



**NR 420: Integrated Ecosystem Management
COURSE SYLLABUS**

Department of Forest and
Rangeland Stewardship
Warner College of Natural Resources

	Instructor	Teaching Assistant
Name:	Dr. Robin Rothfeder	Maria Vicini
Office:	MSNR 211	N/A
Phone:	970-491-6919	N/A
E-Mail:	robin.rothfeder@colostate.edu	maria.vicini@colostate.edu
Office	Tues. and Wed., 1-2 pm, or by appt.	Monday, 9-10 am, or by appt.
Hours:	Office hours conducted via Teams , or in-person at the student's request	Office hours conducted via Teams

Term:	Fall 2021
Class Meeting Days:	Tu, W, Th
Class Meeting Hours:	Lecture: Tu/Th 11:00 am - 12:15 pm Lab: W 5:30 pm – 7:00 pm
Lecture Location:	Forestry 127
Lab Location:	MSNR 232
Course Credits:	4

Course Overview

Welcome to NR 420! This is the capstone course for Natural Resource Management (NRM) majors and may also be taken by other NR disciplines. The course familiarizes students with the biophysical and socioeconomic complexities of ecosystem management, and it provides the opportunity to apply relevant knowledge and skills in a real-world setting. Working in groups and applying concepts from lectures and readings, students will collaborate to identify resource management needs and objectives, determine a project area, and then develop an ecosystem management plan for that area. You will work on developing components of this plan during each lab meeting, including: (1) extraction of geospatially referenced ecological data; (2) analysis of current conditions of natural resources and assessment of critical resources, habitat, and ecosystem services within management units; (3) development of rational goals and implementation plans related to a management objective; and (4) development of quantitative decision support and consideration of multiple scenarios and stakeholders. This is a unique opportunity to hone your job skills, build a professional network, and represent CSU to the northern Colorado community.

Course Goals and Objectives

During this course, students will:

- Develop a basic understanding of the concepts of natural range of variation, ecosystem resistance and resilience, current and desired future conditions, and socioecological dynamics

- Learn how to access, acquire, and process ecological datasets to generate analyzable information
- Learn basic methods for characterizing current ecosystem conditions
- Make projections about ecosystem structure, function, and composition
- Develop ecosystem management objectives based on ecological and social factors
- Apply simple statistical techniques as decision support tools
- Make natural resource management recommendations to achieve desired future ecosystem conditions

Course Prerequisites

LAND220/LIFE220 – Fundamentals of Ecology; or LIFE320 – Ecology

NR220 – Natural Resource Ecology

NR319 – Geospatial Applications in Natural Resources; **or**

NR322 – Introduction to Geographic Information Systems

NR320 – Natural Resources History and Policy

Covid Information

The university's COVID information is at <https://covid.colostate.edu/>.

CSU's Land Acknowledgment Statement

Colorado State University acknowledges, with respect, that the land we are on today is the traditional and ancestral homelands of the Arapaho, Cheyenne, and Ute Nations and peoples. This was also a site of trade, gathering, and healing for numerous other Native tribes. We recognize the Indigenous peoples as original stewards of this land and all the relatives within it. As these words of acknowledgment are spoken and heard, the ties Nations have to their traditional homelands are renewed and reaffirmed.

CSU is founded as a land-grant institution, and we accept that our mission must encompass access to education and inclusion. And, significantly, that our founding came at a dire cost to Native Nations and peoples whose land this University was built upon. This acknowledgment is the education and inclusion we must practice in recognizing our institutional history, responsibility, and commitment.

<https://landacknowledgment.colostate.edu>

This is an Inclusive Classroom

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength, and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

Source: <https://education.uiowa.edu/office-dean/policies/syllabus-checklist>

CSU's Principles of Community

- **Inclusion:** We create and nurture inclusive environments and welcome, value and affirm all members of our community, including their various identities, skills, ideas, talents and contributions.
- **Integrity:** We are accountable for our actions and will act ethically and honestly in all our interactions.
- **Respect:** We honor the inherent dignity of all people within an environment where we are committed to freedom of expression, critical discourse, and the advancement of knowledge.

- **Service:** We are responsible, individually and collectively, to give of our time, talents, and resources to promote the well-being of each other and the development of our local, regional, and global communities.
- **Social Justice:** We have the right to be treated and the responsibility to treat others with fairness and equity, the duty to challenge prejudice, and to uphold the laws, policies and procedures that promote justice in all respects.

<https://diversity.colostate.edu/resources/principles-of-community/>

Required Texts and Materials

Required software:

Students will need access to ESRI ARCGIS 10.0 or better. Campus computers are available for this purpose both in lab and through remote access. Software licenses are also available from the [RAMTECH store](#) for \$29.99 per year.

Provided texts:

Excerpts from:

Ecosystem Management: Adaptive, Community-Based Conservation. 2002. Meffe GK, Nielsen LA, Knight RL, Schenborn DA, Editors. Island Press, Washington, DC. 313 p. ISBN: 1-55963-824-9.

