

PLANT ECOLOGY SYLLABUS

Meeting Times

Lecture: 9:15–10:35am Monday & Thursday, Bartlett Hall Rm 123

Labs: 1:00–5:00 pm, Monday, Tuesday, Wednesday, or Thursday, meet in front of the ENR building unless otherwise noted in the lab schedule below.

Professor: Dr. Myla F.J. Aronson

Email: myla.aronson@rutgers.edu

Office: 105 Blake Hall, 93 Lipman Drive, Cook Campus

Office hours: Monday 11:00am-1:00pm

Lab/Field Instructors: Mike Allen, mcallen@scarletmail.rutgers.edu.

Office hours: Wednesdays 10:00am-12:00pm.

Oliver Stringham, oliver.stringham.ta@gmail.com.

Office hours: Tuesdays 10:00am-12:00pm.

COURSE DESCRIPTION

Ecology is the study of interrelationships between organisms and their biotic and abiotic environments. As a basic science, ecology informs us about the processes governing the patterns we observe in nature. From an applied perspective, it is critical that we understand ecology as it provides insights and solutions to many of the environmental issues we are confronted with in our daily lives. In this course we will focus specifically on the ecology of plants. Plant ecology is the study of the distribution and abundance of plants and their interactions with the abiotic environment and other organisms. In this course, we will examine plant life histories, populations, communities, and plant-animal interactions (pollination, dispersal, herbivory). Labs includes greenhouse, field experiments, and field trips with an exploration of plant biodiversity of the campus and region. Terrestrial systems are emphasized.

COURSE LEARNING GOALS

This course is an introduction to plant ecology. Through the lectures, readings, assignments, field trips, and computer labs you will gain a broader understanding of the key concepts in plant ecology and get experience in applying these concepts by collecting, analyzing, and interpreting data from several local plant communities.

- Students will learn and express an understanding of how evolution and factors such as resources, animal interactions, and competition affect plant life histories, numbers, distribution, and community dynamics, and how humans and plants interact.
- Given a New Jersey habitat, students will be able to predict likely plant communities and identify the dominant plant species within these habitats.
- Students will develop a comprehensive understanding of common field techniques to study plant communities.
- Students will develop a comprehensive understanding of techniques to analyze and visualize plant population and community.
- Students will learn to effectively communicate scientific findings by writing portions of scientific papers based on field and greenhouse experiments.

How you reach the learning goals in class will be assessed through the evaluation and grading of:

- In-class activities
- Lecture exams
- Lab quizzes
- Lab assignments and reports

COURSE MATERIALS

Required Texts:

- Gurevitch, J, SM Scheiner and GA Fox. 2006. *The Ecology of Plants*, 2nd edition. Sinauer Associates, Sunderland, MA.
- Plant Ecology Lab/Field Manual (on Sakai).
- Collins, BR and KH Anderson. 1994. *Plant Communities of New Jersey*. Rutgers University Press, New Brunswick, NJ.

Recommended Texts:

- Knisely, K. 2009. *A Student Handbook for Writing in Biology*, 3rd edition. Sinauer, Sunderland, MA.
- Newcomb, L. 1989. *Newcomb's Wildflower Guide*. Little, Brown and Company, Boston, MA.
- Petrides, G.A. and J. Wehr. 1998. *Eastern Trees Field Guide*. Houghton Mifflin Harcourt.

All required and recommended texts will be on reserve at Chang Library.

How will you succeed in this course?

- Attend all lectures and labs.
- Take notes on paper, not on your computer (studies show that students retain more knowledge when hand-writing their notes)
- Complete and review all readings *before* the lecture or lab for which they are assigned.
- Meet all deadlines.
- Give yourself plenty of time to review the readings and notes before each exam.
- Take advantage of office hours.

COURSE POLICIES

Attendance

Lecture and lab attendance is mandatory. There are NO MAKE-UP LABS so don't miss your lab period! You may not "just" attend another lab section, we have strict restrictions on the number of students per van, as designated by the University. It is urgent that you are ON-TIME for field trips; vans must leave **promptly** at 1pm. If you are late, you will miss the van and you will not be given an opportunity to make up the lab. If an emergency arises, contact your TA immediately for lab and Dr. Aronson for lecture. To qualify for special consideration, all excuses must be submitted by email to your TA (for labs) or to Dr. Aronson (lecture) with supporting documentation (i.e. medical note, army drill notice, etc), **BEFORE** the missed class period. Whether or not special consideration is given is entirely at the discretion of Dr. Aronson.

