

BIO 307 - PLANT ECOLOGY

COURSE SYLLABUS

Instructor: Dr. Kerry Byrne Office: DOW 205
 Contact: Kerry.Byrne@oit.edu Office Hours: MWF 1-2 pm, R 2-3 pm, or by apt.

Lecture: MWF 10 -10:50 am in DOW E255

Lab: T 8 – 11:50 am in DOW E255

Required textbook and other course materials: *The Ecology of Plants*, 2nd edition by J. Gurevitch, S. Scheiner, and G. Fox; additional readings from the primary literature will be assigned for lab discussion and will be available through Blackboard.

Course overview: introduction to the field of plant ecology including physiological, population, community, and ecosystem ecology. Some of the topics covered will be unique to plants, such as photosynthesis, and other topics, not necessarily unique to plants, will emphasize the distinctive ways that plants deal with their environments.

Course objectives: in this course, students should be able to demonstrate an understanding of how biotic and abiotic factors affect the abundance and distribution of plants in natural communities. More importantly, students should leave this course able to:

- Observe patterns and ask interesting ecological questions;
- Design and conduct sound ecological experiments;
- Critically evaluate work published in the primary literature;
- Analyze and interpret data generated from ecological experiments;
- Communicate your findings and the findings of others in written and oral format to your peers and the larger scientific community.

Student assessment: course grades at Oregon Tech follow a “whole grade” structure: A = 100-90%, B = 89-80%, C= 79-70%, D = 69-60%, F < 60%. Student performance will be assessed using the following criteria:

Component	% of grade
Quizzes (best 5/6)	5
Midterms (2)	40
Participation	5
Critical review/ discussion lead	10
Lab final project	20
Final Exam	20

Students must purchase BLUE scantron sheets for all exams and bring them to class on the day exams are scheduled. You may purchase these at the student bookstore.

Quizzes: there will be six unannounced quizzes in lecture and/or lab, based on the reading assignment just for that day. This is a small class, so it is imperative that everyone is prepared to actively participate in the course by keeping up with the reading. Reading takes time, so I believe that your effort to keep up with the reading should be reflected in your evaluation for the course. Quizzes will be OPEN NOTES, but not open book. You cannot make up quizzes. However, your quiz grade will be based on your best five out of six; so if you are unlucky enough to miss class on day with an unannounced quiz, it will not hurt your grade.

Midterms: there will be two in-class exams, on Monday, January 26 and Friday, February 20. These two exams will focus on material covered since the last exam (so the second exam is not cumulative). The format may include TF, multiple choice, short answer, and essay.

Participation: attending class and actively participating in discussions is important! I will evaluate your participation in class discussions, along with your attendance.

Critical review: once in the quarter you will be asked to write a one-page (double spaced) critical review of the paper, as if it were being submitted to a journal and the editor of the journal has asked you for your opinion on whether to publish the manuscript. What to include in your review: (1) short (3-4 sentence) summary of the paper; its main point and the approach taken by the authors; (2) critique the methods, interpretation, creativity, and significance of the work; (3) make suggestions about how to make the research and the paper better. You may also want to make suggestions about future research related to the paper, or an extension of the paper. *The week that you submit your critical review, you will also be responsible for leading the discussion of the article with your classmates (and me).*

Discussion responses: in the weeks that you are not leading discussion/writing the critical review, you must respond (briefly) to three questions about the paper assigned for the week. I will read and evaluate these responses without giving you a formal grade. These questions are designed to help you think critically about the paper as you read it.

- 1) Describe one thing you liked about the paper.
- 2) Describe one thing you did not like about the paper, or something you would have done differently.
- 3) What is something this paper made you wonder about? This could be a conceptual question, or something practical/logistical. You can write your answer to this question in the form of a question.

Lab final project: anyone can collect data, but the ability to analyze, interpret, and communicate meaningful results is more challenging. The lab final project will be a quarter-long investigation into a long-term plant community data set. We will work together to analyze the data during lab periods, and then each student will be assigned a specific subtopic on which they will write professional scientific paper. The final project will be discussed in detail during week 2.

Final Exam: the final exam is cumulative, and will be open note but not open book.

General Details

Make up exams or deadline extensions are issued only for university-excused absences. There are no early exams or extra credit. Late assignments are penalized 20% per day overdue.

Policy on contesting grades: I like to consider my classroom a democratic monarchy. I am the first to admit that I am not perfect- I may grade something incorrectly, or there may be more than one right answer that I have not thought of. Thus, I encourage you to contest your grade if you feel your answer falls into one of those categories. If you feel your answer was graded incorrectly on a test, quiz, or other assignment, you have **one week** after the test is returned

to contest. You must return your original assignment with a typed statement of why you think your answer is correct and why we should consider it for regrading.

Student success center: <http://www.oit.edu/current-students/student-support>

The Student Success Center provides a wide range of student support services including Testing Services which promotes academic success by working with faculty by providing testing services for any of the OIT academic courses as well as specialized testing services such as those needed for accommodations for students with disabilities, in-class test proctoring, and a computer lab, and Career Services which offers career advising, resume writing, job interviewing workshops, job search assistance, career fairs, and job listings.

