

INSTRUCTOR: Jennifer Maresh maresh@biology COH/LML 152A Office Hours: TBA
COURSE TA: TBA

COURSE WEBSITE: <http://bio.classes.ucsc.edu/bioe107>

Required Textbook: *Ecology*. 2008. Cain, M.L., Bowman, W.D. & Hacker, S.D.. Sinauer Press. 621 pp.
Required Reader: *Ecology Reader (BioE 107) SS2 2009*. Contains course handouts, definitions, study guides, readings and assignments. Both are available in the bookstore.

Supplemental Text on Reserve at the Library: *A Primer of Ecology* (4th Ed.). 2008. Gotelli, N.J. Sinauer Press. 291 pp.

COURSE GOALS:

The main goal of this course is to introduce you to the important concepts in ecology. The emphasis will be on ideas, not memorization of a pile of facts. To achieve this, I try to focus on detailed case histories that both illustrate important ideas and exemplify aspects of the scientific process such as good experimental design or clever choice of study system to address a question. Another goal is to foster an appreciation for ecological diversity by comparisons of adaptive features and life histories of organisms. Finally, the goal of the journal articles is to encourage you to begin to think like ecologists for yourselves. Hopefully, the articles and the assignment will help you to develop your skills at critically evaluating evidence for ideas and hypotheses, to begin detecting patterns in nature, and generating your own hypotheses for these patterns.

ASSIGNMENTS & EXAMS:

Ecological Pattern & Process Paper. Students will identify an ecological pattern based on personal observations around campus or any nearby natural areas during their own time and propose (i) an ecological hypothesis that could explain the pattern and (ii) an experiment that one could do to test the idea. The write-up will be a 2-3 page report.

Journal Articles. Scientific journal articles exemplifying a topic introduced in class will be available to students each week. Students are asked to write 3-4 “discussion” sentences summarizing the study’s design, results and ecological significance (*i.e.*, what they did, what they found, and what it means). These discussion assignments are ****OPTIONAL**** and due at the start of class at the end of each week. Optional = extra credit (1% each, up to 5% total).

Midterm. The midterm will cover material introduced in the first half of the course, focusing on the study of ecology at the level of the individual, and the growth and regulation of populations.

Final Exam. The final exam will cover all material introduced in class, with a strong emphasis on material covered during the second half of the course – interactions between populations, and the study of ecology at the community and ecosystem levels. Students will be asked to draw upon general concepts learned during the first half of the course to demonstrate a comprehensive understanding of the integrative concepts of ecology (*i.e.*, “the big picture”).

GRADING:

<u>Assignment</u>	<u>% of Final Grade</u>
Pattern Paper	10%
Midterm Exam	40%
Final Exam	50%
Journal Articles	up to 5% Extra Credit

LECTURE SCHEDULE AND READINGS ("Text" is Cain et al., which you should read; "Supp" is Gotelli and is **non-required but highly recommended** supplement — read it only for your own interest and for detailed explanations of mathematical concepts covered in class)

WEEK 1

Tu	Jul 28	Introduction Evolution & Diversity Biogeography	Text Ch.1 Text Ch.6 Text Ch.17.1 – 17.2
Th	Jul 30	Physical Environment Physiological Ecology	Text Ch.2 – 3 Text Ch.4; Ch.5.4

Discussion Papers:

- (1) Schwenk, K. (1994) Why snakes have forked tongues.
- (2) Wikelski, M. (2005) Evolution of body size in Galapagos marine iguanas.

WEEK 2

Tu	Aug 4	Life Histories & Body Size Behavioral Ecology (<i>Guest Lecturer: D. Shizuka</i>)	Text Ch.7 No Reading
Th	Aug 6	Distributions, Abundances & Dispersal Population Growth & Regulation	Text Ch.8 Text Ch.9.3 – 9.5, Ch. 10.1; Supp.Ch.1 – 2

Assignment Due: Ecological Pattern & Process Paper

Discussion Papers:

- (3) Reznick, D.A. et al. (1990) Experimentally induced life-history evolution in a natural population.

WEEK 3

Tu	Aug 11	Population Structure & Life Tables (<i>Guest Lecturer: A. Harrison</i>) Population Extinction & Metapopulations	Text Ch.9.1, 9.2; Supp. Ch.3 Text Ch.10.3, 10.4; Supp. Ch.4
Th	Aug 13	**MIDTERM** Interspecific Competition	Text Ch.11; Supp. Ch.5

Discussion Papers:

- (4) Cohen, J.E. (1995) Population growth and Earth's human carrying capacity.

WEEK 4

Tu	Aug 18	Predation & Herbivory Parasitism & Disease Mutualism & Commensalism	Text Ch.12; Supp. Ch.6 Text Ch.13 Text Ch.14
Th	Aug 20	Community Succession Species Richness & Island Biogeography	Text Ch.16; Supp. Ch.8 Text Ch.15, Ch.17.3, Ch.18; Supp. Ch.9, Ch.7

Discussion Papers:

- (4) **Estes, J.A. et al. (1998) Killer whale predation on sea otters linking oceanic and nearshore ecosystems.**
- (5) **Herre, E.A. (1993) Population structure and the evolution of virulence in nematode parasites of fig wasps.**

WEEK 5

Tu	Aug 25	Food Webs Conservation & Management	Text Ch. 20 Text Ch.22 – 23
Th	Aug 27	**FINAL EXAM**	

Discussion Papers:

- (6) **Jackson, J.B.C. (2001) Historical overfishing and the recent collapse of coastal ecosystems.**

DRC ACCOMODATIONS:

If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (e.g., office hours) within the first two weeks of the quarter. Contact DRC at 459-2089 (voice), 459-4806 (TTY), or <http://drc.ucsc.edu> for more information on the requirements and/or process."

***** PLEASE NOTE: This syllabus is tentative and subject to change between now and the start of the course!! *****