

Botany 4600 Plant Ecology
CSU Stanislaus, Spring 2015



I. General Information

Professor: Dr. Michael Fleming
Office: Naraghi 269
Office Hours: Tuesdays 11-12, Wednesdays 2-3, Thursdays 10-11, or by appointment
Phone: (209) 664-6923
Email: mfleming1@csustan.edu
Lectures: MWF 1:00–1:50 in Science-1 137 (aka S-137)
Labs: M 2:30–4:50 in Naraghi 211 (aka N-211)
Required Text: *The Ecology of Plants, 2nd ed.* by J. Gurevitch, Scheiner and Fox.

Course Description. Plant ecology is the study of the interrelationships between plants and their environments, with special emphasis on the structure, development, distribution and measurement of plant communities. This course satisfies the ecology elective for the biology major, and is split roughly into thirds that focus on the community concept, applications of the community concept, and the societal importance of plant communities, respectively. Most of our focus will be on wild plant communities, but we will also cover some material dealing with ecology of agricultural systems. **Prerequisites:** BIOL 1150, CHEM 1110, or equivalent. **Strongly recommended:** one semester of statistics (MATH 1600, 1610 or 4640).

Course Objectives. After completing this course you should be able to (1) demonstrate your ability to think like an ecologist, (2) speak & write coherently about ecology with biologists and non-biologists alike, (3) apply ecological knowledge to make informed decisions in your life.

Announcements. Check BlackBoard for updates, lecture slides, study guides, etc.

My Teaching Philosophy. My teaching philosophy is grounded in high expectations, accountability, and belief in appropriate behavior conducive to learning. Five principles guide my teaching philosophy:

1. All students can become lifelong learners.
2. Significant change requires significant commitment and time.
3. Struggle is a necessary and important part of life.
4. Students must accept responsibility for their learning progress.
5. I will never do for students what students can do for themselves.

That said, I will work hard and use multiple ways of learning to help you succeed in this course. Hopefully we'll also have a few laughs as we go along.

Class Participation. Please arrive to class on time and ready to learn. I expect all students to attend every class session; there is plenty of research that shows final grades are positively correlated with attendance. Assignments are due at the start of class (or on your way out if we did it in class). You will talk and work frequently in small groups, and sometimes present your ideas to the entire class. Most importantly, please do not disrupt the learning environment, rights, and property of others. Of course, all gadgets not conducive to learning in the course, such as cell phones/music devices/etc. should be turned off during class. Be honest, hold yourself accountable for your actions, and hold me accountable for mine.

Respectful Classroom Atmosphere. This class is a "judgment-free zone" at all times. This means that when you disagree with somebody's opinion on a subject, you do not have the right to sling insults, raise your voice, or criticize them. I most certainly encourage disagreement on controversial topics and conversations are livelier if people do disagree on a subject. However, polite civil disagreement and outright hostility are two very

different things. I will not tolerate hostility in the classroom, and anyone participating in this behavior will be escorted out of the room and not allowed to return for the rest of the class period.

Evolution. “Respect for data, comfort in faith.” Someone much wiser than me came up with this saying. If you can live by it then you’ll be fine in this class. Evolution and natural selection are central tenets of biology and will be critical aspects of this course, openly discussed and referred to frequently.

Math. Every ecologist uses math and statistics. In this course you will use math as it applies to ecology. This will include making and interpreting graphs, calculating averages and variation around an average, using t-tests, ANOVA, linear regression and ordination. I will help you and there will be chances to practice. NOTE: a laptop computer and/or scientific calculator is a very good tool for this class.

II. Assignments, Exams and Grading

Exams. We will have two midterms and one comprehensive final exam. Exams will consist of diagram interpretation and open response questions. Please plan ahead and arrive early on exam days. Requests for early or make-up exams must be submitted *in writing* prior to the scheduled exam with evidence of your hardship. If you miss an exam and have to make it up you will also need to provide some evidence of hardship. **No make-up exams will be given after graded exams have been returned to the class.**

Primary Literature. Periodically throughout the semester we will have in-class group discussions stemming from readings from primary literature. Some readings and subsequent discussions will require more work than others (depends on the length and rigor of the paper). No opportunities for makeup discussions will be given, but if you miss one I encourage you to talk about the paper with a friend or with me outside of class. These readings/discussions are designed to provide opportunities for you to explore plant ecology research, discuss complicated concepts and terminology, and teach each other.

Labs. The laboratory and lecture are generally integrated, and each lab period will have a special emphasis that (hopefully!) further illustrates concepts introduced in lecture. Labs will often NOT have an accompanying lab report; rather, lab grades are based on (1) participation and (2) the term project that you and your team design, implement, analyze, write up and report to the rest of the class. Any take-home work stemming from a lab constitutes “participation” and will be due the next week at the beginning of lab. You can only get credit for a lab if you are present in lab—there are no make-up labs. Lab activities will include, but are not limited to, greenhouse and bio-ag area work, plant identification, statistical methods relevant to analyzing plant community data, and field trips.

Grades. There are 550 points possible in this course distributed as follows:

Activity/Assignment	Points	% of Total Points
MIDTERM EXAMS (100 x 2 exams)	200	36%
FINAL EXAM	150	27%
PRIMARY LITERATURE DISCUSSION (10 pts. x 3 weeks)	30	6%
LAB TERM PROJECT (30 pts. presentation, 70 pts. paper)	100	18%
LAB PARTICIPATION (5pts. weekly)	70	13%
TOTAL	550	100%

I calculate grades as a function of grade point average (GPA) where A=4.0 and D=1.0 (I will show you an example of this in class). Students find this method fair and equitable. **I give + and – grades** as follows:

4.0-3.8 = A	3.7-3.6 = A-	3.5-3.3 = B+	3.2-3.0 = B	2.9-2.6 = B-	2.5-2.3 = C+
2.2-2.0 = C	1.9-1.6 = C-	1.5-1.3 = D+	1.2-1.0 = D	0.9-below = F	

Important Dates. The last day to add the class is Feb. 4th. Census Date is Feb. 23rd. This is the last day to drop the course. Note there is no CR/NC option for this course; it is offered with letter grade option only. I will not change grades once final grades have been submitted.

