

# Population and Community Ecology Lecture

## Biology 303

### Fall, 2003

Dr. Gregg Hartvigsen, Office in Bailey 4 (basement)

Office Hrs: M 11:30-12:30, T 2:30-3:20, F 11:30-12:30, or by appointment

Required texts: Gotelli's Primer of Ecology and Real & Brown's Foundations of Ecology.

In this course we will investigate populations and communities. We will work to understand both the mathematical foundations of community ecology and gain much experience reading and discussing classical and contemporary literature. Since learning is best done actively you will be expected to explain concepts to the group.

The structure of the course is as follows. I will begin topics on Mondays with a question-driven lecture. The answers to many of these questions reside in Gotelli's book. I will expect you to come prepared. You will be asked to participate, go to the board, and think. Wednesdays and Fridays will be lead by different teams of students. You must choose two different topics (different weeks) but one must be a Wednesday while the other is a Friday. On Wednesdays we will discuss classic papers from the Foundations book. On Fridays we will have student free-choice. For the "student free-choice" meetings on Fridays you are encouraged to develop exercises that will help the group better understand the topic you are discussing. This will involve whatever you'd like, including projects, field trips, or discussions of recent literature, relevant to the week's topic. It should not duplicate what happened on Monday of that week. The more you make us do the more we learn and the more we appreciate your guidance!

To help manage the quantitative aspects of the course (most covered in lectures) there will be homework assignments due on Mondays, the day of the lecture on that topic. This means you will come to class prepared. The problems will be very similar to the book, which provides the solutions to the problems. We will most likely grade them in class. **They will not be accepted late.**

#### Learning Outcomes

After completing this class you should be

- familiar with several classic and contemporary papers in population and community ecology,
- comfortable with basic models in ecology and fluent in one or two of the models,
- knowledgeable about modern methods in population and community,
- experienced in developing a research topic, preparing a grant proposal to gain funding to complete this project, and presenting this project to the class.

Schedule: L=Lecture, P=Paper Discussion, S=Student Free Choice  
 Cx = Read chapter x from Gotelli's book.  
 Fx= Read Foundations paper x.

Date	Topic	To-do (list may change)
8-25	L: Introductions	
8-27	L: Meet in Arbo – Discuss grant proposals	Browse NSF's website and find, download, and skim the GPG (Grant Proposal Guide)
8-29	L: Understanding in Ecology	Appendix: 203-214, and "Can we defy nature's end" [pdf]
9-1	NO CLASS	
9-3	P: Defining Ecology	Frontiers Intro #1 by Kingsland Forbes (F1) Read "Does population ecology have general laws?"
9-5	S:	
9-8	L: Exponential Growth	C1 Homework #1
9-10	P:	Birch (F23) Davidson/Andrewartha (F28)
9-12	S:	
9-15	L: Logistic Growth	C2 Homework #2
9-17	P:	Volterra (F13) Nicholson & Bailey (F6) May (F11)
9-19	S:	
9-22	L: Age Structure Pop Growth	C3 Homework #3
9-24	P:	Leslie (F22)
9-26	S:	
9-29	L: Metapopulation Biology	C4 Homework #4
10-1	P:	Levins (1970) Hanski and Gilpin (1991)
10-3	S:	
10-6	L: Competition	C5 Homework #5
10-8	P:	Grinnell (F5) Park (F35)
10-10	S:	
10-13	FALL BREAK	
10-15	P:	MacArthur (F32) Connell (F37)
10-17	S:	

10-20	L: Predation	C6 Homework #6
10-22	P:	Holling (F24) Huffaker (F36)
10-24	S:	
10-27	L: Island Biogeography	C7 Homework #7
10-29	P:	Simberloff & Wilson (F39)
10-31	S:	
11-3	L: Succession	C8 Homework #8
11-5	P:	Clements (F3) Gleason (F4) Watt (F31)
11-7	S:	
11-10	L: Food Webs	TBA
11-12	P:	Paine (F38) Davis (F30)
11-14	S:	
11-17	L: Diverstiy	TBA
11-19	P:	Teal (F29) Odum (F27) Nature 2000
11-21	S:	3 copies of grant proposal due.
11-24	L: Discuss Grant Proposals	
11-26 to 11- 28	THANKSGIVING	
12-1	Proposal Presentations	
12-3	Proposal Presentations	
12-5	Proposal Presentations	
12-8	TBA	Peer review of 2 grant proposals due
	Final Exam – cumulative	

Grading:

<u>Item</u>	<u>Points</u>
Grant Proposal	70
Proposal Presentation	30
Paper discussion leader	20
Free-choice presentation	20
Discussion/Participation	20
Homework problem sets	40 (5 pts ea)
Final Exam	100