physical and biological processes that affect our environment. A main objective of the course is for you to learn about the conceptual framework of ecology. Within that framework, I expect

you to be able to understand concepts and remember facts better than if you were just “memorizing” information.

I realize that to succeed in the educational, technical, and analytical jobs many of you will be or are doing, you need scientific knowledge and a variety of skills. Therefore, our goal is that at the end of this course you'll be able to demonstrate:

- 1) Knowledge of basic concepts in ecology/environmental biology, including the dynamic nature of ecological processes and the importance of variation in space and time.**
- 2) Ability to make a scientific argument and support it with appropriate examples or scientific justification.**
- 3) Knowledge of and ability to apply the scientific process.**
- 4) Ability to find, evaluate, & use published scientific information.**
- 5) Competence in scientific writing and oral communication.**
- 6) Ability to work together in teams.**
- 7). Ability to integrate concepts within and among disciplines of science.**
- 8) Understanding of the relevance of ecology to society.**

Discussion Sections

This course involves extensive discussion of the primary ecological literature. Students will be discussing published papers relevant to the lecture topics. Critiquing and discussing papers objectively is fundamental to evaluating scientific studies. Worksheets outlining these papers will be required as a pre-cursor to discussion.

For several discussion sessions, you will be using the computer program, EcoBeaker, to simulate and explore ecological concepts. These discussion classes will meet in the LS126 computer lab (see schedule for details).

In addition, you will work in groups to develop a project that addresses an environmental issue or problem. Because human activities continue to impact the natural environment, these issues or problems, and their ecological relevance have become focal areas of study. **This exercise will involve your working in teams on a study of your choosing, with guidance from your instructors.** You will identify an issue or a problem, provide a history of its impacts, ecological relevance, and potential solutions.

Participation in discussion: Since this is a discussion section, the greatest benefits will be achieved when the students thoroughly read the assigned papers. In addition, if students aren't present for the discussion or for working on the group project, then the whole class suffers. Therefore, after one unexcused absence, 6 pts will be deducted from the total course points for each subsequent unexcused absence, in addition to missing any graded activities. For an excused absence, your TA will require written justification from a doctor or other official providing verification of your absence at the date and time of your discussion section.

Grading Policy and Exams

The four exams will be worth 100 points each, so you can earn a maximum of 400 points from exams. You may earn up to 70 points from in-class quizzes. Your performance in the discussion section of the course will account for about 33% of your final grade and a detailed breakdown of that will be discussed in class. The final score and grade will be based on your total accumulated points in class and discussion (about 705 pts max). Final grades will be determined by class averages and our judgment regarding class performance. Plus/minus grades will be given.

<u>Grading schedule (approximate):</u>	points	percentage
Midterm Exams (4 @ 100 pts)	400	57%
In-Class Quizzes/Activities	70	10%
Discussion activities	100	14%
Project total	100	14%
references	(10)	
outline	(10)	
final draft	(50)	
Presentation outline	(10)	
group presentation	(20)	
Discussion Participation total	35	5%
TA evaluation	(20)	
Group evaluation	(15)	
TOTAL	705	100%

Policies for Exams and Graded In-class Activities

Grades will be based on exams (the last exam is the Final), periodical in-class activities, homework, and discussion section activities. You should let the instructor know immediately if you miss any graded activity and have a valid excuse, and can provide evidence that your absence was the result of a serious, unavoidable problem. Arrangements will be made so that you are not penalized for missing a midterm or graded in-class activities, *if you have a bona fide reason for having done so*. **Instructors, including professors and TAs, reserve the right to determine if an absence and missed activity is excusable for legitimate reasons, or will count against your grade.**

Exams: Exams will be 50 min. long, and take place in the lecture room (NE 060). Each exam will cover material presented since the previous exam, recognizing that your knowledge will build over the semester (100 pts each). The final exam will be 2 hours long, but will only cover material since the last midterm exam (100 pts). It is your responsibility to be on time for tests and to contact the professor if there is a problem. Exams will include matching, multiple choice, fill-in, and short answer questions. Make-up exams will consist of essay questions or be oral, and *will be given for the first 3 exams only*. If illness or other serious problem beyond your control prevents you from taking an exam, you are expected to provide some kind of verification of the reason, such as a note from student health services. Missing an exam because your employer wants you to work is *not* an adequate justification. You must contact the appropriate instructor no later than the day after the regular exam with a valid excuse to be accorded the privilege of taking a make-up. It is your responsibility to confirm that the professor received the communication. If you wish to dispute an exam grade, you must do so within one week from the time the exam grade is posted.

Exam Dates:

#1 Feb. 18 #2 March 18 #3 April 20 #4 May 18 (10:30 am - 12:30 pm)

Graded In-class Activities: Graded in-class activities typically will include 1-3 questions, take no longer than 10 minutes, and take place at any time during the class times. **No make-ups will be given for graded in-class activities that you miss.** This is necessary since in-class activities usually cannot be replicated out of class. I will give enough activities so that the lowest may be dropped. Thus, it will be an advantage to do well on all of them to try to earn the maximum points. If you miss an activity, then that can be one that gets dropped. Since most of these activities will involve what is going on in the class (context specific), it will be important for you to be in class each day.