Principles of Terrestrial Ecosystem Ecology, 2nd Edition. 2013. F. Stuart Chapin III, Pamela A Matson, Peter M Vitousek, Editors. Springer Science & Business Media, New York, NY. 529 p. ISBN 978-1-4419-9503-2.

The following peer reviewed publications will be available on our Canvas page:

- Ayres M. 2006. How to write a peer review.
- Berkes et al. 2000. Traditional Ecological Knowledge.
- Ellison et al. 2005. Loss of foundation species: consequences for the structure and dynamics of forested ecosystems.
- Heinimann HR. 2010. A concept in adaptive ecosystem management—an engineering perspective.
- Levin et al. 2009. Developing the scientific basis for ecosystem based management.
- Mosely et al. 2010. Ecological site development: a gentle introduction.
- Mumby et al. 2014. Ecological resilience, robustness and vulnerability: how do these concepts benefit ecosystem management?
- Prach et al. 2019. A primer on choosing goals and indicators.
- Ringold et al. 1996. Adaptive monitoring design for ecosystem management.

Library & Research Help

The CSU Libraries Help Desk provides both research (ph. 970-491-1841) and technical (ph. 970-491-7276) support. You can also email a librarian a research question

(https://libanswers.colostate.edu/form?queue_id=332) or chat with the

Libraries (<https://lib.colostate.edu/services/ask-us/>) for quick help. Explore an online research guide at

<https://libguides.colostate.edu/natsci>.

Important Dates to Remember

Last Day to Add/Drop Classes Without an Instructor Override: Sun, August 28, 2022

Registration Closes: Wed, September 7, 2022

Withdrawal and Repeat/Delete Deadline: Fri, November 11, 2022

Spring 2023 Registration begins: Mon, October 24, 2022 (check RamWeb for specific access date and time)
Fall Recess: Sat, November 19 – Sun, November 27, 2022
Last Day to Process a University Withdrawal: Fri, December 9, 2022
Final Examinations: Mon-Fri, December 12-16, 2022

Useful websites with important dates to remember

<https://registrar.colostate.edu/registration-dates/> (on campus)

<https://www.online.colostate.edu/faqs/important-dates.dot#fall> (CSU Online)

Basis for Final Grade – 1,000 points total

- *Quizzes (50 points)*: Occasional quizzes to assess course engagement; lowest score will be dropped
- *Management Plan (500 points)*: Group-based, stakeholder engaged planning project
 - Plan Analysis – 50 points
 - Project Proposal – 50 points
 - Rough Draft – 50 points
 - Peer Review – 50 points
 - Response to Reviewers – 50 points
 - Final Presentation – 50 points
 - Final Management Plan – 200 points
- *Labs (250 Points)*: Skill-development activities to support the group management plan
 - Group Contract and Self Assessment – 30 points total
 - Weekly Deliverables – 200 points (10 assignments worth 20 points each)
 - Exit Assessment – 20 points
- *Exams (200 points)*: Midterm (100 points) and Final (100 points) to assess understanding of key course concepts

Grading Scheme

GRADE*	RANGE
A+	100% to 96.67%
A	<96.67% to 93.33%
A-	<93.33% to 90.0%
B+	<90.0% to 86.67%
B	<86.67% to 83.33%
B-	<83.33% to 80.0%
C+	<80.0% to 76.67%
C	<76.67% to 70.0%
D	<70.0% to 60.0%
F	<60.0% to 0.0%

*CSU does not use grades of C-, D+, or D-.

Canvas Information and Technical Support

Canvas is an online learning management system where course content, grades, and communication including due dates will reside for this course.

- Login: canvas.colostate.edu
- Support: <https://canvas.colostate.edu/support/>
- For passwords or any other computer-related technical support, contact the Central IT Technical Support Help Desk: <https://www.acns.colostate.edu/technical-support-services/>
- Voice: (970) 491-7276 | Email: help@colostate.edu

The Support pages identify the browsers, operating systems, and plugins that work best with Canvas. If you are new to Canvas quickly review the Canvas Student Orientation materials.

Course Policies

Respect

Showing respect for others is paramount and is taken very seriously in this course. We will strive to create a collaborative, engaging, and respectful environment in which numerous opinions can be discussed and explored. Personal attacks will not be tolerated.

Late Work Policy

Late work will be assessed a penalty of 10% per day. If you anticipate needing additional time for a specific assignment, please inform me in advance. Exams must be taken within specified timeframes unless prior arrangements are made.

Group Work and Free-Riding

Group work will be an inevitable part of your professional experience, and it is common for groups to struggle with communication and accountability at various points over the course of your project. Thus, it is imperative that you communicate with your group in an open, honest, and respectful way; that you address issues early and directly; and that you draw on the instructor if needed, with sufficient time to complete all work to the highest standard.

Free-riding on your group members will not be tolerated. Students who do not contribute meaningfully to all required elements of the capstone experience will either a) be docked credit for relevant portions of the project, and/or b) be removed from the group and required to complete separate deliverables individually. If needed, a group evaluation activity will be implemented to identify and address free-riding behavior.

