

CONSERVATION BIOLOGY & SUSTAINABLE DEVELOPMENT

BIO / ENV 3009; ENV 4900

Baruch College, Spring 2013

Fridays 9:30 AM—2:55 PM, Lecture: Rm 711; Lab: Rm 410

Faculty:	Prof. Jason Munshi-South; Dept. of Natural Sciences
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Office Hours:	by appointment I also answer e-mail promptly.

Course Goals:

At the end of this course, you will understand the theory and practice of conserving biological diversity. As a class, we will seek to define biodiversity, make cogent arguments for why biodiversity is important, understand why biodiversity is under threat from anthropogenic change, and explore strategies for the conservation of biodiversity from genes to entire ecosystems. We will also examine how conservation biology is related to broader efforts for “sustainable development”, including asking under what conditions “sustainability” is a useful concept.

Required Readings:

Periodically, we will have in-class discussions focused on assigned readings from the primary literature (3-4 papers per unit). These readings will be made available as PDFs on the course BlackBoard site.

Recommended Reading:

Daily reading of the *New York Times*, with special attention paid to articles on ecology, conservation, and sustainability, will increase your enjoyment of this course. The “Science” section published every Tuesday, and the Sunday editions, will prove particularly relevant.

Optional Textbook for BIO/ENV3009 (background reading):

Marchetti, M.P., & P.B. Moyle. 2010. *Protecting Life on Earth: An Introduction to the Science of Conservation*. University of California Press, Berkeley, CA.

Required Additional Assignment for ENV4900 ONLY:

Students taking this course as an ENV Capstone are required to complete an additional communications-intensive project throughout the semester. Please see the separate assignment for details. In brief, each student will explore *one* of the 15 global conservation issues in Sutherland *et al.* (2012) *Trends Ecol Evol* 27(1):12-18, throughout the semester. The final project will consist of the following three components:

- I. Weekly blog posts discussing important developments in the student’s chosen issue that have been reported in the popular media and/or scientific literature.
- II. A 10-12 page paper reporting the background information on the issue, discussing its importance to society and nature, and proposing solutions for the future. The paper must be rigorously supported by the scientific literature
- III. A 15-minute oral presentation, including visual aids, at the end of the class.

Grading (BIO / ENV 3009):

<u>Assignment</u>	<u>Points</u>
Exam I	200
Exam II	200
Exam III	200
Lab Activities	350
<u>Attendance / Participation</u>	<u>50</u>
Total	1000

ENV 4900:

<u>Assignment</u>	<u>Points</u>
Exam I	150
Exam II	150
Exam III	150
Final Project	150
Lab Activities	350
<u>Attendance / Participation</u>	<u>50</u>
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

Unsustainable Class Activities:

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

Notes on Grading:

- Your grades are earned by your knowledge as measured by performance on exams, labs, and other assignments. Grades are not assigned by negotiation with the professor, by how hard you worked in class, or by your “need” for a specific grade to graduate, apply to medical school, etc.
- Grades are not an indication of your value as a person or whether or not I like you.
- There is no such thing as “extra credit” in this course.
- Life will go on even if you did not earn the grade you anticipated at the beginning of this course.
- There is no curve in this course. I may slightly bump up grades of students if they are near the border of two grades (e.g. C and C+), if they attended class regularly and participated.
- Any requests for grade changes must be submitted on paper to my mailbox in Rm. 506. You must include a full explanation along with the graded assignment.

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.

[NB: Please note that missing one Friday session is equivalent to missing two class periods. Thus, two unexcused absences will put you in danger of failing the course.]

Tier III minor in Environmental Sustainability and Ad Hoc Major:

The Dept. of Natural Sciences offers a minor in environmental sustainability 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 sustainability Tier III minor, students take two environmentally-themed, interdisciplinary 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.

Schedule is SUBJECT TO CHANGE, particularly the laboratory topics

Friday	Lecture Topics	Laboratory Topics
02/01	I. Introduction II. What is biodiversity?	1. Where does coffee come from? 2. Spider biodiversity
2/08	1 III. History & scope of conservation biology 8 IV. Conservation values & ethics; Why is biodiversity important?	3a. Population Bottleneck Experimental Set-up 4. Real” measures of diversity; keying out species from owl pellets 5a. Conservation values: assessing public attitudes (Gibbs et al. 28)
2/15	3 V. Global patterns of diversity 4 VI. Island biogeography (theory & evidence)	6a. Biodiversity Hotspots 7. Applying IBT: park size and condition (Gibbs et al. 22)
2/22	VII. What to conserve? Catching up / Review	3b. Population Bottleneck Data Collection I 8. Discussion of readings on BlackBoard
03/01	EXAM I 2 VIII. Intro. To Conservation Genetics	9. Inbreeding & fluctuating asymmetry
3/08	7 IX. Loss of genetic variation & fitness X. Major Threats to Biodiversity	5b. PRESENTATIONS → Conservation values: assessing public attitudes 9. Inbreeding & fluctuating asymmetry
3/15	5 XI. Populations & metapopulations 6 XII. Conservation of communities	10. Parrots & Palms – Demography 3c. Population Bottleneck Data Collection II
3/22	11 XIII. Species invasions 9 XIV. Habitat degradation & loss	11. Cane toads video, in-class writing 12. Discussion of readings on BlackBoard
3/29	SPRING BREAK	SPRING BREAK
4/05	EXAM II XV. Habitat fragmentation	13. Ecological consequences of extinctions
4/12	XVI. Intro to Marine Conservation XVII. Urban Ecology & Conservation	3d. Population Bottleneck Data Collection III 6b. HOTSPOTS POSTER SESSION
4/19	10 XVIII. Conservation Medicine XIX. Fundamentals of TREE ID	14. NYC Water supply 15. Tree ID exercise
4/26	8 XX. Sustainable development 13 XXI. Steady-State Economics	3e. Population Bottleneck Final Scoring / NYC water supply 14. NYC Water Supply
5/03	12 XXII. Urban Forest at NY Botanical Garden	15. Urban Forest at NY Botanical Garden
05/10	Catching up / Review ENV4900 PRESENTATIONS	16. Discussion of readings on BlackBoard ENV4900 PRESENTATIONS
05/24	FINAL EXAM (DATE TBD)	