

## BIOLOGY 375-002: CONSERVATION BIOLOGY

<b>INSTRUCTOR:</b>	Dr. Andrew Mashintonio	<b>EMAIL:</b>	<a href="mailto:afm8@njit.edu">afm8@njit.edu</a>
<b>OFFICE:</b>	337D CKB ▪ (973) 642-4973	<b>OFFICE HOURS:</b>	T, R: 12:30pm – 2:00pm
<b>COURSE SCHEDULE:</b>	T, R: 2:30PM- 3:55PM, CKB 220	<b>COURSE WEBSITE:</b>	<a href="http://moodle.njit.edu/">http://moodle.njit.edu/</a>

### COURSE DESCRIPTION:

Conservation biology is a developing and complex field. It draws upon the biological disciplines of population biology, taxonomy, ecology, genetics, and resource management as well as the fields of economics, ethics, and politics to document, understand, and protect the world's biodiversity. This course will give students an overview of this emerging discipline including the scientific methods employed, the biological principles behind conservation techniques and strategies as well as the complexities involved in attempts to influence and implement conservation-oriented policies.



PHOTOGRAPH: MARK CONLIN/ALAMY



### PREREQUISITES:

- Foundations in Biology: Ecology & Evolution (BIOL 205 & 206)
- Foundations in Biology: Cell & Molecular (R120:201&202)

### REQUIRED TEXT:

- A Primer of Conservation Biology, Fifth Edition: Paper Text © 2012 by Richard B. Primack; ISBN: 978-0878936236.

### ADDITIONAL READINGS:

Throughout the semester, I'll be providing additional readings to supplement the course text and to serve as the basis for class discussions. These readings will be posted to the course Moodle site.

### LEARNING OUTCOMES:

Students are able to....

- Identify and explain important threats to biological diversity as well as how these threats relate to human actions.
- Evaluate the variety of management approaches to protecting biodiversity and addressing conservation problems.



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### LEARNING OUTCOMES CONT'D:

- Understand the multidisciplinary effort required for conservation, including policy, economics, and ethics.
- Read critically and be able to form and articulate opinions on complex issues in conservation biology.

### GRADING POLICY:

Your grade will be calculated based on the following components:

1. Exams (40%): There will one mid-term exam and one final exam, each worth 20%. Exams will be predominantly short-answer questions. The final exam will be cumulative, but with an emphasis on the second half of the semester.
2. Assignments (15%): Questions on the readings will be assigned regularly to prepare you for the upcoming class.
3. Case studies (20%): Case studies will be worked on during class and will explore real-world applications of certain topics. A one-page (single-spaced) written assignment will accompany each case study.
4. Review paper (10%): Each student is responsible for independently researching a topic related to conservation biology and writing a paper in the format of a review article in the journal *Conservation Biology*. Topics must be approved by the instructor.
5. Article discussion (5%): In a group, each student will be responsible for leading a class discussion of scientific literature on a particular topic. Grade will be based on writing discussion questions and leading the class in discussion.
6. Participation (10%): Points are awarded for participation during lecture, class discussions, and group work.

### COURSE POLICIES:

**Electronics/Cell Phone Policy:** No electronics (cell phones etc.) in class; laptops permitted for note-taking only or in use in an activity.

**Attendance:** You are expected to attend all classes and complete all the assigned readings in advance. We will primarily use our class time to discuss the readings and explore topics in more detail.

**Moodle:** You must update your Moodle profile with an email address that you check regularly.

**Make-Up Exams and Quizzes:** Make up exams and quizzes will be permitted only with a doctor's or a dean's letter or with prior approval. If you have a serious reason for missing an exam, you must contact me **BEFORE** the scheduled exam period to notify me that you cannot take the exam.

**Late Assignments:** Late assignments based on readings will not be accepted. The purpose of the assignments is to prepare you for the upcoming class. Other late assignments (case study, review paper, etc.) will be penalized 10% per day late.

**Academic Integrity:** I have a zero tolerance policy for academic dishonesty, including plagiarism and cheating. If you have any questions about what constitutes plagiarism or cheating, please ask me or refer to the academic integrity code: [Academic Integrity Code](#).



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**COURSE OUTLINE:**

Please note that this is the proposed schedule. I reserve the right to make changes to the schedule when needed; you will be notified of any changes. Additional readings and assignments will be posted to the course website.

