Fall 2020

BIOL 698-101: Ecology

Phillip Barden

BIOL698 ST Graduate Ecology

Instructor & coordinator: Dr. Phillip Barden
E-mail: barden@njit.edu
Additional instructors: Drs. Bunker, Holzapfel, Russell (contact info below)
Office: Online

Office Hours: Monday, Wednesday: 3:00-4:00pm; by appointment
Course Website: http://canvas.njit.edu
Course Schedule: Tuesday 6:00-8:50pm
Course Location: Online (see below)

Course description: Ecological patterns and processes shape global biodiversity. From the community of microbes under your fingernail to entire continents and the planet, the field of ecology seeks to understand complex interactions among biological species and the environment. These themes are increasingly important; humans are reliant on functioning ecosystems even as anthropogenic factors alter our planet in profound ways. This course introduces graduate students to ecology at multiple conceptual and geographic scales. Covered topics will include:

- Autecology: What are the determinants of organismal and environmental interactions?
- Population Ecology. What determines the abundance, dispersion, age structure, and dynamics of biological populations?
- Species Interactions. What is the nature of species interactions such as competition, predation, parasitism, and mutualism? How do these interactions influence distribution and abundance?
- Community Ecology. What determines the structure, organization, and dynamics of groups of coexisting species?
- Ecosystem Ecology. How do materials and energy move through the biotic and abiotic components of ecosystems? How do organisms and abiotic factors influence the structure and function of ecosystems?
- Applied ecology. How do we apply ecological principles to problems such as conservation biology, global change, and sustainability?

Learning objectives
This course will introduce students to topics in ecology and to the scientific method as applied to ecological research. Students will:

- Learn how to understand and evaluate scientific publications;
- Learn how to ask ecological questions, formulate hypotheses, generate predictions, design and conduct experiments, and interpret data;
- Gain an understanding of the structure of knowledge in ecology, biology, and the natural sciences in general;
- Gain in-depth understanding of foundational and contemporary topics in ecological research.

Prerequisites: None

Required Materials: None.

Instructors: This course is co-taught by Drs. Phil Barden (NJIT) , Dan Bunker (NJIT) , Claus Holzapfel (Rutgers-Newark) , and Gareth Russell (NJIT) . Because ecology is a rich and complex field, each faculty member will contribute their own unique expertise by leading classes throughout the semester. You will find a schedule detailing instructor dates below.

Prof. Barden, Course coordinator
Office hours: Monday, Wednesday: 3:00-4:00pm and by appointment
Office location: Online; 973-596-5863; barden@njit.edu
Prof. Bunker
Office hours: Tuesday 3-4 pm and by appointment
Office location: Online; 973-642-7537; dbunker@njit.edu
Prof. Holzapfel
Office hours: Thursday 10-12 and per appointment
Office location: Online; 973-353-5385; holzapfe@rutgers.edu
Prof. Russell
Office hours: Monday and Wednesday 11:30-12:30
Office location: Online; 973-596-6412; gareth.j.russell@njit.edu

Grading Policy: The course is team taught by Profs. Barden, Bunker, Holzapfel, and Russell. Each faculty member will grade you on 25% of the course, with their own grading schema.

Barden: Paper presentations, notes, class glossary	25%
Bunker: Hypotheses assignments, participation	25%
Holzapfel: TK	25%
Russell: TK	25%

Grading Scale	
A	90 – 100
B+	85 – 90
B	80 – 85
C+	75 – 80
C	70 – 75
D	60 – 70
F	0 – 60

Attendance & Participation: As a graduate student we expect that you will be fully engaged in this course and your graduate work in general. Failure to attend class and participate fully may result in failure in the class.

Assignments: This course will cover a large amount of material and will move quickly. Reading assignments will be posted on Canvas and/or disseminated via email. It is your responsibility to read all assigned materials before class meets and be fully prepared to discuss in class. Assignments will be made by individual instructors and will be due when stated.

Online course format: This course is set to run as Synchronous Online for the entire semester, meaning we will all meet during our scheduled class time (Tuesday, 6:00-8:50pm), but virtually. We will be using Cisco WebEx, a free to use video conferencing platform. By clicking the WebEx links listed on the Canvas page, you will be prompted to download WebEx software or, if you prefer, join the WebEx room from your browser. There is additional information on WebEx available here for the NJIT and Rutgers community:

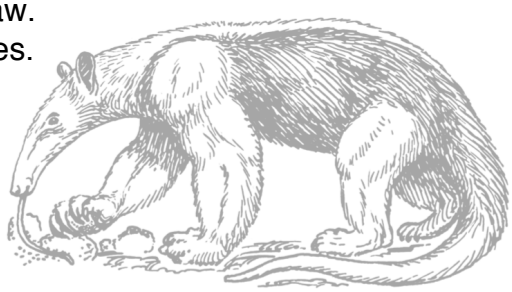
https://ist.njit.edu/webex
https://it.rutgers.edu/webex/
University-wide updates regarding the pandemic are here: https://www.njit.edu/coronavirus

Academic integrity: Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at: http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf.

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. **Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university.** If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at dos@njit.edu

Canvas: We will be using Canvas for our class website (http://canvas.njit.edu). To use Canvas students must have an NJIT UCID. If you are matriculated at NJIT you should already have a UCID. If you are a Rutgers student you may already have one. You can check by following the directions here: https://ist.njit.edu/ucid/. If you do not have one you can request one at the same page or call the NJIT helpdesk for assistance (973 596 2900).

Key Dates:
Sept. 1: First day of classes
Sept. 8: This Tuesday Follows a Monday schedule, NO CLASS
Sept. 8: Last day to add/drop a class.
Sept. 14: Last day to withdraw with 90% refund
Nov. 9: Last day to withdraw.
Dec. 10: Last day of classes.



Week	Date	Instructor	Topic	Assignment (due on date listed)
1	1-Sep	Barden	*Introduction – Core terms and concepts – Survey of major subfields of ecology*	Read the syllabus
2	8-Sep	**No Class–Monday Schedule**		By Wednesday Sept 9 at 5pm: Draft of presentation, paper notes for readings listed on Sept 15
3	15-Sep	Barden	*Distribution of life on earth: biomass, diversity, and carbon*	Bar-On et al. 2018.; Gaston 2000.; Mannion et al. 2004.; MacArthur & Wilson. 1963.; Chapin et al. 2006.
4	22-Sep	Barden	*Evolutionary Ecology: ecomorphology, adaptive radiations, and extinction*	See Canvas
5	29-Sep	Bunker	*Niches*	See Canvas
6	6-Oct	Bunker	*Communities*	See Canvas
7	13-Oct	Bunker	*Biodiversity*	See Canvas
8	20-Oct	Russell	*Population Dynamics in Time and Space*	See Canvas
9	27-Oct	Russell	*Landscape Ecology*	See Canvas
10	3-Nov	**No Class–Election Day but replacement activity from Barden**		See Canvas
11	10-Nov	Russell	*Conservation as Applied Ecology*	See Canvas
12	17-Nov	Holzapfel	*Community Assembly*	See Canvas
13	24-Nov	Holzapfel	*Interactions (competition, predation, mutualism, etc)*	See Canvas
14	1-Dec	Holzapfel	*Multitrophic communities*	See Canvas
15	8-Dec	Barden	*Behavioral Ecology*	See Canvas

*Course schedule is tentative and subject to change. Please see Canvas for updates, reading assignments, and online meeting place information.