General Plant Ecology/ Plant Ecology

BOT 4601 - Fall 2020

lecture: T,R at 12:30 pm - 1:45 pm on ZOOM

Professor	**Learning Assistants**
Dr. Suzanne Koptur	**Walter Gil, Giselle Luna, and Sofia Ocampo**
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office hrs T & R 10:30 am - noon, W 10:00 - 11:00, and by appt.	**Lab TAs: Andrea Salas Primoli and Mayra Ninazunta**

Course Description

This course will examine the ecology of plants at different levels: individual, population, and community. Our focus will be on the interactions of plants with each other, with other organisms, and with their environment. A general background in ecology is assumed (Prerequisite: PCB 3043, a general ecology class, or permission of instructor). Basic principles and foundations of the field will be considered as well as current research. Readings will come from a textbook (see syllabus that follows), articles from the literature, and various other internet resources to expand the topics. Our textbook highlights recent advances in research as well as historic studies that have laid the foundation of this important field of biological science. Students are expected to watch the on-line lectures and other material, and do the readings prior to each class, familiarizing themselves with the content, and coming to class to work on activities that will put the knowledge to use. By maximizing student participation in the learning process, class members will gain competencies in all aspects of plant ecology.

There will be four exams during the semester and a cumulative final exam. There will be in-class activities, including group projects with presentations (each student will work on three projects). Lecture grades will be determined as follows: each exam 10% (the best 4 of 5 --> 40% total), projects 30%, and class participation 30% (in-class work (individual and group) 20%; take-home/online 10%).

There will be a number of extra credit opportunities as well, including attending seminars, participating in field trips, and possibly helping with work-days in natural areas. To get credit, you must write a 1-page review/response to the activity and submit it to the professor. Each extra credit activity is worth 1% pt added to your grade, up to a maximum of 10 pts.

Learning Outcomes

This is a global learning course, and students will have experience interacting with students in other parts of the world via cooperative online international learning (COIL). Students

completing the lecture course will attain familiarity with the ecology of plants around the world, with special attention to plants of south Florida and tropical environments of the New World. Students will be able to understand the many environmental forces that determine the occurrence of species, various forms of the plant body, and the performance and reproductive success of plants in different situations.

After this course, students should be able to: appreciate and explain why all life depends on plants; discuss and illustrate how plants adapt to environmental stresses; explain how basic plant parts have been modified for a variety of functions and purposes; compare plant strategies for reproduction, competition, and interactions with other species (plant and animal) using the details of plant life cycles and life histories; recognize different habitats based on the plants present and/or their adaptations; measure species richness, evenness, and diversity, and compare habitats and communities; assess the "quality" of habitats and valuate them; make informed recommendations for plantings in urban/suburban environments ("the right plant in the right place"); trace and appreciate all the connections and human activities that depend on plants.

In addition, students may appreciate that humans have caused threats to many plants and their habitats, the perils faced by diverse plants in different habitats, and be cognizant of actions taken to conserve species, their genetic diversity, and environments. Students will know how to utilize the scientific literature, especially peer-reviewed journals, important and relevant books, websites, botanical and ecological organizations, to answer questions and meet future challenges.

Finally, students will be able to use their knowledge in planting their own yards and neighborhoods, making gardens, working with others in community gardens and habitat restoration projects. They will be able to think like scientists, exhibiting skepticism about claims made by others, and display a "show me" attitude in requiring data and analyses to back up claims made by others/ agencies/ companies/governments.

PLANT ECOLOGY LAB

Students pursuing lab activities will gain experience in field and lab research in plant ecology, be able to collect and analyze data, and interpret findings in written and oral presentations. They will succeed in working in teams, monitoring the growth of experimental plants, and measuring the outcome of manipulative experiments in the field. All these skills will prepare them for future work in natural areas management, research, or teaching in science.

FIU Code of Ethics and our course:

You are expected to be on time to class, and to stay the full period. If you are late, please come in, entering quietly and joining in the activity taking place. You are expected to maintain high standards of academic honesty, avoiding plagiarism, and turning in or presenting work that is original and citing sources when used. Any student found in violation of these standards will earn an automatic F and be reported to the Deans Office, no exceptions made. In accordance with FIU's policy on academic honesty (http://conduct.fiu.edu), it is expected that students in Plant Ecology will not submit the academic work of another person or persons as their own (both

individual students and groups). Additional discussion of academic honesty and integrity may be found at http://conduct.fiu.edu. We will use Turnitin.com in this course.

Lecture Schedule

required textbook: Gurevitch, J., S.M. Scheiner, and G.A. Fox. 2006. The Ecology of Plants (2nd ed.). Sinauer Associates, Inc. Sunderland, MA.

recommended: **Hammer, R. 2003. Everglades wildflowers. Falcon guides.**

Wk	Date/day	topic	text
1	August 25 - T	Introduction - pretest - course goals rated by students	1
	27 Aug - R	Photosynthesis and light	2
2	1 Sep - T	Water relations	3
	3 Sep R	Soil and nutrients	4
3	8 Sep - T	Processes of Evolution - Population Biology	5
	10 Sep - R	Outcomes of Evolution; Habitats, plant adaptations, life forms	6
4	15 Sep - T	Plant Challenges Presentations	
	17 Sep - R	Plant Challenges Presentations	
	F – M	Exam 1 online – Chapters 1 – 6 and presentations	
5	22 Sep - T	Library class with Patricia Pereira Pujol	
	24 Sep - R	Vegetative and Sexual Reproduction [Jigsaw assignment – Plant Reproduction]	7
	Saturday 26 Sep	Field trip to Shark Valley, Everglades National Park - 9 am - noon	
6	29 Sep T	Plant life histories	8
	1 Oct - R	Seeds and seedlings	
7	6 Oct - T	Community Properties	9
	8 Oct - R	Competition and other interactions	10
8	13 Oct - T	Plant Reproduction Presentations	
	15 Oct - R	Plant Reproduction Presentations	
	F – M	Exam 2 online – chapters 7 - 10	
9	20 Oct - T	Herbivory and plant pathogens	11
	22 Oct - R	Mutualisms	

	Sat 24 October	**Field trip to The Barnacle Historic State Park in Coconut Grove - National Public Lands Day - 9 am - noon**	
10	**27 Oct - T**	**Disturbance and succession**	**12**
	29 Oct - R	**Diversity and Rarity**	**13**
11	**3 Nov - T**	**Interactions Presentations**	
	5 Nov - R -	**Interactions Presentations**	
	F – M	**Exam 3 online - chapters 11 – 13 and presentations**	
12	**10 Nov - T**	**Ecosystem processes**	**14**
	12 Nov - R	**Communities in Landscapes**	**15**
13	**17 Nov - T**	**Landscapes, metapopulations, fragmentation**	**16**
	19 Nov - R	**Climate and vegetation; Biomes**	**17 & 18**
	20 Nov Friday	**Field trip to the Kampong (NTBG) in Coconut Grove – 10 am - noon**	
14	**24 Nov - T**	**Regional and Global Diversity**	**19**
	26 Nov	**THANKSGIVING HOLIDAY**	
15	**1 Dec - T**	**Paleoecology**	**20**
	3 Dec - R	**Global Change: Humans and Plants**	**21**
	F - M	**Exam 4 online – ch. 14 - 21**	
	Wk 16 - 8 Dec - T	**Final exam (cumulative) 12 - 2 pm**	