

Syllabus -- NRSM 271N Conservation Ecology (Honors)

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Office hours: Wed. 1:30-3:30 or by appointment

Meetings

Payne Native American Studies Building (NAS) 201

MW 11:00-12:20 pm (Wednesdays are seminars unless otherwise noted)

Format: Regular meetings will include lectures, discussions, in-class exercises and occasional field excursions. Some weekend field trip will correspond with in-class materials.

Course Objectives and Learning Outcomes

Ecology is the study of relationships between organisms and the physical environment, organisms and other organisms, and the cycling of matter and energy. It is, in a broad sense, the science of connections. This concept, as integrated in protected area management and contemporary topics of preservation and conservation, requires students of scientific inquiry to be fluent in science, as well as policy and management. To the best of my ability, I try to overlap the science content with the discussions you will be having in other courses as part of the Wilderness and Civilization program.

This course also introduces ecological theory and terminology, particularly as related to the study, management and conservation of wild landscapes. Concepts will be illustrated with examples from local and regional ecosystems. Students will develop their critical analysis ability, and hone the technical communication skills necessary to integrate ecological science into natural resource policies, management plans, and prescriptions.

Students completing the course should be able to:

1. Understand the role of abiotic factors in determining the distribution of species and productivity of ecosystems.
2. Develop informed hypotheses about the role of biotic processes in regulation of ecosystem composition, structure and function.
3. Clearly communicate ecological concepts and ideas verbally and with the written word.
4. Critically evaluate and apply the technical ecological literature.
5. Describe the relationship between natural disturbances, ecosystem succession, and the application of these concepts to conservation.

Readings

Readings will be taken from various books as well as scientific journal articles and will be distributed to the class one week prior to discussion via moodle or in class. Students should read assigned material prior to the course meeting for which it is assigned. Please see the moodle site for all course materials as needed. We will also use your High Country News as a way explore many of our class topics. It's important to do the readings-it will help you join discussions and ask thoughtful questions. Please don't ignore them.

Assignments

Students will write review and opinion papers and other assignments as part of the course. The final project will consist of an in-class presentation and white paper about an out-of-class experience you choose to attend as part of the semester. Quizzes and exams will also be graded assignments for the course. Please see the following for a detailed description of each graded activity for the course.

1. **Laboratory Exercises and writing assignments**-Each laboratory exercise will require a one to two page write up based on the activity. Guidelines will be tailored to each activity specifically, and outlined in class. Other field trips and activities will include writing assignments. Expect up to 5 assignments throughout the semester.
2. **In-class quizzes**-Attendance may be taken each week through a 10- point introductory quiz on the weeks' required reading material. If you read the material, you should be able to pass the quiz. These cannot be made up if class is missed. Because we only meet twice a week, it is important to come to class.
3. **Participation**-this may take the form of attendance, as well as leading discussions, asking thought-provoking questions, and coming prepared to participate in class activities by reviewing the material assigned in prior weeks.
4. **High country News Bite**-each week, one person will be responsible for delivering a short, 5-10 minute presentation with at least one question for the audience about an article relating to a topic in science in High Country News. It is great if you also want to include other information that you reviewed as part of the topic, but it is only necessary to base your discussion on the article that you read for the news bite.
5. **Ecology in Action-YOUR FINAL PROJECT FOR THIS CLASS**-You will be responsible for attending at least ONE event/guest speaker/activity that is related to some topic in ecology for your final project. As part of your final project, you will prepare a short, five-page report on the activity/guest speaker/event, as well as a short (7 minute) presentation for class (you do not need to use powerpoint).

Academic Integrity

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. We expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected

cases of academic misconduct will be handled according to University regulations. More information, including definitions and examples, can be found at: http://life.umt.edu/vpsa/student_conduct.php

Disability Accommodations

This course is accessible to and usable by otherwise qualified students with disabilities. To request reasonable program modifications, please consult with the instructor. Disability Services for Students will assist the instructor and student in the accommodation process. For more information, visit the Disability Services website at <http://life.umt.edu/dss>.