Tips for excelling in BIOL. 354

- **Ask questions and answer questions.** There is no such thing as a "dumb" question; any question you have in lecture undoubtedly is on the minds of many other students. When questions are asked of the class, think carefully, and volunteer an answer when you can.

- **Use a binder or course folder** to keep your notes, lecture handouts, and other information together all in one place. Bring it to class.
- **Be prepared.** Read the appropriate assignments **before** class. Reread notes from the last class.
- **Study actively.** Make study sheets, design your own exam questions and answer them, answer study questions in the text, take notes on the book. **Be an active learner.**
- **Collaborate with your classmates.** Work together to understand the information. Teaching each other is a great way to learn! Your written answers must be in your own words, however.
- **Attend class and take notes.** Each lecture builds on the previous one, therefore it is important to keep up with the material. You will be lost if you have not learned the background information that is assumed in each new lecture. Cramming is not a good strategy. Exam questions will come from lecture material, textbook readings, discussion articles, and homework.

Other Important Information

Cheating. Cheating has rarely been a problem in Biol. 354, and warning you about the consequences may seem unnecessary. Nevertheless, to avoid any possibility of you not recognizing what the consequences are, this is my policy: If you are caught cheating in an exam or on an assignment, you will receive a zero on the exam or assignment. In addition, the event will be reported to campus judicial authorities and may lead additional actions from the University. Remember, your writing must be your own words. I recommend that you look at the site below to get a clear explanation of plagiarism, cheating, and similar inappropriate conduct.

<http://science.widener.edu/svb/essay/plagiar.html>

Dropping. The last day to drop is February 11. After that you must present documentation of a work related issue or other problem (not a low grade) to the Undergraduate Advising Office of the Biology Department. Unfortunately, the last day to drop without the risk of penalty comes very early in the semester. If you are unsure what to do, please feel free to talk with the instructor about your concerns.

ECOLOGY AND THE ENVIRONMENT (BIOL 354) SPRING 2009

DATE			LECTURE TOPIC	TEXT CHAP.
Jan.	26	M	Goals, objectives; What Is Ecology?	1
	28	W	Distribution Factors: Dispersal and Habitat Selection	5
	5	F	Discussion: Introduction	
Feb.	2	M	Distribution Factors: Other Species	5
	4	W	Distribution Factors: Physical Factors	6
	6	F	Discussion: EcoBeaker*: Barnacles, part I	
	9	M	Population Parameters	8
	11	W	Vital Statistics (Last Day To Add/Drop)	8
	13	F	Discussion: Finding and Citing Scientific Articles (meet in LS126)*	
	16	M	Population Growth	9
	18	W	EXAM #1	
	20	F	Discussion: Cohen (1995) Population Growth and Earth's Carrying Capacity	
	23	M	Competition	10
	25	W	Predation	11
	27	F	Discussion: Estes et al. (1998) Killer Whale Predation; Group Projects	
March	2	M	Herbivory and Mutualism	12
	4	W	Disease and Parasitism	13
	6	F	Discussion: EcoBeaker*: Keystone Predator	

	9	M	Regulation of Population Size	14
	11	W	Conservation Ecology I	17
	13	F	Discussion: Dolan et al. (2005) Re-wilding North America	
	16	M	Conservation Ecology II	17
	18	W	EXAM #2	
	20	F	Discussion: Group projects; 5 References Due	
	23	M	Succession	18
	25	W	Biodiversity	19
	27	F	Discussion: McGrady-Steed et al. (1997) Biodiversity Regulates Ecosystem Predictability; Outlines for Group Presentations Due	
	30	M	SPRING BREAK – No Class	
April	1	W	SPRING BREAK – No Class	
	3	F	SPRING BREAK – No Class	
	6	M	Effects of Predation and Competition on Community Structure	20
	8	W	Disturbance and Non-Equilibrium Communities	21
	10	F	Discussion: EcoBeaker* - Intermediate Disturbance Hypothesis	
	13	M	Primary Production	22
	15	W	Secondary Production	23
	17	F	Discussion: EcoBeaker* - Island Biogeography; papers due	

	20	M	EXAM #3	
	22	W	Nutrient Cycles	24
	24	F	Discussion: Group projects	
	27	M	The Carbon Cycle	25
	29	W	Climate Change I	25
May	1	F	Discussion: Group Presentations	
	4	M	Climate Change II	25
	6	W	Human Impacts on Ecosystems I	26
	8	F	Discussion: Group Presentations	
	11		Human Impacts on Ecosystems II	26
	12		Catch Up and Review	
	18	M	FINAL EXAM 10:30-12:30	

* Note: On days with EcoBeaker assignments, discussions will meet in the LS126 computer lab.