Ecological Field Methods
Fridays 1:00 – 5:20 pm, Central King Building 328

Biology 475
Fall 2024

Instructor: Maria Stanko
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Phone: 973-642-7246

Course website: http://canvas.njit.edu
Office: CKB 340E
Office Hours: Tuesdays 3:00pm-4:00pm, Thursdays 11:30am-1:30pm, or email for appointment

Description: Exploration of the natural systems around you inspires endless scientific questions. In this class, we'll travel to a variety of sites near campus, using each to become familiar with the types of ecosystems found in our area, to identify common plant and animal species, and to address ecological questions employing common methods used in the collection of ecological data. In addition to field techniques, you'll learn how to design an experiment to test a scientific question, to apply different statistical tests commonly used to analyze ecological data, and to report scientific results in written and oral format. Using what you've learned throughout the semester, each student will design and carry out an independent ecological field experiment and present the results in a class research symposium at the end of the semester.

Photo credit: Maria Stanko

Prerequisite: R 120:280 (Ecology) OR R 120:370 (Plant Ecology) AND/OR permission of the instructor.

Text: McMillan, V. E. 2016. Writing papers in the biological sciences. 6th ed. Bedford/St. Martin's, Boston, Massachusetts, USA. (Previous editions OK.)
App: Download and make an account on the iNaturalist app: https://www.inaturalist.org/
Field recording tools: It is recommended that you bring a camera (phone camera ok) and a small notebook to class each week!
Additional readings: Labs will be posted on the course website (http://canvas.njit.edu). Students are required to read the posted lab description prior to attending class.

Learning outcomes: Students are able to….

1. Describe the types of ecosystems found in our area.
2. Identify common plant and animal species found in local ecosystems.
3. Collect ecological field data using appropriate tools and experimental design.
4. Apply different statistical tests commonly used to analyze ecological data.
5. Research topics using electronic and print sources and attribute sources properly.
6. Design and carry out an experiment to test an ecological question.
7. Communicate scientific results in written and oral format.

Disability Statement: Please let me know if you need accommodations for a disability. If you are in need of accommodations due to a disability please contact the Office of Accessibility Resources & Services (OARS), to discuss your specific needs.

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Grading: Grades will be assigned based on the percentage (rounded to a whole number) of points you earn out of the total possible, following the standard grade scale (90%+ A, 85-89% B+, 80-84% B, 75-79% C+, 70-74% C, 60-69% D, <60% F). Please note that the number of assignments and article summaries is estimated and may vary slightly.

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Participation	30
3 Quizzes (5 points each)	15
7 Field Lab Homework Assignments (15 points each)	105
1 iNaturalist Assignment	25
2 Article Summaries (15 points each)	30
1 Research Project Proposal	15
1 Oral Presentation (30 points)	30
1 Research Paper (50 points)	50
1 Final Exam (50 points)	50
	350

Schedule: Please note that the schedule below is the proposed schedule – the order of topics and locations is likely to deviate somewhat from this schedule. Check Canvas often – the exact schedule for each week will be posted by Thursday each week.

Week	Date	Topic	Location	Reading/ Assignments Due
1	Sept. 6	Course Basics, Field Lab 1: Statistics and variation	South Mountain Reservation	Introduction & Chapter 1, Writing Summaries
2	Sept. 13	Field Lab 2: Pollination	Hutcheson Memorial Forest	FL 1, AS 1, Chapter 2
3	Sept. 20	Field Lab 3: Tree height and identification	South Mountain Reservation	Turbek et al. 2016, FL 2, Ch. 3
4	Sept. 27	Field Lab 4: Species-area & diversity	Cheesequake State Park	FL 3, Ch. 4
5	Oct. 4	Field Lab 5: Tree demography & herbivory	Jockey Hollow – Morristown NHA	FL 4
6	Oct. 11	Field Lab 6: Aquatic sampling	Ken Lockwood WMA	Ch. 6, Project proposal
7	Oct. 18	Field Lab 7: Amphibian dispersion	Hacklebarney State Park	Ch. 10, pp. 210-217 Meet with Dr. Stanko
8	Oct. 25	Student projects!	TBD	FL 7, Chapter 7
9	Nov. 1	Student projects!	TBD	Chapter 8
10	Nov. 8	Field Lab 8: Soil differences among microhabitats	Great Swamp Outdoor Ed. Center	Project Data & Analysis due
11	Nov. 15	Field Lab 9: Niches at feeding stations	Watchung Reservation	FL 8, Paper Draft Due!
12	Nov. 22	Paper Draft Meetings	Online – schedule meetings	FL 9, Ch. 10, pp. 191-201
13	WED Nov. 27	Field Lab 10: Dune Succession	Sandy Hook Gateway NRA	FL 9, Ch. 10, pp. 191-201
14	Dec. 6	Presentations	on campus	iNaturalist assignment, Presentation, Final paper
	Dec. 15-21	Final Exam TBD*		