Extra Credit. I do not plan to offer extra credit. If I do come up with a great idea for extra credit, I will let you know, but often it means more work for both you and me (not an attractive option). The best thing to do is do well in class, study effectively, and get help when you need it.

Cheating and Plagiarism. Don't do it! Your work should reflect your own effort and words. Any verified instance of cheating and/or plagiarism will be unpleasant for all involved. At minimum, verified instances of cheating or plagiarism will result in the offending student receiving an automatic F in the course and being referred to the Dean of Students for further disciplinary action.

Recording Lectures and Special Accommodations. This course is ADA accessible. Students with documented disabilities should seek special accommodations for all classes through the Disability Resource Services office on campus (MSR 210). If DRS notifies me that you require ADA accommodations then you will receive them. Examples of ADA accommodations include extra time for exams, permission to record lectures, and note-taking assistance. If you record my class in any form (video, audio, still pictures, etc.) without accommodation from DRS, that constitutes intellectual property theft and will be unpleasant for all involved. NOTE: Student athletes who will miss class for games/matches should have their coach contact me, and I will accommodate your schedule by allowing alternate test dates and/or excusing points missed in class.

III. Field Trip, Tuesday 3/31/15

We will be in the field during the semester, mostly around campus during lab. One significant part of the class is our field trip to Red Hills, a serpentine soil site with many endemic plants, where we will survey plant communities there and use those data (and prior class data from the same site) to explore a plant ecology question and write a formal scientific paper. For the Red Hills trip, we will meet in the parking lot at Red Hills. I will provide you with a plant list and directions to the site. More details provided in class.

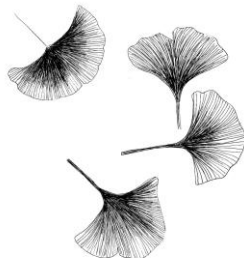
IV. Study Skills

The following suggestions may help you succeed in this and other classes. 1. **Read** the chapter(s)/papers before class and bring questions you have to class. 2. **Attend** class. 3. **Complete all assignments** and turn them in on time. 4. **Take notes** in a way that is intuitive to you, even if you have to use a lot of paper. 5. **Join a study group** with like-minded individuals. 6. **Study** for the exams sooner than the night before or morning of the exam. 7. **Go to bed early** the night before and get up early the day of exams. 8. **Learn how you learn** and then stick with a style or process that is successful for you.

Learning takes time and is difficult (impossible?) to do in a single session before an exam. Form a study group that meets regularly so you can talk about new concepts and review terminology with your colleagues. When studying for exams, focus primarily on lecture/lab notes and concepts emphasized in in-class and lab activities; readings are useful background information with lots of relevant examples of concepts discussed in class. Students who study in groups tend to do better than those that study alone.

V. Graduate Students

If you are taking this course as a graduate student, then extra work is required. Please set up a time to talk to me about additional graduate-level work.



VI. Tentative Schedule (subject to change)

<i>Week (Monday date)</i>	<i>Lecture Topic(s)</i>	<i>Readings</i>	<i>Lab</i>
1 (Jan. 26) First class is Jan. 28	Introduction The Community Concept	Ch. 1 Ch. 9 (pp. 205-212)	
2 (Feb. 2)	Community Concept, cont'd Evolutionary Processes	Ch. 9 (pp. 205-212) Ch. 6	Greenhouse → set up competition experiment
3 (Feb. 9)	Environmental Gradients Climate	Ch. 2, 3, 4 (<u>skim</u> these) Ch. 17, 19	Plant ID, theory and practice of sampling communities
4 (Feb. 16)	Biomes Indicator Species Concept	Ch. 18 Ch. 8	Process plants/data from competition experiment
5 (Feb. 23)	Nature of Populations EXAM 1 FRIDAY Feb. 28	Ch. 5	Share data from competition experiment
6 (Mar. 2)	Competition Herbivory	Ch. 10 Ch. 11	Statistical Methods 1 – the basics (mean, SD, types of graphs, t-tests, ANOVAs)
7 (Mar. 9)	Nature of Communities Ordination Methods 1	Ch. 9 (pp. 212-end), Ch. 15	Statistical Methods 2 – Regression Analysis
8 (Mar. 16)	Ordination Methods 2	Ch. 15	Team formation, Statistical Methods 3 – Indirect Ordination
9 (Mar. 23)	Succession	Ch. 12	Statistical Methods 4 – Direct Ordination
10 (Mar. 30)	Landscape Ecology EXAM 2 FRIDAY Apr. 3	Ch. 16	RED HILLS TRIP TUES. 3/31 Field trip prep, gear, logistics, data sheets
11 (Apr. 6)	Spring Break ☺	No Classes!	Do something fun
12 (Apr. 13)	Lessons From Succession	Ch. 12 (review), 13	Process soil from FT, begin entering/formatting data
13 (Apr. 20)	Restoration Ecology	Ch. 12 (review), 8	Work on reports
14 (Apr. 27)	Plants and People	Ch. 21	Work on reports
15 (May 4)	Global Climate Change	Ch. 21, 19	Work on reports
16 (May 11)	Extinction Good News For a Change!	Ch. 19 Special topic not in text	Reports
17 (FRIDAY, May 23)	FINAL EXAM = FRI. MAY 22nd, 11:15 - 1:15		

