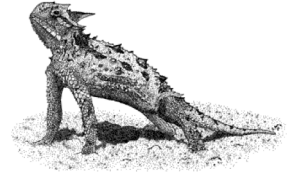


ECOLOGY LECTURE (BIOL 3680-001)

FALL 2019



Instructor: Dr. Marina M. Gerson **Pronouns:** she/her/they

Office: N-272

Office Hours: Mon/Wed 12-12:30, Tue/Thu 9:30-10:30, & by appointment

Contact Information: my office, mgerson@csustan.edu or (209) 664-6547

Required Materials: *iClicker* (Used is fine. Free roll-call registration in class.)

Ecology: Concepts and Applications, 8th edition, by Molles and Sher (ISBN 9781259880056)

(Note, it would be okay to have the 7th edition, if you can find a good used copy.)

Stan State Blackboard course site

COURSE DESCRIPTION and OBJECTIVES:

Prerequisites: BIOL 1050 & 1150 **and** CHEM 1100 & 1110 **and** statistics or calculus.

Ecology is the study of the relationships between organisms and their physical environments. It includes the study of individuals, populations of individuals, entire species and their interactions, community structures and relationships, ecosystem level functioning, and large-scale interactions. Ecological studies may be empirical, seeking out factual information on how organisms relate to their living on nonliving world; or, ecological studies may focus on applied topics, seeking guidelines for mitigation of human impacts and conservation of natural resources.

Knowledge of ecological concepts is important to the study of any living thing, and it is critical that we apply this knowledge if we are to support the persistence of the species and landscapes present on our planet today.

EXPECTATIONS OF STUDENTS

- **Be respectful of others** by arriving on time, giving your attention to whoever is presenting, listening to the ideas of your classmates, turning off cell phones, and generally being polite. This also means no text-messaging (yes, the person at the front of the room *can* tell what you are doing) and no internet surfing (it's distracting to those sitting around you).
- **Engage the course material** through participation in class, reading the text, and thinking about ecology outside of class.
- Students are expected to **take exams** on days and times scheduled. If you have a legitimate excuse to miss, I need to know the reason, in writing, before the exam date. If you have an emergency, you must let me know of the emergency as soon as you reasonably can. I will determine the appropriateness of taking the missed exam.
- **Maintain your academic integrity.** *Your integrity is your most valuable asset as a student* and in your future career as an educated person. In line with this, it is the policy of the Department of Biological Sciences that anyone caught *cheating* or *plagiarizing* will receive a grade of F for the course. I reserve the right to request any student suspected of cheating to take a second, different exam on the material. Please protect yourself by making your integrity obvious.

EXPECTATIONS OF THE INSTRUCTOR

- Same as those for students, in terms of respect for participants and engagement in the course. *Protecting your privacy and maintaining an environment in which you can learn are my top priorities.*
- Be **open to feedback** on the course and be flexible in order to make appropriate changes to meet student needs.
- Be **fair and consistent in assessment** of student learning and provide appropriate feedback to facilitate improvement.
- Be **available to students** outside of class time to answer questions and discuss class material.

Course Objectives

Students completing the course will be able to explain and apply foundational concepts in ecology:

- Interactions between organisms and their environments exist at each level of biological organization.
- Living things are constrained by physical laws.
- Random processes influence the evolution of populations, while natural selection promotes adaptive qualities of individuals.
- Ecological systems reveal complex relationships.
- Both genetic and environmental influences determine the responses of living things.

Student Learning Outcomes

Successful students will be able to:

- Give examples of morphological, physiological, and behavioral traits of individuals that mediate the hardships of the environment.
- Explain how individual fitness is influenced by evolutionary, developmental, and environmental constraints.
- Predict the outcomes of exploitation, competition, and mutualism, based on population traits.
- Deduce underlying reasons for the distributions of individuals in populations.
- Explain how the shape, tilt, rotation and revolution of the Earth itself result in the distributions and life histories of living things on our planet.
- Trace the flow of energy and the cycling of materials through an ecosystem, identifying the trophic roles of each population
- Identify details in which energy budgets of individuals vary, within populations and between species.
- Give examples of ways in which islands have been ideal settings for studies of biodiversity and evolution.
- Provide examples of experimental and observational evidence for the evolution of populations and the ecological processes responsible.
- List specific factors that result in the dynamics of populations.
- Explain examples in which populations vary in individual importance to community structure.
- List several ways in which, at both the local and global levels, humans negatively impact the biosphere beyond the scale of any other single species, often in unpredicted ways.
- Explain how biodiversity influences ecosystem processes.
- Discuss the broadly predictable patterns in which ecological systems develop over time.
- Identify aspects of life history that are constrained by the evolutionary past and those which are flexible to respond to the environment.
- Give examples of ways in which specific environmental conditions can influence the outcome of interactions between individuals or populations.

