NRSM 344 Ecosystem Science and Restoration Capstone
SYLLABUS
Spring 2022

Introduction: This five-credit course is the planning course for the field learning experience for students in the Ecosystem Science and Restoration (ESR) major and ESR Option of the Environmental Science and Sustainability major (although it is also open to students pursuing other majors). It is designed to get students active in the field of ecosystem science and restoration through the application of ecological principles to management practice, creative participation in developing a research or project proposal, and through direct service-learning. The course centers around two activities: 1) developing a capstone or thesis project proposal, and 2) hosting a volunteer restoration event.

Prerequisites: Students must have completed at least one course in:
• Ecology
• Ecological restoration (NRSM265 *Elements of Ecological Restoration* or equivalent)

Meeting Time and Location
• Wednesdays, 3:00-4:50 PM, LA 205
• Fridays, 2:00-4:50 PM, LA 205

Instructor: Dr. Cara Nelson, Professor, Department of Ecosystem and Conservation Sciences, College of Forestry and Conservation.

• Email: cara.nelson@umontana.edu
• Mobile phone: 406-241-2478
• Campus Mailbox: 413-A Clapp (room with the photocopier)
• Office Hours (via Zoom or telephone): Thursday 3:30-5:30 PM
    – You must schedule at least 24-hr in advance: https://calendly.com/caranelson_officehours/office-hours.
    – Meetings are set for 30 minutes.
    – Once all meeting times for a given day have been scheduled, the scheduler will no longer show that day as available.
    – If you are unavailable during office hours, other times can be arranged.

Learning outcomes: By completing this course students should be able to:
• Compile a high-quality application for a job in ecosystem science, restoration, or management;
• Evaluate ecological restoration plans;
• Write a proposal for an ecosystem science or restoration study or project;
• Use reference software and "cite-while-you-write" programs;
• Organize a volunteer restoration work day; and
• Communicate effectively to scientist, managers, the public, and media.

Course format: A variety of learning tools will be used, including lectures, field trips and peer-learning activities.

Lectures — Lectures will be based on readings that will be made available ahead of class and will form the basis of in-class discussion (see below for more information on reading assignments). During class sections that include lecture, lecture periods will be from 3:10-4:00 PM (Weds) or 2:10-4:00 PM (Fri). Any lectures that include remote participation will be accessed using this zoom link: https://umontana.zoom.us/j/98525361161?pwd=UUNhSHZvaEUyU0ZrQXY0aURiSVZjZz09

Field trips — The course includes two field trips to area parks to collect sample data for class labs. In addition, students will participate on one additional trip to visit a native plant greenhouse. Two trips will be scheduled (each to a different greenhouse): one on a Friday afternoon and one on Sunday afternoon.

Volunteer event – In addition to trips scheduled during class periods, each student will be required to work with a group to organize and participate in one volunteer work event at the FireWise Garden on campus on a Friday or Sunday afternoon in April (students will be involved in scheduling).

Peer learning — Peer learning has been shown to be a highly effective teaching tool and is an integral component of the course. Students will work in groups for various aspects of the course. Most class sessions will include time for peer-group meetings.

Professional presentations — This course includes professional presentations and meetings. Please dress and act professionally for these events. Contact instructor if you have any questions.

Assignments

Consistent with five credits, this course requires an average of ten hours of work per week outside of class time. Please allow enough time in your schedule for course work.

Instructions for all assignments will be posted on Moodle. Students will share files using UMBox, UM's on-line file-sharing site. A primer on using UMBox will be given during the first class.

(1) Required Reading – Most reading in this course will be self-directed. There are three short, assigned textbooks.

- Writing Scientific Research Articles SECOND EDITION, Cargill and O'Connor (Wiley-Blackwell 2013), available in the bookstore (also available on Amazon).
- The Master Communicators Handbook, Erickson and Ward (Change Makers Books, 2015). The bookstore ordered copies which are expected to arrive week 2 of the semester. Also available on Amazon for $15.00 (paperback) or $10 (Kindle) https://www.amazon.com/Master-Communicators-Handbook-Teresa-Erickson/dp/1785351532/ref=sr_1_1?crid=113JRJPUTQZOV&keywords=The+Master+Communicators+Handbook&qid=1642617718&sprefix=the+master+communicators+handbook%2Caps%2C613&sr=8-1
- Effective Ecological Monitoring, Lindenmayer and Likens (CSRIO 2010). Cara has two copies of this book that the class can share or students can order through Amazon for $38.00 (paperback) or $28.50 (Kindle) https://www.amazon.com/Effective-Ecological-Monitoring-David-Lindenmayer/dp/1486308929/ref=sr_1_2?crid=3BABKII7YKYA0&keywords=%E2%80%A2+Effective+Ecological+Monitoring&qid=1642564630&sprefix=effective+ecological+monitoring%2Caps%2C313&sr=8-2

Additional readings will be assigned from the contemporary scientific literature, chapters from books, and popular sources. All reading materials either will be provided in class or will be available on Moodle. Students will be expected to answer questions about the readings during class discussion.

