BIOLOGY 354, Ecology and the Environment

Fall 2009 Syllabus

Prof.:	**Dr. Matthew Edwards**	**Dr. Chun-Ta Lai**
Office:	LS 203	PS 154
Hours:	1-2 MW, or by appt.	1-2 MW, or by appt.
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Each of us will hold our office hours only during the weeks we are lecturing. If the scheduled office hours are not convenient for you, please arrange an appointment. **The best way to reach us is by e-mail**, but feel free to talk with us after class. You may also leave messages for us in our mailboxes in the Biology Office (LS 104). Please recognize that we have other responsibilities besides Biol 354 and that these responsibilities often take us out of our offices. If you are having problems in class, please see the instructors as soon as possible. We will do everything we can to help you improve your achievement, but don't wait until mid-semester or just before exams.

General Course Information

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

Class: MW 12:00-12:50, NE 60

Friday Discussion Sections and Teaching Assistants

Sec 1	Schedule # 20467	8:00-8:50 F	LS 134	Sheila Madrak
Sec 2	Schedule # 20468	9:00-9:50 F	LS 134	Sheila Madrak
Sec 3	Schedule # 20469	11:00-11:50 F	LS 134	Allison Steele
Sec 4	Schedule # 20470	10:00-10:50 F	LS 134	Cheryl Laskowski

Sec 5	Schedule # 20471	12:00-12:50 F	LS 134	Allison Steele

TA	Office	Phone	E-mail	Office Hours
Allison Steele	LS 212	4-0457	steele@rohan.sdsu.edu	9 – 11 F
Cheryl Laskowski			claskows@sciences.sdsu.edu	9 – 10 F
Sheila Madrak	PS 250	4-8698	svmadrak@gmail.com	14-16 T Th

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. 2008. Ecology: The Experimental Analysis of Distribution and Abundance. 6th Edition. Benjamin Cummings. We will use most parts of this text. From time to time we 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 Blackboard 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 quizzes. 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 we suggest you obtain is the 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 text 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, we expect you to be able to understand concepts and remember facts better than if you were just 'memorizing' information.

We 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 LS 126 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 you 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: Because 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.

Grading schedule (approximate):	**points**	**percentage**
Midterm Exams (4 @ 100 pts)	**400**	**57%**
In-Class Quizzes	**70**	**10%**
Discussion activities	**100**	**14%**
Project total	**100**	**14%**
References	(10)	
Paper	(60)	
Paper outline	(5)	
Presentation outline	(5)	
Group presentation	(20)	

Discussion Participation total	**35**	**5%**
TA evaluation	(20)	
Group evaluation	(15)	
TOTAL	**705**	**100%**

Policies for Exams and Graded In-class Quizzes

Grades will be based on exams (the last exam is the Final), in-class quizzes, 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 60). 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 may 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 has received the communication.** If you wish to dispute an exam grade, you must do so within one week from the time an exam grade or quiz is posted.

Exam Dates:

#1 Sep 28 #2 Oct 21 #3 Nov 18 #4 (Final) Dec 16 (10:30 – 12:30)

Graded In-class Quizzes: Graded in-class quizzes will take no longer than about 5 minutes and take place at any time during the class. **No make-ups will be given for graded in-class quizzes that you miss**. We will give enough

quizzes so that the lowest may be dropped. Thus, it will be to your advantage to do well on all of them to try to earn the maximum points**.** If you miss a quiz, then that can be one that gets dropped. Because most of these quizzes will involve what is going on in the class (context specific), it will be important for you to be in class each day.

Furloughs and class cancellation. Due to extraordinary budget cuts to the CSU, fees to students have increased 32%, many sections have been cut and faculty will be required to take nine (9) unpaid furlough days each semester. A furlough is mandatory un-paid time off; faculty and staff on each CSU campus are being "furloughed" two days per month. These furlough days will unfortunately mean that we will be unable to include all elements of this class that we believe would provide the best educational experience. Unfortunately this is the result of a dramatic cut to the CSU by the state after years of under-funding the system. This class will not meet, and we will not be available for office hours, phone or email consultation on the following regularly scheduled days: September 14, October 12, November 9 and November 25.