Students will also demonstrate the ability to:

- Choose and apply appropriate ecological methods of study.
- Use ecological models to make predictions and explore ecological interactions.
- Calculate ecological descriptive statistics from raw data sets.
- Develop hypotheses and appropriate experiments for testing the hypotheses.
- Analyze experimental data using appropriate statistical tests to evaluate hypotheses.
- Make connections between ecological concepts and everyday life.

TUTORING ON CAMPUS – Free tutoring and writing help services are available to assist you in most disciplines, including in biology! Library Annex LX14; Phone (209) 667-3642; Web <http://www.csustan.edu/Tutoring>

CAMPUS COUNSELING SERVICES – Overwhelmed by the stress of juggling classes and your home life? Our campus offers **excellent** counseling services to help support you! New location near Student Services SSX 1.1; Phone (209) 667-3381; Web <http://www.csustan.edu/Counseling/>

STUDENT HEALTH CENTER – You have already paid for access to health care on campus. Services include: birth control, flu shots, immunizations, pharmacy, check-ups, HIV testing, TB tests, and *doctor's notes for when you are sick!* Phone (209) 667-3396; Web <http://healthcenter.csustan.edu>

LIBRARY – Even in the temporary buildings, reference librarians enjoy helping you to find out all kinds of things! You can get help in person at the Reference Desk in LX25, or by phone or chat (scan left side of library main webpage). Phone (209) 667-3233; Web <http://library.csustan.edu>

TENTATIVE LECTURE SCHEDULE

DATES	TOPICS	Molles & Sher
Aug 23	Syllabus; Introduction to Ecology	1
Aug 26, 28, 30	Natural History: Life on Land	2
Sep 2	LABOR DAY HOLIDAY - NO CLASSES ALL DAY	--
Sep 4*, 6	Natural History: Life in Water	3
Sep 9	Natural History: Life in Water	3
Sep 11, 13	Population Genetics and Natural Selection	4
Sep 16, 18** Sep 20	Adaptations: Temperature Relations Midterm 1	5 1-5
Sep 23***	Let's go HYBRID - LECTURE WILL BE ONLINE Adaptations: Water Relations	6
Sep 25	Adaptations to Environment: Energy & Nutrients	7
Sep 27	Adaptations to Environment: Social Relations	8
Sep 30	Population Ecology: Population Distribution & Abundance	9
Oct 2, 4	Population Ecology: Population Dynamics	10
Oct 7, 9	Population Ecology: Population Growth	11
Oct 11	Population Ecology: Life Histories	12
Oct 14	Population Ecology: Life Histories cont.	12
Oct 16	Midterm 2	6-12
Oct 18	Interactions: Competition	13
Oct 21	Interactions: Competition	13
Oct 23, 25	Interactions: Exploitative Interactions	14
Oct 28	Interactions: Mutualism	15
Oct 30, Nov 1	Communities and Ecosystems: Abundance/Diversity	16
Nov 4, 6	Comm and Ecosys: Species Interactions & Community	17
Nov 8	Comm and Ecosys: Primary Production & Energy Flow	18
Nov 11	Veteran's Day Holiday - No classes all day	--
Nov 13, 15	Comm and Ecosys: Primary Production & Energy Flow	18
Nov 18	Midterm 3	13-18
Nov 20, 22	Communities and Ecosystems: Nutrient Cycling & Retention	19
Nov 25, 27	Communities and Ecosystems: Succession and Stability	20
Nov 29	THANKSGIVING HOLIDAY - No classes all day	--
Dec 2	Large-Scale Ecology: Landscape Ecology	21
Dec 6	Large-Scale Ecology: Geographic Ecology	22
Dec 9	Large-Scale Ecology: Global Ecology	23
Dec 9	Large-Scale Ecology: Global Ecology cont.	23
Dec 11	Reading Day - No More Classes	--
FINAL EXAM	Friday, December 13, 11:15-1:15	1-23

