

PRINCIPLES OF ECOLOGY
ENV1020 MW
Baruch College, FALL 2007
Professor JASON MUNSHI-SOUTH

Lecture: MW 9:55-10:45

Labs: GO13A&B MW11:10-12:50; GT13A&B MW 1:15-2:55

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Office Hours:	Mondays and Wednesdays 3 PM to 4 PM (or by appointment) I also answer e-mail and phone calls promptly.

Required Reading:

Lecture: Molles, Manuel C. 2006. *Ecology: Concepts and Applications, 4th Edition*. McGraw-Hill.

Lab: Santos, Miguel A. 2004. *Principles of Ecology*. Pearson Custom Publishing. 189 pp.

Recommended Reading:

Daily reading of the *New York Times*, with special attention paid to articles on urban ecology and sustainability, will increase your enjoyment of this course. The “Science” section published every Tuesday will prove particularly relevant. I will highlight important articles as they appear during the semester. Please also consult the course website for a growing list of online ecological resources.

Course Description:

This course brings together the 1) conceptual framework of ecology, 2) major ecological issues, and 3) skills needed for scientific study. Ecology is broadly defined as the study of relationships between living organisms and their biotic and abiotic environment. Scales of ecological inquiry addressed in this course range from genes, individuals, and populations to communities, ecosystems, and landscapes. Lectures stress the importance of ecology for conserving biodiversity and environmental quality, and draw heavily on examples from both NYC and tropical ecosystems in the developing world. Laboratory exercises include study of materials recycling and energy flow, effects of environmental stress, population growth, carrying capacity, developmental changes in ecosystems, and a field trip to a local ecosystem.

Required Field Exercise:

You will be required to visit Jamaica Bay Wildlife Refuge once during the semester in lieu of three lab periods (see schedule). Jamaica Bay contains exemplary, diverse habitats of the eastern US all within the city limits of New York, including salt marshes, upland forest and grassland, freshwater ponds, and an open bay. Professors teaching ENV1020 will be at Jamaica Bay on certain weekend dates, but you also have the option of visiting the refuge on your own. See the handout for full details on the assignment.

Optional Field Exercise (50 pts. Extra Credit):

To earn extra credit in the course, you can visit Stuyvesant Cove Park (eastern end of 23rd street, on the waterfront) and write a two-page, double-spaced essay on either 1) aspects of “green” or sustainable design incorporated into the park that could be used elsewhere in NYC, or 2) a synopsis and critique of a weekly “The Green Renter” lecture that you attend one evening. See <http://www.solar1.org/> for details.

Writing Assignment:

This summer Mayor Bloomberg announced a wide-ranging initiative (PLANYC 2030) to improve the sustainability of resource use in NYC. One potential criticism of the plan is that it maintains a steady flow of resources for human use, but does not address the functional quality of NY's ecosystems for non-human life. You will write a critique of a major initiative from one of the plan's six focal areas (Land, Water, Transportation, Energy, Air, Climate Change) that recommends actions to improve ecosystem functioning and/or biodiversity conservation in NYC. You will thus need to read part of PLANYC 2030, and identify scientific sources (i.e. journal articles) on an ecological issue in NYC. See handout.

Grading:

Lecture Exam I:	200 pts.
Lecture Exam II:	200
Writing Assignment	150
Lab projects / activities:	150
Laboratory Exam I:	125
Laboratory Exam II:	125
Participation:	50
Total:	1000

Sustainable Class Activities:

- ◆ asking questions before, during, or after class
- ◆ coming to office hours
- ◆ offering *constructive* feedback on the class, positive or negative
- ◆ inquiring about research experiences and other opportunities in environmental science
- ◆ calling me by my first name

Unsustainable Class Activities:

- ◆ arriving late or leaving early (unless *absolutely* necessary)
- ◆ talking to classmates during the lecture
- ◆ texting, IM'ing, e-mailing, etc.
- ◆ Cheating / Plagiarism (will be met with swift and harsh punishment)

Baruch College Attendance Policy (Undergraduate Bulletin, p. 41):

"All students are required to attend every session of their courses. If a freshman or sophomore is absent in excess of twice the number of class sessions per week, the instructor must give the student a WU grade, which counts as an F. The instructor may give a junior or senior a WU grade (the equivalent of an F) for excessive absences. The WU grade may be given by the instructor at any time." Absences should only be for serious illnesses and family emergencies.

Environmental Sciences Minor and Ad Hoc Major:

The Dept. of Natural Sciences offers a minor in environmental studies for students that wish to pursue general intellectual interests or specific career objectives. For example, business students may improve their marketability with knowledge of current issues in environmental sustainability, and public affairs or pre-law students may gain knowledge for future specialization in environmental law or policy. For the environmental sciences minor, students take two environment courses at the 3000 level or above followed by the capstone course, ENV 4900—Topics in Environmental Science. New environmental studies courses are planned for future semesters. It is also possible to design an ad hoc major that combines ENV courses with additional sciences and courses in other fields. Please inquire for more information.

Course Schedule:

M/W	Lecture Topics	Ch.	Laboratory Topics	Ex.
8/27	Introduction: What Is Ecology?	1	Science, Observation & Microscopes (1)	1
8/29	Life on Land	2	Materials & Methods: Niche Experiments	2
9/05	Life in Water	3	The Scientific Methods	3
9/10	Temperature Relations	4	Environmental Chemistry	4
9/17	Water Relations	5	FIELD TRIP / FREE TIME	
9/19	Energy and Nutrient Relations	6	Environmental Physics: S/V Ratio	5
9/24	Social Relations / Behavioral Ecology	7	Environmental Physics: 2 nd Law of thermodynamics	6
9/26	Population Genetics and Natural Selection	8	Ecological Roles of Microorganisms	7
10/01	Molecular Ecology	8	Ecological Roles of Fungi & Plants	8
10/03	Population Distribution and Abundance	9	Ecological Roles of Animals	9
10/10	Population Dynamics	10	Ecological Aspects of Photosynthesis	10
10/15	Population Growth	11	Saline Environment	11
10/17	Lecture Exam 1		Ecological Niche & Global Climate Change	12
10/22	Life Histories	12	Lab Exam 1	
10/24	Competition	13	Competition: Materials and Methods	13
10/29	Exploitative Interactions	14	Adaptations Associated With Feeding	14
10/31	Mutualism	15	Commensalism and Mutualism	15
11/05	Species Abundance and Diversity	16	Population Growth	16
11/07	Species Interactions and Community Structure	17	Population Density	17
11/12	Primary Production and Energy Flow	18	Population Structures & Distribution	18
11/14	Nutrient Cycling and Retention (WRITING ASSIGNMENT DUE)	19	FIELD TRIP / FREE TIME	
11/19	Succession and Stability	20	FIELD TRIP / FREE TIME	
11/23	NO CLASS	21	NO CLASS	
11/26	Landscape Ecology (EXTRA CREDIT DUE)		Intraspecific Competition	21
11/28	Geographic Ecology	22	Ecosystem Components	22
12/03	Global Ecology	23	Ecological Succession	23
12/05	TBD		Evolution and Ecology (FIELD TRIP ASSIGNMENT DUE)	24
12/10	TBD		Lab Review	
12/12	TBD		Lab Exam II	
	FINAL EXAM*			