

# Conservation Biology BIOS 406/506

Fall 2016

LECTURE: 11:00AM-12:15PM T, Th MO 442

LABS: 12:30-3:20PM T or Th, MO 444 unless otherwise specified in schedule

Instructor: Dr. Holly Jones, [hjones@niu.edu](mailto:hjones@niu.edu)

Office: MO 448

Office Hours: Mondays 1-2p or by appointment

TA: Heather Herakovich

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Office Hours: Tuesday 9:30-11 in MO424

Wednesday 2-3:30 in MO353

## Course Description

Welcome! This course provides an overview of the field of conservation biology. Specifically, we will explore concepts including: biodiversity, the causes and consequences of biodiversity loss, invasive species, climate change, restoration, conservation ethics, and social aspects of conservation. You will learn about these concepts and we will focus our activities and discussion on how to approach conservation issues. Class and lab sessions will be a mixture of lecture and in-class activities.

**Required Textbook:** Groom, Meffe, and Carroll. *Principles of Conservation Biology*, Third Edition. Available from the NIU Bookstore or online.



**Technology Resources:** You will be using Blackboard for this course to access readings and assignments, as well as communicating with your classmates and me. If you need help using Blackboard, please contact the ITS help desk (815-753-8100) and/or view the tutorial here:

<http://www.niu.edu/blackboard/students/>

## Course Goals and Objectives

Given the broad scope of this course, my primary goal is to help you build foundational knowledge in conservation biology research and knowledge. Taking this course is much like joining a physical fitness center, but with an emphasis on mental rather than physical development. I will provide you with the resources/tools and coaching (like a personal trainer) to learn the material, but you are ultimately responsible for the learning outcomes. The course material and assignments are designed to help you meet the following objectives (and hopefully have just a little bit of fun doing it):

1. *Understand and Articulate the Science of Conservation Biology:* Identify, discuss, and recall major theoretical and empirical concepts in Conservation Biology. Demonstrate conceptual knowledge retention and written/oral communication skills in course activities.
2. *Learn how to formulate, execute, analyze, and communicate a primary research project:* The lab for this class will be unlike any others you have experienced in that you will get a chance to see firsthand what conservation science research is like. You and your teammates will demonstrate that you can choose a research project, carry it out over the course of six weeks, enter and statistically analyze data for it, and communicate it to your classmates and to the managers at your field site.
3. *Learn to Communicate Like a Conservation Biologist:* Integrate and synthesize scientific research to provide evidence-based recommendations to agencies, non-profits, and other stakeholders. Demonstrate team

collaboration competencies (i.e., communication, problem-solving, management, and accountability) critical to both academic and applied work settings.

## Course Expectations and Policies

**Syllabus as a Contract:** This course syllabus should be considered a contract. By enrolling in the course, you agree to the policies discussed below. Likewise, I agree as instructor to abide by these policies. Any changes will be announced in class and through Blackboard and will be minor (e.g., changing the lecture topic of a day, but not the day of an exam). Be familiar with the policies discussed here. If you ask me a question that is answered in the syllabus, the likely response will be: “Read the syllabus.”

**Attendance:** Class attendance in both lectures and lab is required, as we will be actively interacting in groups and working on projects in class. If you are absent, you will let your group down and it will be counted against your grade. Please note that late arrivals are disruptive and will not result in credit. If you are 15 or more minutes late, please do not come to class as you will not receive credit for the class activity and will interrupt the learning of your peers.

**Respectful Learning Environment:** Please show engagement and respect for the classroom learning environment by turning off all electronic devices. I reserve the right to confiscate cell phones that are used in class for the duration of class – including those used for texting. Note-taking on electronic devices has been empirically shown to be distracting to other students, so use of laptops will be restricted to the back row. Class discussion and debate are highly encouraged (and will be facilitated) in this class, but only in a professional and respectful manner.