Tips for excelling in BIOL. 354

• **Ask 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 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, and 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 only occasionally been a problem in Biol. 354, and warning you about the consequences may seem unnecessary. Nevertheless, to avoid any possibility of you not recognizing the consequences of cheating, this is our 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 instructors reserve the right to take any action they see fit, including expulsion from the course, and the event will be reported to campus judicial authorities and may lead to additional actions from the University.** Plagiarism is a very serious matter, and remember that your writing must be in your own words. We strongly 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 Sep 14. After that date, 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 one of the course instructors about your concerns.

ECOLOGY AND THE ENVIRONMENT (BIOL 354) Fall 2009 SCHEDULE

DATE			LECTURE TOPIC	CHAP.	LECTURER
Aug	31	M	Goals, objectives; What Is Ecology?	1,2,3	Edwards
Sept	2	W	Distribution Factors: Dispersal and Habitat Selection	4,5	Edwards
	4	F	Discussion: Introduction		
	7	M	**Labor Day - No Class**		
	9	W	Distribution Factors: Other Species/Physical factors	6,7	Edwards
	11	F	Discussion: EcoBeaker* -- Barnacles, Part I		
			Dr. Edwards' furlough day – No class		
	14	M	{**Last Day To Add/Drop**}		
	16	W	Population Parameters	8	Edwards
	18	F	Discussion: Finding an citing scientific articles (Meet in LS 126)		
	21	M	Vital Statistics	8	Edwards
	23	W	Population Growth	9	Edwards
	25	F	Discussion: Cohen (1995) Population growth and Earth's carrying capacity		
	28	M	Exam #1	1-9	Edwards
	30	W	Competition	10	Edwards
Oct	2	F	Discussion: Estes et al. (1998) Killer whale predation; group projects		

	5	M	Predation	11	Edwards
	7	W	Herbivory and Mutualism	12	Edwards
	9	F	Discussion: EcoBeaker* -- Keystone Predator		
	12	M	**Dr. Edwards' furlough day – No class**		
	14	W	Disease and Parasitism	13	Edwards
	16	F	Discussion: Dolan eet al. (2005) Rewilding North America		
	19	M	Conservation Ecology	17	Edwards
	21	W	Exam #2	10-13, 17	Edwards
	23	F	Discussion: Group projects: 5 references due		
	26	M	Community structure – Succession	18	Lai
	28	W	Community structure – Biodiversity	19	Lai
	30	F	Discussion: Chapin et al. (2000) Consequences of changing biodiversity		
Nov	2	M	Effects of predation and competition on community structure	20	Lai
	4	W	Disturbance and non-equilibrium communities	21	Lai
	6	F	Discussion: EcoBeaker* -- Island Biogeography		
	9	M	**Dr. Lai's furlough day – No Class**		
	11	W	**Veteran's Day - No Class**		
	13	F	Discussion: EcoBeaker* -- Intermediate disturbance hypothesis		
	16	M	Primary production	22	Lai
	18	W	Exam #3	18-22	Lai
	20	F	Discussion: Group projects		
	23	M	Secondary production	23	Lai
	25	W	**Dr. Lai's furlough day – No Class**		
	27	F	**Thanksgiving Vacation - No Class**		
	30	M	The nutrient cycle	24	Lai
Dec	2	W	The carbon cycle	25	Lai
	4	F	Discussion: Group presentations		
	7	M	Climate Change	25	Lai
	9	W	Human Impacts on Ecosystems	26	Lai
	11	F	Discussion: Group presentations		
	16	W	Final Exam (10:30 - 12:30)	23-26	Lai

* Note: On days with EcoBeaker assignments, discussions will meet in the LS 126 computer lab.

** Supplemental readings will be available online.