DATE	LECTURE TOPIC	READINGS / ASSIGNMENTS
T – 1/19	Course overview; what is conservation biology?	Chapter 1 (pp. 3-16)
TH – 1/21	Patterns of biodiversity	Chapter 2 (pp. 19-35); Wilson 1987; Terborgh 1988
T – 1/26	How many species are there?	Chapter 2 (pp. 35-45); individually assigned readings
TH – 1/28	Biodiversity and ecosystem functioning	Chapter 3 (pp. 47-66); Naeem et al. 1999; Radiolab “Worth”
T – 2/2	<i>Discussion:</i> Ethics and economics	Chapter 3 (pp. 66-77); Leopold 1949, Kareiva & Marvier 2007, Kaimowitz & Sheil 2007
TH – 2/4	<i>Case Study:</i> Complexity in Conservation	Murphy 2007
T – 2/9	<b>Guest lecture-</b> Caroline DeVan	TBD
TH – 2/11	Habitat loss and fragmentation	<b>Case Study #1 DUE:</b> Chapter 4 (pp. 79-98); Wilcove et al. 1998; Crooks & Soulé 1999; Brook et al. 2003
T – 2/16	Pollution, environmental degradation, and exploitation	Chapter 4 (pp. 98-104, 110-116); McCarty 2001, Pimm 2008; Peterson et al. 2003; Wickramasinghe et al. 2003; McClure et al. 2013; Brashares et al. 2004; Christ 2010
TH – 2/18	<i>Discussion:</i> Climate change	Chapter 4 (pp. 104-110); Donner et al. 2005; Moritz et al. 2008; Heller & Zavaleta 2009
T – 2/23	<i>Case Study:</i> Caribou Conservation	
TH – 2/25	<i>Discussion:</i> Invasive species	Chapter 4 (pp. 116-126); Lips et al. 2006; Strayer 2009; Davis et al. 2011 and replies
T – 3/1	Small populations and extinction	<b>Case Study #2 DUE:</b> Chapter 5 (pp. 135-167); He & Hubbell 2011; Pitman et al. 1999; Purvis et al. 2000; Wake & Vredenburg 2008
TH – 3/3	<i>Discussion:</i> The role of zoos, aquariums, and botanical gardens	Chapter 6 (pp. 199-211), Donlan et al. 2005, Redford et al. 2011, Swaisgood & Sheppard 2010 & responses
TH – 3/8	<b>MIDTERM EXAM</b>	<b>MIDTERM EXAM</b>
T – 3/10	Movie: "Crash: A Tale of Two Species"	<b>Paper topic DUE</b>
▶	<b>MARCH 13-20: SPRING BREAK – NO CLASSES</b>	

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**COURSE OUTLINE (CONT.):**

Please note that this is the proposed schedule. I reserve the right to make changes to the schedule when needed; you will be notified of any changes. Additional readings and assignments will be posted to the course website.

DATE	LECTURE TOPIC	READINGS / ASSIGNMENTS
T – 3/22	Applied population biology	Chapter 6 (pp. 169-180)
TH – 3/24	Law & policy	Chapter 6 (pp. 180-190); IUCN Red List brochure; Harris et al. 2011
T – 3/29	<i>Discussion:</i> Red knots and Horseshoe Crabs in the Delaware Bay	Niles et al. 2009, Niles interview 2011, FWS 2013
TH – 3/31	Protected areas – establishment, design, & management	Chapter 7 (pp. 213-252); Myers et al. 2000; Joppa & Pfaff 2009; Gilbert-Norton et al. 2010
T – 4/5	<i>Discussion:</i> Protected areas	Liu et al. 2001; Reed & Merenlender 2008; Mascia & Pailler 2011
TH – 4/7	Conservation outside of protected areas	Chapter 8 (pp. 255-270); Miller & Hobbs 2002; Lindsey et al. 2005; Pocewicz et al. 2011
T – 4/12	<i>Case Study:</i> Wolf Management	<b>PAPER DUE:</b> Case study handout; individually assigned readings
TH – 4/14	<i>Discussion:</i> Restoration and reintroduction	Chapter 6 (pp. 191-199); Chapter 8 (pp. 270-281); Donlan et al. 2006; Palmer et al. 2010
T-4/19	<i>Case Study:</i> Wetland Mitigation	<b>Case Study #3 DUE:</b> Case study handout
TH- 4/21	Human-wildlife conflict	
T- 4/26	Sustainable development	<b>Case Study #4 DUE:</b> Chapter 9 (pp. 283-302); Fjeldsa et al. 2005; Naughton-Treves et al. 2005; Loucks et al. 2009
TH- 4/28	<i>Discussion:</i> Conservation, education, and the media	Chapter 9 (pp. 303-309); Bride 2006; Radiolab “Galapagos”
T- 5/3	<b>NO CLASS- FRIDAY SCHEDULE</b>	
<b>FINALS</b>	<b>FINAL EXAM WEEK: MAY 6-12, 2016</b>	