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Zero Textbook Cost Syllabus for ENV 3009/BIO 4009 (Conservation Biology and Sustainable Development)

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

SPRING 2018

FRIDAY 9:30am-2:55pm

Instructor: Natalia Borrego

Office:

Office Hours: by appointment

E-mail:

Course Description

From Registrar: This course focuses on the theory and practice of conserving biological diversity. Lecture, lab, and field activities involve defining and measuring biodiversity, understanding the importance of biodiversity and the anthropogenic mechanisms that result in species extinction, and exploring biological strategies for the conservation of biodiversity from genes to entire ecosystems. Students also examine how conservation biology is related to broader efforts for sustainable development, including asking under what conditions sustainability is a useful scientific concept.

From me: Conservation biology is an interdisciplinary topic that explores how we can protect and maintain natural areas. Due to the resources we take and impacts we have on natural environments, this field is directly related to restoration ecology (restoring natural areas) and sustainable development/natural resource management. We will explore the basis for these related fields from an ecological, social, legal, and cultural perspective, as all conservation and management projects take place in the larger human landscape. We will consider how we measure biodiversity, why it matters, why it is threatened, and how we can manage (protect, restore, maintain, use) it in a sustainable manner (and what that means). Overall, the class will be roughly broken into the following thirds:

- What is conservation biology? (including history of field, what is diversity, and why we need to think about people)
- What are the threats to biodiversity and tools to address them at various scales?
- Examples of conservation and management activities

Lab will focus heavily on exposing students to major tools, techniques, and concepts used in the field and will involve computer modeling and simulation work. We will focus on several key species (grizzlies, panthers) to illustrate and connect topics in the course.

Course Objectives

- 1) Students will be introduced to the history and foundations of conservation biology as it relates to various fields, understanding the importance of social and ecological knowledge in practicing conservation biology.
- 2) Students will be able to describe and quantify biodiversity and discuss different aspects the term may focus on.
- 3) Students will be introduced to major issues that are leading to global declines in biodiversity.
- 4) Students will explore and understand issues facing various levels of ecosystems (genes to entire regions), potential solutions, and appropriate applications.
- 5) Through field and lab studies, students will become familiar and comfortable with some of the tools used by conservation biologists.
- 6) All of the above concepts will be considered in relationship to the management and restoration of natural resources in the New York area and beyond.



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- 7) By the end of this course, you should be able to begin to understand the complexities associated with managing and protecting natural communities.

Course Structure: The course will consist of a mixture of classroom, lab, and field activities.

Classroom activities will consist of short presentations accompanied by group discussions on course readings. Information discussed in class will parallel and supplement the material in the required readings. That is, some of what we cover will elaborate on material presented in the textbook, whereas other parts will consist of novel material that is not covered in the book.

Lab and field activities will consist of activities that expose you to tools and issues faced by conservation ecologists. These will range from handling and analyzing existing data sets to collecting information on biodiversity and conservation issues to meeting with experts in the field. **We may meet at various places around the city throughout this course; please keep up with the schedule, as we may be on the move and difficult to locate once we arrive at a site.**

Course Materials and Tools: Note: **This is a zero-textbook course and part of the new zero-textbook initiative at CUNY.** All resources are freely available from CUNY or other sources. Please let me know if you need help finding these resources. You should not have to purchase any resources.

Readings

Required Lecture Texts:

Conservation Biology for All, edited by N. S. Sodhi and P. R. Ehrlich (free at <http://www.conbio.org/publications/free-textbook> or on Blackboard)

Spreadsheet Exercises in Conservation Biology and Landscape Ecology. Donovan, T. M. and C. W. Welden (free at http://www.uvm.edu/rsenr/vtcfwru/spreadsheets/?Page=conbiolandecol/conbio_landecol.htm or on Blackboard)

Readings: Additional readings/materials may be posted on the course website (Blackboard).

All material should be read prior to class discussions. Material from these assignments may appear on the exams even though it may NOT be covered in class.

Course Website: The course web page will be posted on the Baruch Blackboard site. Most materials are posted in Microsoft Word, PowerPoint, or Adobe Acrobat. It is the student's responsibility to check the course website on a regular basis for new assignments. Many assignments will also be submitted or facilitated (e.g., discussions) via Blackboard.

Course Assignments

Homework and Classwork: Classwork will take place in class and homework will be assigned through Blackboard. These may include short quizzes on required readings, short responses to papers, leading discussion on case studies, lab activities, etc. Homework will be announced in class. It is the student's responsibility to check Blackboard for new assignments. At least 5 days will be given to submit any homework assignments. **I will drop the lowest grade from this area.**

Exams:

Lecture Exam 1: March 23. The exam will cover the assigned readings and class material up to the day of the exam.

Final Exam: TBA based on official schedule. The final exam will focus on assigned readings and lecture material and will be cumulative. **The final exam grade will replace the grade from the first exam if that benefits the student.**

Writing Assignments: A writing assignment paper will be due no earlier than May 1 (to be submitted electronically). Details will be posted on Blackboard and announced in class.