**Academic Integrity:** A certificate of completion (with scores) from the university's Online Tutorial of Academic Integrity (<http://www.niu.edu/ai/students/>) is required at the beginning of this course. Instructions can be found here: <http://www.niu.edu/ai/students/certificate.htm>. If evidence of academic dishonesty is detected, you will receive a zero for that assignment and one warning. Repeat incidents may result in course dismissal or failure. You will need to submit an electronic copy of your certificate on Blackboard, due by the beginning of class on **Thursday, Sept. 1.**

**Late Work:** The ability to meet and manage work deadlines in light of other responsibilities is a critical component of professionalism. Late work will not be accepted so please do not ask. However, early work is always accepted!

**Email Etiquette:** Email is the best way to reach me. But, in the spirit of promoting healthy work-life balance, please keep in mind the following email etiquette guidelines: (1) indicate the course in the subject line and topic (e.g. BIOS 406 Syllabus Question), (2) use proper grammar/punctuation, complete with greeting and salutation (I'm not fluent in “text talk” and it's disrespectful to not sign on and off of email communications), (3) expect responses Monday-Friday between 9:00am and 5:00pm, with at least a 48-hour time lag, and (4) check the syllabus or Blackboard and with your TA before asking questions. Not following these guidelines may result in my not answering your email.

**Special Accommodations:** I am happy to provide special accommodations for students with documentation of a disability through the Center for Access-Ability Resources (CAAR). Please contact me as early in the semester as possible. CAAR is located on the 4th floor of the University Health Service Building (815-753-1303).

**Student Support and Services:** As a student, you may experience a range of issues that can negatively impact your learning, such as anxiety, depression, interpersonal or sexual violence, difficulty eating or sleeping, loss/grief, and/or alcohol/drug problems. These mental health concerns or stressful events may lead to diminished academic performance and affect your ability to participate in day-to-day activities. In order to support you during such challenging times, Northern Illinois University provides a number of confidential resources to all enrolled students, including Counseling and Consultation Services 815-753-1206, Advocacy Services for Sexual Assault, Dating Violence and Stalking Support 815-753-1206 [24- Hour Crisis Assistance: Public Safety at 815-753-1212], and Services for Students with Disabilities (drc@niu.edu) or phone: 815-753-1303. If you are experiencing any sorts of these issues that prevent you from attending or doing well in class, please come talk to me at your earliest convenience and seek a doctor's note.

## Online Discussion Assignments

Each week, students will read a range of chapters and articles that will form the foundation of their knowledge of the issues. Every student is required to write a review on the readings and write a comment on a fellow student's review. The point of these reviews and comments is to spark some dialogue about course topics and raise any questions you might have about the readings. Reviews and comments will be made via the Discussion Tab on Blackboard.

Reviews are due Sunday nights at Midnight for the following weeks' readings. The first review will be due the first Sunday after classes begin - Sunday, August 28th. Comments are due Tuesday nights at Midnight. You will not get credit for late reviews/comments regardless of computers crashing, skies falling, etc.

Reviews should be a **short** paragraph and should include any opinions or thoughts you have on the readings, anything you've done or read in your life outside of class that may pertain to the subject, and every review should end with 1-2 questions you have based on the readings. Please do not just summarize what you read or you will not receive credit. These reviews should be thoughtful and thought provoking, not a rehash of what you read. Comments should be a short response to any of your fellow students' reviews. Keep it clean and respectful, please.

## Conservation Service Learning Experience

In order to obtain firsthand experience of conservation in action, all students will participate in a volunteer opportunity with local conservation practitioners outside of class time. Links to upcoming activities in the region are posted on blackboard. If there is an opportunity you are aware of or wish to participate in that is not included in these links, please let me know beforehand because I will need to approve it.

Following the participation, you will write a 2-4 page description and reflection on the experience detailing the activity and its goals, successes and challenges of the project, and an assessment of whether you think the goals will be achieved. During the activity, be sure to ask leaders about the project. The paper is due by the start of class on **Thursday, December 1**, but may be turned in at any time (and completing the paper soon after the experience would be prudent). It must be typed, double-spaced, with 1"-margins and 10–12-pt. font.

