COURSE SYLLABUS

ENV/BIO 3009/4900: Conservation Biology and Sustainable Development

An interdisciplinary course linking biodiversity, ecological processes, human systems, and applied management.

Baruch College, CUNY | Spring 2018 | Instructor: Dr. Natalia Borrego | Friday 9:30 a.m.-2:55 p.m.

Course description

This course examines the theory and practice of conserving biological diversity. Lecture, laboratory, and field activities address how biodiversity is defined and measured, the ecological and human processes that contribute to species decline, and approaches to managing biological diversity from genes to ecosystems.

The course treats conservation as an interdisciplinary problem. Ecological knowledge is considered alongside social, legal, economic, and cultural context because management decisions occur within human landscapes. Across the semester, students ask how biodiversity can be measured, why it matters, why it is threatened, and how natural systems can be protected, restored, maintained, or used sustainably.

Learning outcomes

1. Describe the historical and scientific foundations of conservation biology and explain why ecological and human dimensions must be considered together.
2. Measure and compare biological diversity using multiple metrics and explain what each metric captures.
3. Identify major drivers of biodiversity decline and evaluate how those drivers operate at different biological scales.
4. Use ecological evidence to compare possible responses to conservation and management problems.
5. Apply selected field, quantitative, and spatial tools used in conservation and ecological research.
6. Connect global conservation problems to local examples in New York City and the surrounding region.
7. Recognize the scientific, social, and practical trade-offs involved in managing and restoring natural systems.

Course structure

Class meetings combine short lectures, discussion of assigned readings, quantitative and computer-based activities, laboratory exercises, and field experiences. Students are expected to come prepared to use the assigned material rather than simply receive it during class.

Classroom	Laboratory / quantitative	Field / practitioner
Short lectures, primary-literature discussion, case studies, student-led discussion	R, biodiversity measures, population viability analysis, matrix models, spatial tools	Local field exercises, site visits, meetings with practitioners and invited experts

Course materials

This course was taught as a zero-textbook course. Required materials were provided through open-access texts, institutional access, and freely available teaching resources so that students were not required to purchase a textbook.

- Conservation Biology for All, eds. N. S. Sodhi and P. R. Ehrlich.
- Spreadsheet Exercises in Conservation Biology and Landscape Ecology, Donovan & Welden.
- Primary research articles, case studies, news and audio pieces, and instructor-provided materials.

Assignments and evaluation

Assessment combines exams with regular low-stakes work, written synthesis, and - for the research option - a collaborative project involving data collection or analysis and scientific presentation.

Component	ENV/BIO 3009	ENV/BIO 4900 / research option
Exam I	25%	20%
Final exam	35%	30%
Homework & classwork	30%	30%
Writing assignment	10%	10%
Group research project	-	10%

Research-option project

Students enrolled in BIO/ENV 4900 - and students in 3009 who elect the research option - work in teams to collect or analyze data related to a current conservation problem. Teams prepare a short scientific presentation and a written report.

Course expectations

- Preparation matters. Readings and other assigned material should be completed before class so they can be used in discussion and activities.
- Participation means contributing to the scientific work of the class: asking questions, evaluating evidence, completing group tasks, and giving peers room to contribute.
- Field and laboratory meetings may occur away from the usual classroom. Students are responsible for keeping track of meeting locations and schedules.
- Academic work must be the student's own or properly attributed. Course policies follow Baruch College standards for academic integrity.
- If illness prevents attendance, students should not come to class and should contact the instructor as soon as possible.

Grading and late-work policies

Final course grades are based on the published weighting above. Grade changes are made to correct clerical errors. Concerns about individual assignment grades should be submitted in writing within one week of the assignment being returned.

Make-up exams are not routinely given; when an exam is missed, the final exam carries the corresponding additional weight. The final exam may also replace the first exam grade when doing so benefits the student. Late writing or group assignments receive the penalties described in the course instructions; late homework and classwork are not accepted.

Academic integrity

Students are expected to submit their own work and to acknowledge sources and collaborators appropriately. Cheating, plagiarism, forgery, and unauthorized collaboration are handled under Baruch College academic-integrity procedures.

Shared responsibilities

My responsibility is to guide students as active learners, connect biological material to other disciplines and everyday life, provide timely feedback, and make the class as engaging and relevant as possible. Students are responsible for arriving prepared, participating in discussion and group work, asking questions when needed, and contributing to a classroom in which others can do the same.

Representative course schedule

The schedule below reflects the Spring 2018 course. Readings were drawn from the open-access text, primary literature, and instructor-selected materials.

Date	Topic	Representative activity
Feb 2	Course overview; history of conservation ecology	Scientific papers; introduction to R
Feb 9	What is biodiversity, and where is it?	Biodiversity measures; NCEP activities
Feb 16	Human dimensions of conservation	Diversity in R; ecological economics; environmental justice; practitioner discussion
Feb 23	Habitat loss and fragmentation	Introductory spatial/GIS activity; fragmentation exercise
Mar 2	Overexploitation and invasive species	Applied demography; harvested-population exercises

Date	Topic	Representative activity
Mar 9	Climate change, novel threats, conservation genetics	Conservation genetics; student presentations on emerging threats
Mar 16	Exam I; zoo field visit	Field application
Mar 23	Harbor School field day	Place-based ecological learning
Apr 11	Population, species, and landscape conservation	Population viability analysis
Apr 13	Community and ecosystem conservation	Matrix models; case-study preparation
Apr 20	Protected areas, endangered species, reintroductions	Student-led global case studies
Apr 27	Restoration ecology and working landscapes	Marine spatial planning
May 4	Sustainable yield of resources	Applied management activity; UN visit
May 11	Course synthesis	Group research presentations

Grading scale

A 93-100 | A- 90-92.9 | B+ 87.1-89.9 | B 83-87 | B- 80-82.9 | C+ 77.1-79.9 | C 73-77 | C- 70-72.9 | D+ 65-69.9 | D 60-64.9 | F <60