Evaluation and Workload: These determine the grade you earn for the course.

Lecture	
Exams	
Lecture Exam I:	25%
Final Exam:	35%
Homework and Classwork	30%
Writing Assignments	10%
Course Total:	100%

***NOTE:** ENV 4900 option: Students enrolled in BIO/ENV 4900 must complete an additional project that will factor in to their final grade. This grading option is also open to students enrolled in BIO/ENV 3009 who wish to participate in research project.*

Group Project: Students will work in teams to collect and analyze data related to current conservation topics. Students will prepare short (~15 min presentation) on their topic and results and submit group paper due no earlier than May 1.

<i>Lecture</i>	
<i>Exams</i>	
<i>Lecture Exam I:</i>	<i>20%</i>
<i>Final Exam:</i>	<i>30%</i>
<i>Homework and Classwork</i>	<i>30%</i>
<i>Writing Assignments</i>	<i>10%</i>
<i>Group Project</i>	<i>10%</i>
<i>Course Total:</i>	<i>100%</i>

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	0-59.9				

Course Policies: These policies are based on ideas of fairness and respect.

Grading Policies: Final course grades are non-negotiable and will NOT be curved in any way. Grade changes will be made only to correct clerical errors. I reserve the right to bump a grade by one level based on class participation, etc., at my discretion. Grades for individual assignments may or may not be curved depending on the class results. If a curve is instituted, the instructor will determine a fair and reasonable curve which will be applied to each individual's grade. Complaints about grades on individual assignments must be submitted in writing within a week following the return of the relevant assignment. Only reasonable and well-justified complaints will be considered, and all decisions are final.

Make up exams and late assignments: If you are ill, please do not come to class.

Exams: Make up exams will not be given; instead, the final exam will count for the full weight of the class. Because of this, the final exam grade may also replace the first exam grade if that benefits a student who took both. **Attendance at the final exam is required to pass the course.**

Writing and group assignment: The assignments are due May 1. Late papers will receive a 20% reduction in grade per day.

Homework and Classwork: Late homework and classwork will not be accepted.

Academic Integrity: I fully support Baruch College's policy on Academic Honesty, which states, in part:

"Academic dishonesty is unacceptable and will not be tolerated. Cheating, forgery, plagiarism and collusion in dishonest acts undermine the college's educational mission and the students' personal and intellectual growth. Baruch students are expected to bear individual responsibility for their work, to learn the rules and definitions that underlie the practice of academic integrity, and to uphold its ideals. Ignorance of the rules is not an acceptable excuse for disobeying them. Any student who attempts to compromise or devalue the academic process will be sanctioned. "

Academic sanctions in this class will range from a D or F on the section or assignment to a D or F in this course and are at my discretion. A report of suspected academic dishonesty will be sent to the Office of the Dean of Students. Additional information and definitions can be found at http://www.baruch.cuny.edu/academic/academic_honesty.html

Personal responsibilities and class etiquette: I understand everyone's time is valuable and that you (or someone) are (is) paying for you to pursue a higher education degree, which marks you as having achieved a goal. In light of this:

- My responsibility and goal is *to guide students, as active learners, in becoming critical thinkers who can evaluate and assimilate material from across the spectrum of biology and connect it to other disciplines and their everyday life.* We will accomplish this through class activities, and I will **fairly** evaluate your progress in this area through the methods noted above. I will **respect** your time and effort by attempting to start on time, promptly respond to emails and grade assignments (less than 1 week from receipt), being available for help, and attempting to make class as engaging and relevant as possible. I will regularly seek feedback in these areas through short surveys.
- Your responsibility is to be an active, engaged student who does not detract from class activities. **We will utilize an inverted classroom or discussion-based approach as much as possible, so I expect you to arrive prepared for class.** Please arrive on time and plan to stay *engaged* for the entire class. Take part in discussions, ask questions as needed, and stay off personal devices (phones, facebook, etc). **All work you submit in any form must be your own or properly attributed.**

Additional Information: Environmental Sciences at Baruch College

See the Baruch College Undergraduate Bulletin on the web for information about the Biological Sciences Major, the Arts and Sciences Ad Hoc Major in Natural Science Areas, and the minors in Chemistry, Natural Sciences, Physics, and the Interdisciplinary Minor in Environmental Sustainability. On this site you can click on a course and see the description and the pre- and co-requisites. The web address

is: <https://www.baruch.cuny.edu/confluence/display/undergraduatebulletin/Department+of+Natural+Sciences>.

Tentative Course Schedule

Chapters refer to the required course text. Additional class readings are posted for the first three weeks; past this class additional readings may be added and will be announced in class and posted on Blackboard.