## Research Projects (Lab)

In the beginning of the class, I will assign you each to a group for our research projects. You will plan your research projects for the first three lab periods and carry them out in the field at Nachusa Grasslands for the subsequent six weeks. The remaining time will be spent analyzing your data and preparing to present it. If you do not show up for a field research or data analysis lab day you will automatically lose 20 points from your course engagement score no matter the reason. I reserve the right to remove people from teams and give zero points for group scores to those who are not communicating with their team members and show no effort in the team-based work while projects should be progressing. Which is a dry way of asking you to please be a good team member because almost all conservation is done in teams!

The project will have four outputs: 1) a short description of your research questions and hypotheses, 2) a description of your methods, 3) an in-lab Powerpoint presentation that will be attended by managers at the research site, and 4) a paper from your group. You will be graded as a group and individually for team-based projects. Group members will evaluate one another and those evaluations will contribute to your individual grades, so it is in your best interest to be a good team player. You will also put your names on individual sections of the paper for the first team-based project (more than one person can work on a section) and that will also contribute to your individual grade.

Note that the group project format is also meant to simulate real-world group conservation planning, in which groups that share a common goal are still composed of different personalities and approaches. Most conservation is accomplished in interdisciplinary groups of people since most environmental problems span multiple disciplines, stakeholders, and institutional boundaries. Learning to work effectively in a group and reflecting on which skills you bring to groups will go a long way into making you a valuable employee down the road.

## Field Trips and Journals (Lab)

Field trips will take the entire meeting period of the lab. Always be sure to dress appropriately for weather conditions and inform me of any pertinent medical concerns. We will use NIU buses to convey students to and from each site. All trips will depart from the north side of Montgomery Hall at 12:30 PM sharp. There are no makeups for field trips; absences will cause you to lose class participation points. Since you will be required to submit a field journal (see below), missing a field trip will also necessarily reduce the amount of material available for journal notes. You cannot submit a field journal entry for a field trip you missed.

The field journal should document what was observed and/or learned on each of the field trips. The writing style should be informative and descriptive, but not verbose. It should be written in complete sentences. Each entry must include:

1. Date
2. Time
3. Location
4. Weather conditions
5. Activities
6. Observations
7. Conclusions

I recommend using a small spiral-bound notebook for notes during field trips. Submit field journals using the journal function on Blackboard or you can submit a hard copy in lab or photos of your journal via email to your TA via email as long as it is legible. Examples of field journal entries will be available on Blackboard. The field journal entry is due on Blackboard at Midnight one week after your field trip. For example, if your field trip is on Tuesday, your journal entry is due on Tuesday at Midnight the following week.

## Extra Credit Opportunities

**Please note the last day to submit extra credit is the last day of class (1 December) by Midnight.** You may earn up to 30 points of extra credit in the semester. You may attend any conservation-oriented seminars on campus to receive 10 points of extra credit. You must email the TA with the following to receive credit:

1. The name of the person who spoke and title of the talk.
2. What you learned and how it's relevant to conservation.

Extra credit write ups are due within 72 hours (3 days) of seeing the talk. I do not take late work so get the write ups in on time for credit. Biology seminars are Thursdays from 3:30-4:30 in MO 443. Please also check the ESE Institute's website for other opportunities and I'll keep a list on Blackboard as well. If you think a seminar should count, talk to me beforehand because I will need to approve it.

You can receive 30 points of extra credit for one day (approximately 4 hours) of volunteer work at Nachusa Grasslands, Afton Forest Preserve, St. Charles Park District, or any other of the Conservation Opportunities listed on Blackboard as well. You must turn in (to your TA) a sheet of paper that details:

1. The date attended,
2. the work you performed, and
3. what you learned.

Extra credit write-ups are due within 72 hours (3 days) of volunteering. You must have a steward or employee of the place in which you are volunteering to print and sign their name on the sheet of paper (you don't need to have covered what you learned when they sign) to get credit for your work. This volunteer experience has to be distinct from your Conservation Learning Experience. You can volunteer at any of these places for your learning experience, but if you want extra credit, you will need to volunteer a second time.

## Student Evaluation

Grades for this course are determined from a 0 to 1000 point-scale, and include the following activities:

**Course Engagement (180pts; 18%):** This evaluation includes completion of the academic integrity tutorial certification (10 pts), online discussion assignments (14 x 6 pts = 84pts) for readings assigned for class, and a grade from your TA and me based on your attendance and participation throughout the semester (86 pts).

