

## BIOLOGY 475-H11: ECOLOGICAL FIELD METHODS - HONORS

<b>INSTRUCTOR:</b>	Dr. Maria Stanko	<b>EMAIL:</b>	<a href="mailto:mstanko@njit.edu">mstanko@njit.edu</a>
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<b>OFFICE:</b>	340E CKB ▪ (973) 642-7246	<b>OFFICE HOURS:</b>	Please email for appointment
<b>COURSE SCHEDULE:</b>	T & F: 8:30am –5:00pm; CKB 326	<b>COURSE WEBSITE:</b>	<a href="http://moodle.njit.edu/">http://moodle.njit.edu/</a>

### COURSE 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.



### PREREQUISITES:

- Foundations of Biology: Ecology and Evolution (BIOL 205/206) **AND** permission from the Instructor.

### TEXTBOOK:

- Writing Papers in the Biological Sciences; Fifth Edition: Spiral-Bound © 2012, By Victoria E. McMillan, Bedford/St. Martin's; ISBN-13: 978-0312649715. Read Chapters 1-4, 6-8, 10

### ADDITIONAL READINGS:

Labs will be posted on the course website (<http://moodle.njit.edu>). Students are required to read the posted lab description prior to attending class. Quizzes will be given at random to ensure students come to class prepared.

### 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. Research topics using electronic and print sources and attribute sources properly.
4. Design and carry out an experiment to test an ecological question.
5. Apply different statistical tests commonly used to analyze ecological data.
6. Communicate scientific results in written and oral format.

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**WRITING REQUIREMENTS:** We will emphasize scientific writing 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** – A few times during the course, you will be asked to 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 (more detailed instructions will be given in class). 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 what the results mean. 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 three weeks 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.



**COURSE GRADE:** Grades will be assigned based on the percentage of points you earn out of the total possible, following the standard grade scale. Please note that the number of assignments and article summaries is estimated and may vary, affecting final total possible points.

Participation	45 points	1 Oral Presentation	30 points
8 Quizzes (5 points ea.)	40 points	1 Formal Lab Report	50 points
7 Lab Homework Assignments (15 points ea.)	105 points	Final Exam	50 points
2 Article Summaries (15 points ea.)	30 points	<b>Total</b>	<b>350 points</b>

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**ATTENDANCE:** Absences will only be excused for documented (doctor's or dean's note), valid reasons. In case of an emergency or absence, notify me prior to the trip. **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. More than 1 unexcused absences will result in failure of the course.

**CLASS POLICIES:** You must ensure Moodle access during the first week of class. Be sure to edit your profile to list an email address that you check regularly. Cell phone use is permitted during class only for taking pictures. You may use your phone however you wish (quietly!) during the drive to the field site

**ACADEMIC DISHONESTY:** The course has a zero tolerance policy for academic dishonesty, including plagiarism and cheating. Please note that we often work together in this course during labs, but all work you turn in must be your own. Instances of dishonesty will be punished by a zero on the assignment and consultation with the office of the Dean of Students to determine if further action is required. If you have any questions about what constitutes plagiarism or cheating, please ask me, or refer to the academic integrity code: [Academic Integrity Code](#).

**MAKE UP EXAMS, QUIZZES AND LATE ASSIGNMENTS:**

Make up exams and quizzes will be possible only with a doctor's or 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. The writing revision process is an important part of this course; if you do not submit a rough draft, you will automatically lose 15 out of 50 points for the paper.

**HOW TO DRESS FOR CLASS:**

For field trips, please wear comfortable shoes (sneakers are fine) and dress so that you'll be comfortable outdoors for several hours.

Although it will be hot, you may find that pants are the best protection from insects and thorns. In the absence of lightning, we will go out in the rain, so please bring a raincoat or umbrella if rain is in the forecast. A hat is a good idea for sun protection. Dress in layers, bring sunscreen and insect repellent if you wish, and always bring lots of water and a packed lunch!



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**COURSE OUTLINE:** Please note that the schedule below is the **PROPOSED** schedule. I reserve the right to change lab topics and/or locations due to weather or other conflicts.

DAY	DATE	TOPIC	LOCATION	READINGS/ASSIGNMENTS DUE
T	May 23	Statistics, Excel, Lit. Search, Variation / Tree ID	South Mountain Reservation	
F	May 29	Pollination / Succession	Hutcheson Memorial Forest	Variation Lab Article Summary #1
T	May 30	Tree demography	Morristown National Historical Park	Project Proposal Dispersion Lab
F	June 02	Pollination /Succession Bioblitz	Hutcheson Memorial Forest Ernest L. Oros Wildlife Preserve	Tree demography Lab
T	June 06	Student Projects	South Mountain Reservation	Article Summary #2 Pollination Lab
F	June 09	Aquatic Sampling	Ken Lockwood WMA	
T	June 13	Species-area and diversity	Hacklebarney State Park	<b>PAPER DRAFT DUE</b>
F	June 16	Tree allometry	Brendan Byrne State Forest	Species-area Lab
T	June 20	Soil differences among microhabitats	Great Swamp NWR	Tree allometry Lab
F	June 23	<b>Presentations and Final Exam</b>	<b>On Campus</b>	Soils Lab <b>Final Paper</b>