(2) Restoration Plan Critique – Students will independently critique a local restoration plan and submit a written evaluation. Students will discuss their critiques in class.

(3) Capstone Proposal – Students will work individually or in teams to develop a proposal for an ecosystem science or restoration study or project. Students will be given a choice of projects that are suitable for the course assignment. This assignment will involve independent research and incorporate ecological theory, experimental design, land management practices, and budgeting. The proposal will be presented orally during UM's Conference on Undergraduate Research (April 22). In addition, students will produce a written version for an actual funding opportunity. For students planning to enroll in *Ecosystem Science and Restoration*

Practicum (NRSM495; required for ESR and ESS/ESR option majors) or for thesis credits, this proposal will form the basis of work done in these courses. The proposal counts for 65% the course grade. Individual group member grades will be weighted by individual participation and performance within the group. Components of the project are due throughout the course (see assignment).

Students who are writing senior thesis proposals with a faculty mentor will need to schedule meetings to meet with their faculty mentors. At least one of the meetings should be scheduled with Cara and the faculty mentor, ideally during class time devoted to capstone projects.

Failure to submit a final version of the Capstone Proposal at the end of the semester will result in no credit for the final proposal, and students will be unable to register for NRSM 495 or thesis credits. No late proposals will be accepted, unless an accommodation has been arranged at the start of the semester or in the event of illness or emergencies.

(4) Resume and Cover Letters – Students will submit a draft and final cover letter "applying" to work on the capstone project of their choice. Students working on senior thesis will address the cover letter to their faculty mentor. All other students will address their cover letter to the course instructor.

(5) Volunteer Restoration Work Day – Students will work in teams to organize a volunteer restoration event for the FireWise Demonstration Garden on the UM campus, to be held on a Friday or Sunday afternoon (students will be involved in scheduling). Each student team will submit a Volunteer Event Plan, and revise the plan based on feedback, in advance of the event. The volunteer events will be evaluated by the course instructor and the volunteers who attend. In addition, all students will submit a group evaluation after their event.

(6) Precision of Estimation Report – Students will have an opportunity to learn how to develop field methods and assess precision of estimation associated with different sampling designs through a power analysis exercise. The exercise involves collecting and analyzing field data and submitting a final report.

(7) Tracking Time and Effort – Students will document time and effort on course tasks throughout the semester using the "Time and Effort" Excel template, which is posted on Moodle. This document should be downloaded, updated weekly, and shared with the course instructor via Google Docs. When you "share", please make sure to select "anyone with the link can edit".

(8) Self and Group Evaluations – All students will submit two self evaluations during the semester; one before spring break and the other at the end of the semester. Students working on group capstone projects will also submit two group evaluations during the semester; one before spring break and the other at the end of the semester.

Formal Writing Assignments: This course fulfills UM's General Education Upper Division Writing requirements for FCFC majors (FCFC majors require that students take three distributed UD writing courses). Upper Division writing courses are designed to give students advanced experience with college-level writing. Formal writing assignments in this course include: 1) Resume and Cover Letter (individual assignment; 3-4 pages; one revision; 4% of grade); 2) Restoration Plan Critique (individual assignment; 3-4 pages; no revisions; 6% of grade); 3) Volunteer Event (group assignment; 4-6 pages; one or two revisions; 20% of grade); 4) self-evaluations (2% of grade); and 5) Capstone Proposal (individual or group assignment; four-five revisions; 60% of grade).

No late assignments will be accepted (unless legitimate emergency situations arise); assignments submitted late will receive no credit and no feedback. This course has a very tight schedule and builds on previous assignments – falling behind will make meeting deadlines and completing your work in the class much more difficult.

Approved Upper-Division Writing Course Learning Outcomes
- Use writing to learn and synthesize new concepts;
- Formulate and express written opinions and ideas that are developed, logical, and organized;
- Compose written documents that are appropriate for a given audience or purpose;
- Revise written work based on constructive feedback;
- Find, evaluate, and use information effectively and ethically;
- Begin to use discipline-specific writing conventions; and
- Demonstrate appropriate English language usage.

Upper-division Writing Requirement in the Major Outcomes
- Identify and pursue more sophisticated questions for academic inquiry;
- Find, evaluate, analyze, and synthesize information effectively from diverse sources;
- Manage multiple perspectives as appropriate;
- Recognize the purposes and needs of discipline-specific audiences and adopt the academic voice necessary for the chosen discipline;
- Use multiple drafts, revision, and editing in conducting inquiry and preparing written work;
- Follow the conventions of citation, documentation, and formal presentation appropriate to that discipline; and
- Develop competence in information technology and digital literacy.