**Exams (130pts; 13%):** We will have one midterm and one final exam, each worth 65pts. The midterm will be on topics covered up until then and the final will be cumulative. Both tests will be based on material covered in class and lab. Both will consist of multiple-choice questions, short answers, and essays.

**Conservation Service Learning Experiences (70pts, 7%):** You will write a 2-4 page description and reflection on the experience detailing the activity and its goals, successes and challenges of the project, and an assessment of whether you think the goals will be achieved. A rubric will be available on Blackboard.

**Research question and hypotheses (50pts, 5%):** You will need to turn in what your group's research question is and what your group's hypotheses are before you get your research going at Nachusa Grasslands. More information will be given out in lab.

**Research methods (50pts, 5%):** You will need to turn in your group's research methods before getting started at Nachusa Grasslands. More information will be given out in lab.

**Research Project Presentation (150pts, 15%):** You will do a group presentation in lab to present your team's research project (125pts). Your TA will evaluate your lab presentations. Each student will also receive an individual score for their presentation style (25pts). Each group member must present to receive credit. Rubrics will be available on Blackboard.

**Research Paper (200pts; 20%):** Your team will write a paper in response to the team-based project 1 prompt. You will receive an individual score for the sections of the paper that you write (180 pts per paper) and your group will also receive a score for the paper holistically (20 pts). Rubrics will be available on Blackboard.

**Team-based Project Participation (100pts; 10%):** Your group will evaluate you as a team member for your research project. Rubrics will be available on Blackboard.

**Field Trips (70pts; 7%):** We will go on seven field trips over the semester. You will complete a journal entry for each field trip (10 pts each).

Letter grades are distributed according to the following point ranges: A (920-1000), A- (900-919), B+ (880-899), B (820-879), B- (800-819), C (720-799), C- (700-719), D (620-699), and F (<620).

**Grades are non-negotiable.** The only time I will consider changing a grade is if you think I have made a mistake adding points. I will not change points or give you more credit for any other reason.

## Graduate Student Evaluation

Graduate students are expected to operate at a higher level than undergraduates. Therefore, I will grade graduate students more critically and they will be expected to exemplify a higher level of learning than undergraduates. I will evaluate the possibility of more advanced graduate student assignments the first week of classes when we find out the ratio of grads to undergrads.

## Lecture and Lab Schedule

Week	Date	Lecture Topic	Lab Exercise	Reading	Due Today
1	Aug 23	Introduction to conservation biology	Introduction to lab; groups assigned; syllabus review. Homework: think of potential research topics.	Text Ch 1; Soule 1985	
	Aug 25	Biodiversity & global patterns		Text Ch 2	
2	Aug 30	Nachusa and research questions, hypotheses, methods	Choosing research project; devising/researching methods		
	Sep 1	Biodiversity & global patterns 2		Kareiva and Marvier 2012; Jenkins et al. 2013; Meyers et al. 2000	Academic Integrity Certificate*
3	Sep 6	Extinctions	Finalize research methods. Write up needed equipment list, data sheets, etc.	Text pp. 70-84; Barnosky 2011	Research questions and hypotheses for Tuesday Lab <sup>#</sup>
	Sep 8	Rarity, threats to biodiversity		Text pp. 64-70, 86-89	Research questions and hypotheses for Thursday Lab <sup>#</sup>
4	Sep 13	Habitat loss & degradation	Nachusa	Text pp. 173-188; Kareiva et al. 2007; Marris Ch. 1	Research methods for Tuesday Lab <sup>#</sup>
	Sep 15	Habitat degradation & fragmentation		Text pp. 213-240	Research methods for Thursday Lab <sup>#</sup>
5	Sep 20	Pollution	Nachusa	Text pp. 188-197	Field journal entry for Tuesday Lab <sup>#</sup>
	Sep 22	Invasive species		Text pp. 294-321; Simberloff et al. 2012	Field journal entry for Thursday Lab <sup>#</sup>
6	Sep 27	Invasive species	Nachusa	Text pp. 327-330; Tershy et al. 2012	Field journal entry for Tuesday Lab <sup>#</sup>
	Sep 29	Overexploitation		Text pp. 253-277	Field journal entry for Thursday Lab <sup>#</sup>
7	Oct 4	Climate change	Nachusa	Text pp. 333-360; Miller-Struttman et al. 2015; Mawdsley et al. 2009	Field journal entry for Tuesday Lab <sup>#</sup>