Excuses without supporting documentation will not be granted.

If you miss more than **ONE** lab without a valid excuse, you will automatically lose 10% off your final grade.

If you miss a class period (either lecture or lab), you must, in addition to emailing your lab instructors and/or Dr. Aronson, report yourself absent on Rutgers' Self-reporting absence system: <https://sims.rutgers.edu/ssra/>.

Assessment

- Lecture (50% of final grade)
 - Three exams will cover material from lecture, lab, and readings (10% first and second exam each, 15% final exam, total of 35% of final grade). Approximately 25% of the 2nd and 3rd exams will be cumulative.
 - Lecture assignments (15% of final grade). These are in-class assignments aimed to increase your understanding of particularly challenging topics. *There are no make-ups for these assignments.* You must be present in lecture to receive credit for these assignments (and if you are late to lecture you will not be given credit for that assignment). One lecture assignment will be dropped (your lowest score) from your final grade calculation.
- Lab (50% of final grade)
 - Assignments and Lab reports (35% of final grade)
 - Quizzes (15% of final grade)
 - 3 lab quizzes on plant identification
 - 3 online plant identification assignments
 - One quiz will be dropped (your lowest score) from your final grade calculation.

Late Assignment Policy: There is **NO** late work accepted for lecture assignments and lab quizzes. Lab assignments are due at the beginning of lab, by 1pm *sharp*, 10% will be deducted for each day the assignment is late, *including if you are late to lab the day it is due*. If still late after 3 days, the assignment will not be graded and you will receive a zero for that assignment.

No extra credit will be awarded, but students are encouraged to submit work early for initial comments.

To be fair, we ask that any requests for a grade changes must be in writing, over email.

For assignments and lab reports, points will be taken off for misspellings, wrongly formatted text, sloppiness, not adhering to given formatting guidelines, and similar mistakes. We will use the gradebook on Sakai so you can check your current grade at all times. If you feel like you are falling behind, come and talk to us about ways to improve your performance. We are here to help you learn!

Assessment Scale:

A: 90-99 %; B+: 85-89 %; B: 80-84 %; C+: 75-79 %; C: 70-74 %; D: 60-69 %; F: < 60%

Academic Conduct and Integrity

All instances of plagiarism or other unacceptable and unethical academic conduct will be reported to the Office of Student Conduct might result in warnings or suspension according to Rutgers official rules.

All students are expected to follow University policies on academic integrity:

<http://academicintegrity.rutgers.edu/> .

Write everything by yourself, in your own words, and never copy text from the internet or publications – we are using turnitin.com to check lab reports. Please remember to cite all sources for information (see lab manual). Reference lists have to include all authors and full title of each paper.

Each student has the responsibility: (1) to uphold the highest standards of academic integrity in the student's own work; (2) to refuse to tolerate violations of academic integrity in the university community; and (3) to foster a high sense of integrity and social responsibility on the part of the university community.

Cheating and Plagiarism: Plagiarism is defined as the use of any information, published or unpublished, without acknowledgement of the source. **Cheating** is a special form of plagiarism that occurs when you use the work of another student in place of your own. Violations are always reported to the Dean's Office, under University rules. It is extremely important that you distinguish your own ideas from those of others. Your sources must always be acknowledged. If you have any questions about this, please see the instructors.

Notice for Students with Disabilities

Rutgers University welcomes students with disabilities into all of the University's educational programs. In order to receive consideration for reasonable accommodations, a student with a disability must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation:

<https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations. To begin this process, please complete the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>.

LECTURE SCHEDULE

Subject to revisions. All readings for lecture unless otherwise stated are from Gurevitch et al. (2006). Readings may be added throughout the semester.