CBFA=Conservation Biology for All

SE=Spreadsheet Exercises in Conservation Biology and Landscape Ecology

- 2/2 Course overview and history of conservation ecology**
Reading: *CBFA* chapter(s): Introduction, 1, 14.1-14.3; [BBC article](#)
Articles: [Conservation Biology](#); [\(Grey et al. 2016\)](#)
Activities: Discuss footprint; How to read a scientific paper; Intro to R (Code School)(out of class activity/homework)
- 2/9 What is biodiversity, and where is it?**
Required Reading: *CBFA* chapter(s): 2, 16
Articles: (Myers et al. 2000; Spathelf and Waite 2007; “There Have Been Five Mass Extinctions in Earth’s History. Now We’re Facing a Sixth. - The Washington Post” n.d.; Lucifora, García, and Worm 2011)
Activities: Spider biodiversity lab activity; Dollars & Fence class discussion and writing assignment; Intro to R remaining modules

NOTE FEBRUARY 16 IS LAST DAY TO DROP WITHOUT A W

- 2/16 Human aspects of conservation biology**
Reading: *CBFA* chapter(s): 3, 14.4-14.7; [The Conservation-Religion Interface: What Every Conservation Biologist Should Know](#); [Why is Biodiversity important? NCEP module](#);
Articles: (Tilman et al. 2017; Packer et al. 2009; Miller and Funston 2014; Costanza et al. 2014); *Gaurdian: how wildlife camera traps our revolutionizing conservation; habitat on the edges making room for wildlife*
Activities: Diversity in R, Biodiversity Conservation and Human Health, Snapshot Safari class project introduction (<http://snapshotsafari.org>)
- 2/23 Threats to biodiversity: Habitat issues**
Reading: *CBFA* chapter(s): 4, 5;
Articles: *Science Friday-Mass extinction events on the horizon* Sutherland et al. 2017; Packer et al. 2013; *McDonald et al. 2008: The implications of current and future urbanization for global projected areas and conservation*
Activities: *Spreadsheet Exercises in Conservation Biology and Landscape Ecolog-* Chapter 6; continue class project data collection
- 3/2 Threats to biodiversity: Overexploitation, invasive species**
Reading: *CBFA* chapter(s): 6, 7, And 8;
Articles: (Essington, Beaudreau, and Wiedenmann 2006); *NY Times Climate Change Cheater; The invasive species we can blame on Shakespeare*
Activities: Continue Data Collection for Class Project. *Spreadsheet Exercises in Conservation Biology and Landscape Ecology*-Chapter 5
- 3/9 Protecting and Restoring Areas and Organisms: Reserves, endangered species, reintroductions, and the ESA**
Reading *CFBA 10-12* Articles: TED Talk by Topher White on cellphones in rainforest;
Articles: Bahaa-el-din et al. Mammal Review African Golden Cat (read and come up with questions for our skype talk with author); Bahaa-el din et al. Effects of human-land use on Africa’s only forest-dependent felid: The African Golden cat

Activities: **SKYPE TALK WITH CONSERVATION FIELD BIOLOGIST & CLASS DISCUSSION**

- 3/16 Conservation at the population, species, and landscape level**
Reading: *CBFA 10*
Articles: (Crowder et al. 1994; Akçakaya and Sjögren-Gulve 2000; Soorae et al. Global Reintroduction Perspective) *Ted-Talk: DeExtinction TedTalk: California Condor*
Activities: *Spreadsheet Exercises in Conservation Biology and Landscape Ecology*-Chapter 28.
Snapshot Safari species richness collectors curve with class data (answering: do we have enough data?)
- 3/23 Exam 1**
Articles: effective oral communication in science. Dr. Rosling's TED talk.
Activities: Presentation Zen; *Spreadsheet Exercises in Conservation Biology and Landscape Ecology*-Chapter 17
- NO CLASS 3/30 & 4/6**
- 4/11 Zoo Trip; Presentation and Talk with Dr. Patrick Thomas (Bronx Zoo Associate Director and Vice President of the Wildlife Conservation Society)**
- 4/13 The Interface of Conservation and Behavior**
Reading: TBA
Articles: *Van Bommel et al. (2012); Bremner-Harrison et al. (2004); King et al. (2017)*
Activities: *Spreadsheet Exercises in Conservation Biology and Landscape Ecology*-Chapter 32;
Gapminder.org presentation tools
- NOTE APRIL 16 IS LAST DAY TO DROP WITH A W**
- 4/20 Disease Ecology, Conservation Biology, and Climate Change**
Reading: *Read (2002) Conservation Medicine: Ecological Health in Practice*
Articles: *Van de Bildt et al. (2002); Viana et al. (2014); Salkeld et al 2017;*
Activities: Final Snapshot Safari Data Analysis (Species diversity indices and community comparisons)
- 4/27 Harbor School Day**
- 5/4 Luke Hunter Class Visit & Conservation Policy**
Reading: Washington post: Myth about the endangered species act; The endangered species act a success or a failure?; Kreuter et al. 2016 Conservation credits; Snall et al. (2016) Green Infrastructure
Activities: Condor Endangered Species management lab
- 5/11 Next steps, Course conclusion, and catch-up**
Reading: *CFBA chapter(s): 15*
Supplemental Reading: POCB chapter(s): 17, 18
Activities: IUCN species threats activity using species from class project; exam review; careers in Conservation
- Final Exam: TBA, 5/18-5/24**