Week	Date	Lecture Topic	Lab Exercise	Reading	Due Today
	Oct 6	Guest speaker – John Vanek Jobs in ConBio and Research talk		TBA	Field journal entry for Thursday Lab <sup>#</sup>
8	Oct 11	Midterm Exam	Nachusa		Field journal entry for Tuesday Lab <sup>#</sup>
	Oct 13	Climate change 2		IPCC Summary for policymakers 2013; Jones et al. 2012	Field journal entry for Thursday Lab <sup>#</sup>
9	Oct 18	Small populations, conservation genetics	Nachusa	Text pp. 375-394; Carty et al. 2009	Field journal entry for Tuesday Lab <sup>#</sup>
	Oct 20	Population viability analysis		Text pp. 432-435	Field journal entry for Thursday Lab <sup>#</sup>
10	Oct 25	Population viability analysis	Field trip to Fermi Lab. Leave in front of Montgomery Auditorium at 12:30 sharp. Return no later than 3:20.	Morris and Doak Chapter	Field journal entry for Tuesday Lab <sup>#</sup>
	Oct 27	Protected areas & reserves		Text Ch 14; Hole et al. 2011; Oldekop et al. 2016	Field journal entry for Thursday Lab <sup>#</sup>
11	Nov 1	Reserve & ecosystem management	Data entry and analysis	Text pp. 467-473; Selig and Bruno 2010	Field journal entry for Tuesday Lab <sup>#</sup>
	Nov 3	Ecosystem services 1		Text Ch 5; Costanza et al. 1997; Armsworth et al 2006	Field journal entry for Thursday Lab <sup>#</sup>
12	Nov 8	Ecosystem services 2	Data entry and analysis	Benayas et al. 2009	
	Nov 10	Restoration ecology 1		Text Ch 15; Seddon et al. 2014	
13	Nov 15	Restoration ecology 2	Draft review with Heather - optional	Hobbs and Cramer 2008; Jones et al. in review	
	Nov 17	Guest lecture - Allison Sacerdote, Research Scientist, Chicago Academy of Sciences		Hoffman et al. 2010	
14	Nov 22	Advanced topics in restoration; Presentation guidance	NO LABS	Baron Ch. 8; Hobbs 2006; Donlan et al. 2005	
	Nov 24	NO CLASS - HAPPY THANKSGIVING			



Week	Date	Lecture Topic	Lab Exercise	Reading	Due Today
15	Nov 29	Closing thoughts and discussion; review for final	Final presentations	Kareiva and Marvier Chapter 1	Final paper, presentations, and group member evals due for Tuesday Lab*
	Dec 1	<b>Final Exam</b>			Final paper, presentations, and group member evals due for Thursday Lab*; Conservation service learning experience *; Extra credit#
	* - Assignments due on Blackboard before lecture begins. Please note: <u>Late work is not accepted under any circumstances.</u> # - Due at Midnight				

## Other Information

**Getting Started:** Carefully review this syllabus and complete the Online Tutorial on Academic Integrity ("Tutorial" folder in Blackboard). A certificate of completion must be submitted on Blackboard under the "Submit Academic Integrity Certificates here" tab by Thursday, September 1st at the beginning of class.

Read early and often to do well in this course! We cannot cover all the textbook concepts in class; class time is best served exploring key concepts and hands-on exercises. Thus, the textbook readings are meant to provide you with course information breadth (classroom time offers depth).

**Office Hours & Appointments:** My drop-in office hours can get pretty busy during certain times in the semester. To ensure one-on-one availability, please email me to schedule an appointment.

**More about Conservation Biology:** I'm always happy to talk to students more about undergraduate experiences and graduate studies in conservation/environmental science. ☺ Please schedule an appointment with me if you want to learn more!