Course Withdrawal:

Important Dates Restricting Opportunities to Drop a Course Autumn 2017:

Deadline	Description	Date
To 15 th instructional day	Students can drop classes on CyberBear with refund	September 19 = last day
16 th to 45 th instructional day	A class drop requires a form with instructor and advisor signature, a \$10 fee from registrar's office, student will receive a 'W' on transcript, no refund.	September 20 through October 31
Beginning 46 th instructional day	Students are only allowed to drop a class under very limited and unusual circumstances. Not doing well in the class, deciding you are concerned about how the class grade might affect your GPA, deciding you did not want to take the class after all, and similar reasons are not among those limited and unusual circumstances. If you want to drop the class for these sorts of reasons, make sure you do so by the end of the 45 th instructional day of the semester. Requests to drop must be signed by the instructor, advisor, and Associate Dean and a \$10 fee applies.	November 1 – December 12

Late Assignments

Students participating in official University activities (e.g., sports, etc.) will be allowed extensions on assignments with terms established on a case-by-case basis.

Negotiated excused absences for non-University activities (e.g., family emergency) will be considered on a case-by-case basis. Requests for extensions will only be considered when made at least 1 week prior to the assignment deadline. Post-hoc extensions will be considered in extreme circumstances (e.g., you could not make the deadline because you were unconscious or in the hospital) on a case-by-case basis.

Unexcused late assignments will be accepted up to 4 working days (i.e., weekdays **not** course meetings) after the original due date. The overall grade of the assignment will be diminished by 20% for each day late. E.g., the highest possible score for a “perfect” assignment turned in 3 days would be 40% of the possible points for an on-time assignment.

There are no excused absences for field trips. Please leave your cell phones at home or off during class.

Outline for course topics and specific corresponding field trips

Date (s) indicate the Monday of each week’s topic

September 18-Introduction to Wildlife and Wildfire

In-class discussion about state and federal wildlife law to prepare for Wednesday’s seminar. We will also have a short lecture on fire ecology to prepare for Friday’s field trip to the Bitterroot to discuss the role of fire in natural systems. There are readings to do for Wednesday and Friday.

September 25-Complementary Goals for Continental Conservation and Ecological Concepts

In-class reading and discussion of Soule and Noss, 1998 and Watson et al.: "Catastrophic Declines in Wilderness Areas Undermine Global Environment Targets" and Spotted Owl Case study.

October 2- Prairie Ecosystems, conservation easements, and private versus public land conservation

We will discuss the science and management framework for conservation easements, introduce the prairie ecosystems of eastern Montana to prepare for our field trip, and read background articles on the Greater Sage Grouse case study in terms of collaborative conservation.

October 9-Population Viability Analysis components: Counts, Demography, and Metapopulations and their application to the Endangered Species Act

Read primers on Population Viability Analysis and associated critiques as applied to Grizzly Bear conservation in the GYE and Sage Grouse conservation in Montanan grasslands. We will also have an accompanying field trip to the Centennial Valley to discuss Sage Grouse conservation in light of ESA regulations/potential listings.

October 16- Island Biogeography and Terrestrial Reserve Design

In class discussion on primary concepts in island biogeography, the SLOSS debate, and how we design reserves based on scientific information. We will also have a weekend field trip to the Cabinet mountains, an area set aside in a large-scale conservation initiative.

October 23- Island Biogeography and Reserve Design continued

October 30- Habitat definitions and niche theory

We will discuss the definitions of habitat, niche, and apply these definitions to theoretical ideas surrounding niche theory, including the concept of ecological traps, foraging strategies, and critical habitat designations.

November 6- Freshwater ecology, hydrology and invasive species ecology

Water resources are a topic that spans policy, scientific investigations, and cultural identities. During this class, we will review the definition of a watershed, and use these guidelines to look at two case studies: The Great Lakes and Invasive Species, and The Colorado River.

November 13- no class on Monday, please attend Wednesday lecture

November 20-no class

November 27-Population growth, limitations and the human science experiment

We will discuss population growth models and do a laboratory activity focused on human demographics. Discussion will focus on the concept of carrying capacity and how it relates to human population growth as well as other aspects of resource use and resource protection.

December 4- Climate science and adaptation

December 8-10- Fall retreat and final student presentations