Testing services: 541-885-1791

Career services: 541-885-1020

Peer consulting services: <http://www.oit.edu/current-students/student-support/tutoring> Peer Consulting is a **completely free** academic support service available for all students of Oregon Tech. Peer Consultants are typically Oregon Tech students who have taken the same classes you have and have earned a B or better in their areas of expertise. We often have professors and staff that offer their time and assistance in the Center as well. Our goal is to provide assistance in all areas, majors, and courses offered at Oregon Tech. Peer Consulting reinforces what you are learning in your classes, fosters your sense of community and strengthens intercultural communication. Peer Consulting helps empower you to become successful in your academic career and reach your graduation goal. **Office:** LRC 233 **Tel:** 541.851.5236

Disability services: <http://www.oit.edu/current-students/student-support/disability-services> If you may need a course adaptation or academic accommodation because of a disability, or if you might need special arrangements in case the room or building must be evacuated, please see me as soon as possible. I rely on the Disability Services for assistance in verifying the need for accommodations and developing accommodation strategies. If you have not previously contacted that office, I encourage you to do so. Staff will assist in communicating information about needs and adjustments to instructors. **Call:** 541-885-1031 or 541-851-5227 for further assistance. **Office:** LRC 230B

Statement on recording lectures and in-class discussions: Please be advised that this class may be recorded. HOWEVER, if you would like permission to record this class you must speak with the professor prior to making any recordings.

Disrupting the academic environment: obstruction or disruption of teaching, research, administration, disciplinary procedures, or other institutional activities, including the Institution's public service functions or other authorized activities on institutionally owned or controlled property is strictly prohibited by Oregon Tech's code of student conduct and may result in disciplinary action.

The honor code: cheating and plagiarism are strictly enforced in this course. Students with "wandering eyes" during exams will be asked to move seats one time, after that you will be asked to leave the exam and receive a 0 grade. Students may work together on assignments and projects, but each individual is expected to contribute equally, not rely on the work of others. Students caught cheating will receive a zero on the exam or assignment and be reported to student services.

Plagiarism means to:

- to steal and pass off (the ideas or words of another) as one's own
- to use (another's production) without crediting the source
- to commit literary theft
- to present as new and original an idea or product derived from an existing source

All of the following are considered plagiarism:

- turning in someone else's work as your own
- copying words or ideas from someone else without giving credit
- failing to put a quotation in quotation marks
- giving incorrect information about the source of a quotation
- changing words but copying the sentence structure of a source without giving credit
- copying so many words or ideas from a source that it makes up the majority of your work, whether you give credit or not (see our section on "fair use" rules)

For more information on plagiarism and how to properly cite scientific works and writings contact your instructor or visit www.plagiarism.org

Tentative Lecture Schedule

Unit	WEEK	DATES	TOPICS	READING
Physiological ecology	1	5-Jan	Course logistics & introduction	Chpt. 1
		7-Jan	Light & photosynthesis	Chpt. 2
		9-Jan	Water, energy, & temperature	Chpt. 3
	2	12-Jan	Cont.	Cont.
		14-Jan	Soils, nutrition, & belowground interactions	Chpt. 4
		16-Jan	Cont.	Cont.
Evolutionary ecology	3	19-Jan	No Class - Holiday	~
		21-Jan	Natural selection & adaptation	Chpt. 6
		23-Jan	Gene flow & speciation	Cont.
	4	26-Jan	EXAM 1	~
Population ecology	4	28-Jan	Plant growth & reproduction	Chpt. 7
		30-Jan	Pollination, seed predation, & dispersal	Cont.
	5	2-Feb	Life history	Chpt. 8
		4-Feb	Cont.	Cont.
Community ecology	6	6-Feb	Ecological statistics, measuring communities	Chpt. 9
		9-Feb	Cont.	Cont.
		11-Feb	Abundance, diversity, & rarity	Chpt 13 pp. 307 - 313
	7	13-Feb	Competition	Chpt. 10
		16-Feb	Cont.	Cont.
		18-Feb	Allelopathy, Facilitation, & Coexistence	Cont.
		20-Feb	EXAM 2	
	8	23-Feb	Herbivory	Chpt. 11
		25-Feb	Disturbance	Chpt. 12
		27-Feb	Succession	Cont.
		28-Feb – 1 Mar	FIELD TRIP	~
	9	2-Mar	Invasive species & diversity	Chpt. 13 pp. 313 - 324
4-Mar		Biogeochemical cycles	Chpt. 14	
6-Mar		Productivity & the carbon cycle	Cont.	
10	9-Mar	Climate & weather	Chpt. 17	
	11-Mar	Climate change	Chpt. 21	
	13-Mar	Climate change, cont. & course summary	Cont.	
FINAL EXAM		18-Mar	10 am – 12 pm	~

Tentative lab discussion schedule

WEEK	DATE	TOPIC	DISCUSSION PAPER
1	6-Jan	Photosynthetic pathways	Christin and Osborne 2014
2	13-Jan	“socialism in the soil”? Mycorrhizal relationships; introduction to lab term project	van der Heijden & Horton 2009; Avolio et al. 2014
3	20-Jan	Plant conservation issues related to gene flow	Fischer & Matthies 1998
4	27-Jan	Seed dispersal	Howe & Smallwood 1982
5	3-Feb	Life history strategies	Chambers 1995
6	10-Feb	Competition	Corbin & D’Antonio 2004
7	17-Feb	Mutualisms	Janzen 1966
8	24-Feb	No lab this week- weekend field trip	~
9	3-Mar	No lab discussion this week- time to work on research papers	~
10	10-Mar	Global Change	Vitousek 1994