*Do not schedule travel during the final exam period until after the NJIT final exam schedule has been posted here: https://www.njit.edu/registrar/exams/

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Attendance, lateness, make-ups, and class policies:

- You must ensure Canvas access during the first week of class. Be sure you check the email address associated with your Canvas profile regularly.
- Absences will only be excused for valid reasons, documented via the Dean of Students Office. In case of an emergency or absence, notify me prior to the trip.
- Quizzes will be given at random to ensure students come to class prepared.
- BE ON TIME TO LAB. If you are not there when the van leaves, you will be counted as absent.
- You may NOT travel independently to the field site.
- Make-up exams and quizzes will be possible only with a dean's letter or with prior approval. Late assignments will be accepted but penalized 10% of the points available for each 24-hour interval that they are late.

How to dress for class: For weeks when we have a field trip, please wear comfortable shoes (sneakers are fine) and pants, and dress so that you'll be comfortable outdoors for several hours. In the absence of lightning, we will go out in the rain/snow, so please bring a raincoat or umbrella if rain is in the forecast. On snowy/wet days, your feet will be more comfortable in waterproof boots. Make sure you always bring winter hats/ coats/ gloves on cold days! Dress in layers, bring insect repellant or sunscreen if you wish, and always bring water! We will follow NJIT's requirements for indoor mask-wearing in the vans and any other indoor space on all field trips.

Photo credit: Maria Stanko

How to turn in assignments:

1. Article summaries: upload to Canvas via the link for the assignment. Don't forget the citation!
2. Field Lab analysis assignments: Upload two files to Canvas via the links: A) Your Excel file with your completed analysis.
   B) A document with answers to the questions in the assignment, including a figure if part of the assignment. Remember that all figures must have labeled axes and a figure caption!

Academic Dishonesty: 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.

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Generative AI: This course expects students to work without artificial intelligence (AI) assistance unless specifically stated in the directions of an assignment. For assignments in which AI use is permitted, the AI must be cited as shown within the NJIT Library AI citation page (https://researchguides.njit.edu/AI). If you have any questions or concerns about AI technology use in this class, please reach out to your instructor prior to submitting any assignments.

Writing Intensive/Honors: This NJIT Honors course fulfills the Rutgers writing intensive requirement. Scientific writing is emphasized throughout the semester through reading of primary scientific literature, composition of weekly article summaries, and the development and writing of a scientific paper describing your own research project. Writing assignments associated with this goal include:

a. Article Summaries – For article summary assignments, you will research and choose a scientific article relevant to the subject for the week, read it thoroughly, and write a one-page summary of the article. Your goal is to concisely convey what scientific question was addressed in the paper, why that question was of interest, how the experiment was conducted, what was found, and the implications of the results. I will provide feedback on each summary that you should use to improve your writing on future summaries.

b. Final Paper – You will write a final paper in the format of a scientific journal article describing your own independent research project (more detailed instructions will be given in class). In addition to feedback on your research question and experimental design, I will provide critical comments on your writing as you work on your final paper. A complete draft of the paper is due prior to the final due date. I will provide extensive comments on your draft which you should incorporate into your revisions. Only the final version of the paper will be graded, though submission of incomplete drafts will result in penalty to your grade.