Date	Topics	Readings	
September	6	Introduction to the Course	
	10	Urban Plant Ecology	Aronson et al. 2017 (on Sakai), Del Tredici 2014 (weblink to be emailed)
	13	The Science of Plant Ecology	Chapter 1, Appendix 1
	17	Plant Identification and Life Histories	Chapter 8, pages 185, 188-192 Plant Identification Basics (on Sakai)
	20	Photosynthesis, Light & Water Adaptations	Chapter 2
	24	The Soil Environment	Chapter 4
	27	Global Patterns of Vegetation	Chapters 17-18, Chapter 19, pages 446-447. Ellis et al. 2008 (on Sakai)
October	1	Succession and Disturbance	Chapter 12
	4	Community Properties I	Chapter 9 Chapter 13, pages 307-310, 320-321
	8	Community Properties II	
	11	EXAM 1	
	15	Competition I	Chapter 10, pages 225-226, 233-237, 240-242, 248-253. Gibson et al. 1999 (on Sakai)
	18	Competition II	Chapter 10, pages 226-230
	22	Herbivory I	Chapter 11, pages 257-263, 267-273
November	25	Herbivory II	Chapter 11
	29	Plant Reproduction	Chapters 7-8
	1	Pollination Ecology	Chapter 7, pages 163-172
	5	Seed Ecology and Dispersal	Chapter 7, pages 179-183 Chapter 8, pages 185-188
	8	Recruitment limitation	Munzbergova & Herben 2005 (on Sakai)
	12	Invasive Species	Chapter 13, pages 313-316
	15	EXAM 2	
December	15	Population Structure and Dynamics I	Chapter 5
	19	Population Structure and Dynamics II	Chapter 5
	20	Applied population ecology	TBA
	26	Plant evolution and adaptation	Chapter 6, pages 129-133, 137-141, 143-144, 145-153
	29	Plant evolution and adaptation	Chapter 6
	3	Urban plant evolution	Johnson et al. 2015, TBA
	6	Restoration ecology	Handel 2013
10	Design with plant communities	Felson & Pickett 2005	
17	FINAL EXAM: 8:00am-11:00am, Bartlett 123		

LABORATORY SCHEDULE

All labs begin **promptly** at 1:00 pm. We go out to the field RAIN or SHINE! You must be on time or you will be left behind. Meet where specified in the schedule below. Always bring a print-out of that day’s lab, a notebook, and a writing utensil. Most labs are outdoors: **dress appropriately** for the weather, poison ivy, and ticks. *You must wear long pants and close-toed shoes.* You will **not** be able to attend the lab without appropriate clothing and you will not be given a chance to make-up the lab should you show up inappropriately dressed.

All readings are from Collins and Anderson (1994), unless otherwise stated. Readings may be added throughout the semester. ***All assignments are due at the beginning of lab by 1pm sharp, unless specified below.***

Week of	Topic	Location	Readings	Assignments
Sept 10	Plant Competition	Floriculture Greenhouses	Ch. 1-4	
Sept 17	Ecological Succession/ Forest Ecology	Hutcheson Memorial Forest, Somerset, NJ (meet in front of ENR)	Ch. 5, 7	
Sept 24	Plant-Insect Interactions	Heylar Woods Meadow (meet at the entrance to Heylar Woods or ENR, follow TA instructions – Transportation on your own)		Check on Plant Competition experiment and weed as specified in the lab manual.
Oct 1	Forest Ecology I	Hutcheson Memorial Forest (meet in front of ENR)		Field Quiz 1
Oct 8	Forest Ecology II	ENR Woods (meet in front of ENR)	Ch. 8	Plant-Insect Interactions Assignment Due.
Oct 15	Pinelands Ecosystems	New Jersey Pinelands (meet in front of ENR) <i>Late Return!</i>	Ch. 9-11	Online Quiz 1, due Friday Oct. 27, 5:00pm.
Oct 22	Forest Ecology III: Data Analysis	TBA		Field Quiz 2 Check on Plant Competition experiment.
Oct 29	Coastal Ecosystems	Sandy Hook National Seashore (meet in front of ENR) <i>Late Return!</i>	Ch. 12-13	Forest Ecology Assignment Due Field Quiz 3
Nov 5	Plant Competition: Harvest	Floriculture Greenhouses (Meet at entrance to greenhouses)		

Nov 12	Greenhouse and Herbarium tour	Floriculture Greenhouses and Chrysler Herbarium		Online Quiz 2, due Friday Nov. 17, 5:00pm
Nov 19	NO LABS			Tropical Plant Description Assignment Due Wednesday Nov. 22, 5:00pm
Nov 26	Plant Competition: Data analysis	TBA		Two Instagram posts due, Friday Dec. 1, 5:00pm
Dec 3	Climate Change	TBA	Chapter 3	Online Quiz 3, due Friday Dec. 8, 5:00pm Climate Change Assignment Due at the end of Lab.
Dec 10	NO LABS			Plant Competition Lab Report due at the beginning when your lab period would normally meet.

This syllabus and schedule is a guide for the course and is subject to change. We will email you by Sakai if any changes occur.