*First clicker day

**Drop deadline is 9/19

***Dr. Gerson off campus; lecture will be prerecorded and Office Hours will be held through Zoom

ASSESSMENT METHODS, GRADES and GRADING:

As a core course in the Biology major, it is important for students in this class to demonstrate both mastery of factual content and the ability to synthesize ideas based on the theories discussed in the class. Your grade will be based on clicker participation, mixed-format lecture exams, and lab activities. *There will be opportunities for Extra Credit, some of which will require participation in lecture.* Lab and lecture points are combined for a single grade in the course. The course is graded with plusses and minuses.

A (>924), A- (900-924), B+ (875-899), B (825-874), B- (800-824), C+ (775-799), C (725-774), C- (700-724), D+ (675-699), D (625-674), D- (600-624), F (<600)

<u>ASSIGNMENT</u>	<u>DATE</u>	<u>POINTS</u>
Syllabus Exercise	August 23	5
Lecture Participation w/iClicker	Throughout semester	95
Midterms	9/20 (125 pts), 10/16 (125 pts), 11/18 (125 pts)	375
Final Exam	December 13	125
Lab points	Throughout semester	<u>400</u>
TOTAL POSSIBLE POINTS		1,000

Participation using iClicker

You earn points by using your iClicker to participate each day in class. Questions will appear from the beginning through the end of class each day. Some questions will be opinion-based and have no "right" answer; others will be objective questions designed to indicate your level of knowledge. Your participation with your clicker will help me to gauge the level at which I need to cover each new topic and helps to keep you awake, too! I know that sometimes things come up. Don't worry: you will be able to *miss three days of clicking* without penalty.

Exams

There will be 3 midterms worth 125 points each and a comprehensive final. Exams will be mixed format, including approximately 30 multiple choice questions (you will need a Scantron) and followed by free response that could include T/F (and if False correct the statement to make it true), short answer, complete a graph or diagram, or apply your knowledge to a new circumstance. Exams will include recently covered material and will not include questions from chapters/material not yet covered. Some content builds on prior knowledge, so some questions may feel comprehensive, building on content included in previous quizzes. The comprehensive final will be in the same format.

Notes on Grades and Assignments

- In general, any homework or extra credit assignment should be turned in on the day and time it is due.
- Exams must be taken as scheduled unless you have made a prior arrangement with me. If an emergency arises, please contact me as soon as it is reasonable to do so.
- Following the return of any graded assignment, you have seven days in which to dispute any grade discrepancies. To dispute the scoring of an assignment, bring the assignment and supporting information showing why you deserved a different grade to my office, where we can discuss the issue privately.
- At the prerogative of the instructor, non-compliance with safety regulations or topics under Expectations of Students may result loss of credit for that activity.

Special circumstances: I understand that unusual circumstances can temporarily alter your availability for our class. If you know ahead of time that you will have a conflict on an important day, please get in touch with me as soon as possible. If an unforeseen incident causes you to miss an exam or due date, get in touch with me *as soon as your circumstances allow*. If you miss a regular class day, please get the notes from a friend, review the posted lecture notes, and come to my office hours with any questions you may have.

Learning styles and needs: As an instructor, I believe that part of my job is to intentionally facilitate the success of students with different learning styles and needs, and I do my best to incorporate multiple ways of learning into my courses and assignments. Please meet with me privately *as soon as possible* if there are particular accommodations that will foster your individual success in this course.

Lecture Recording Policy: Audio or video recording (or any other form of recording) of classes at Stanislaus State University is **not permitted unless expressly allowed by the faculty member** as indicated in the course syllabus or as a special accommodation (8/AS/10/FAC--Faculty Policy on Student Recording of Classes). Recordings are taken out of context of the classroom setting, and while they may document the exact words spoken, they do not fully document the exchange of information and understanding that occurred during the class session. If you have a particular reason why you would like to make an audio recording of lectures, please discuss this with me in my office.