There are high expectations and standards for students' written work and oral contributions. The ability to evaluate the substantive merits of student work is seriously impeded by typographical errors, poor grammar and poorly organized or constructed sentences; these errors will be interpreted as a lack of interest in your work and the course. There are services (e.g., The Writing Center) available on campus to assist students in developing and improving writing skills. If you are unsure of the quality of your writing, please make use of these services in addition to asking the course instructor for additional commentary and feedback on your assignments.

Students will be expected to use RefWorks or other reference software that allows you to maintain scientific references and "cite-while-you-write." Students will also be expected to use MS Words Editing features (like "Track Changes"). Training will be provided.

Evaluation

Assignment	Points
Restoration Plan Critique	6
Capstone Proposal	60
Resume and Cover Letter	4
Precision of Estimation Report	6
Volunteer Work Day	20
Time and Effort Reporting	2
Self Evaluations	2
TOTAL	**100**

This course is offered as traditional letter grade only. Students cannot change to credit/no credit at any time during the semester. Letter grades will be assigned bases on students' numeric scores as follows:

A = ≥ 94%, A- = 90-93%
B+ = 87-89%, B = 84-86%, B- = 80-83%
C+ = 77-79%, C= 74-76%, C- = 70-73%
D = 60-69%; F = <60%

Communication: All course communications outside of class will be sent via Moodle to students' University of Montana email accounts. In general, my policy is to try to respond to email within 24 hours. We do check our email accounts regularly during the week, but as a rule will not respond to email sent over the weekend.

Course documents and assignment submission: Course materials and assignments can be found on the course Moodle and assignment submission should also be through the Moodle site. Moodle topics are organized by assignment type rather than by week of the semester. Here is a list of how the topics are organized to help you find your way around

- Topic 1. Syllabus, Schedule & Logistics – includes key information from the syllabus (like how to schedule office hours), as well as links to the syllabus and schedule. It also includes the zoom link to use for any classes that are designated as remote.
- Topic 2. Readings – includes pdfs of any assigned readings that are not in the course textbooks.
- Topic 3. Lecture notes and resources – includes documents and videos associated with class content and is organized by date. I will not post content for all lectures, but if I show a powerpoint or if class is recorded, the files will be in this area. I will also post any documents related to course content (optional readings) here.
- Topic 4. Restoration Plan Critique – includes the assignment and associated files for the critique due the second week of class.
- Topic 5. Resume, Cover Letter, Strategic Planning – includes the detailed assignment for creating a resume, cover letter and strategic plan.
- Capstone Projects – includes resources and assignments that are part of the capstone project, including group evaluation assignment. Submit all work for review by the instructor here. You will need to use a platform other than Moodle to share files for group capstone projects (see below) and for thesis projects to share files with your project mentor.
- Topic 7. Volunteer Event – includes resources and assignments that are part of the volunteer restoration work event, including the group evaluation assignment. You will need to use a platform other than Moodle to share files with your group (see below)
- Topic 8. Precision of Estimation Report (will be hidden until after spring break) – includes resources and assignments that are part of the assignment in which you will assess observer error and calculate required sample sizes.
- Topic 9. Self evaluations and Time and Effort Tracking – includes the assignment for self evaluations and the template for tracking your time and effort.

Please make sure you take the time to navigate Moodle as soon as possible, so that you are aware of where to find all course materials.

Platforms for students to share files: All students in the course will need to share documents within their groups. Suggested platforms for doing so include "UMBox" and "Google Drive."

Classroom environment: Students at University of Montana are diverse in many ways, including race, gender, age, religion, preparedness, and mobility. Please help create a respectful learning environment by honoring all student contributions and expressing your views in ways that do not diminish other students' perspectives.

Plagiarism: All students must practice academic honesty, including taking care not to plagiarize the words or ideas of others (i.e. submitting a direct quotation from a source without using quotation marks and citing the original document; or submitting text based on someone else's ideas without proper citation). Academic

misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. All students need to be familiar with the Student Conduct Code. The Code is available for review on line at: http://www.umt.edu/SA/VPSA/index.cfm?page?1321.

Disability modification: Students with disabilities will receive reasonable modifications. It is the student's responsibilities to request modifications from the instructors with sufficient advance notice, and to be prepared to provide verification of disability and its impact from Disability Services. Please make an appointment to speak to one of the Instructors after class during the first two weeks of the semester to discuss details. For more information, visit the *Disability Services for Students* website at www.umt.edu/dss/