Extra Credit Policy

Upon request, each student may complete one extra credit activity worth up to 25 points. I will assign an article and/or video for you to summarize, synthesize, and reflect on connections with your educational experiences and career goals.

Grades of "Incomplete"

Per university policy, an instructor may assign temporary grade of Incomplete to a student who demonstrates that he or she could not complete the requirements of the course due to circumstances beyond the student's control and not reasonably foreseeable. A student must be passing a course at the time that an Incomplete is requested unless the instructor determines that there are extenuating circumstances to assign an Incomplete to a student who is not passing the course. When an instructor assigns an Incomplete, he or she shall specify in writing using the Department Incomplete Grade Form the requirements the student shall fulfill to complete the course as well as the reasons for granting an Incomplete when the student is not passing the course. The instructor shall retain a copy of this statement in his or her grade records and provide copies to the student and the department head or his or her designee. (Section I.6 of the *Academic Faculty and Administrative Professional Manual*). For more information: <https://registrar.colostate.edu/incomplete-grades/>

Disability Access

Colorado State University is committed to providing reasonable accommodations for all persons with disabilities. Students with disabilities who need accommodations must first contact the Student Disability Center before requesting accommodations from the professor. The Student Disability Center (SDC; <https://disabilitycenter.colostate.edu/>) is in room 121 of The Institute for Learning and Teaching (TILT) building. Their phone is (970) 491-6385 (V/TDD). Students who need accommodations in this course must contact the professor at the beginning of the semester to discuss needed accommodations.

Attendance Policy

Attendance and active participation are mandatory and are especially important for learning in a capstone environment. Absences and lack of participation will be penalized up to 7% of the student's total grade. Absences due to illness, family emergency, or University sponsored activities may be excused if a written explanation is provided prior to the intended absence (except for emergencies, in which case an explanation should be provided as soon as practical). Any student who misses course content will be held responsible for all materials covered and all announcements made during their absence. If you are going to miss an assignment, quiz, or exam, you must discuss this with me and have my approval beforehand. Unexcused absences will result in a grade of 0 points for any relevant assignments, presentations, exams, etc.

Students who will miss class due to participation in University-sanctioned extracurricular/co-curricular activities must inform their instructors prior to the anticipated absence and take the initiative to make up missed work in a timely fashion. Instructors must make reasonable efforts to enable students to make up work which must be accomplished under the instructor's supervision (e.g., examinations, laboratories). In the event of a conflict in regard to this policy, individuals may appeal using established University procedures.

For the purposes of this regulation, University-sanctioned activities include competitions, events and professional meetings in which students are officially representing the institution. Appropriate sanctioned activities include:

- a. Intercollegiate athletics;
- b. Collegiate club sports and competitions;
- c. Conferences and workshops recognized by the University not related to academics;
- d. Commitments on behalf of the University (ASCSU, band, etc.); and
- e. Professional activities recognized by the University related to academics.
- f. Department heads or their designated representatives must approve sanctioned professional and departmental activities. Other sanctioned activities must be approved by the appropriate program director on record with the Division of Student Affairs offices or the Department of Athletics.

Religious Accommodation

Participation in official University activities, e.g., an out-of-town athletic event, or special religious observances may provide a legitimate reason for an excused absence. The student is responsible for discussing this with the instructor at the beginning of the semester.

Final Exam Policy

Final examination week is part of the regular semester. Student attendance shall be consistent with University policy. If a student has three or more final examinations (not classes) scheduled for the same day or if conflicts of examination times occur, the student may negotiate a time change with the instructors involved. If the parties involved cannot find a mutually agreeable time, the Registrar's Office indicates which courses must be changed. **Note:** The Registrar's Office must be notified at least one week prior to Final Examination Week to allow instructors time to make appropriate accommodations. It is the student's responsibility to initiate negotiations. <http://www.registrar.colostate.edu/final-exams>

Professionalism Policy

Per university policy and classroom etiquette; mobile phones, iPods, etc. **must be silenced** during all classroom and lab lectures. Those not heeding this rule will be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned and may suffer a reduction in their final class grade. When emailing the instructor or TA, please include your full name, CSU ID, and the course number in your email.

Academic Integrity

The Department of Forest and Rangeland Stewardship takes academic integrity seriously. At minimum, academic integrity means that no one will use another's work as their own. You can find an overview and CSU's definition of plagiarism here: <https://writing.colostate.edu/guides/guide.cfm?guideid=17>.

If you plagiarize you could lose credit for the plagiarized work, fail the assignment, or fail the course. Each instance of plagiarism, classroom cheating, and other types of academic dishonesty will be addressed according to the principles published in the CSU General Catalog (under "Academic Integrity/Misconduct": <http://catalog.colostate.edu/general-catalog/policies/students-responsibilities/>).

This course will adhere to the CSU Academic Integrity Policies and Guiding Principles (<https://catalog.colostate.edu/general-catalog/policies/students-responsibilities/#academic-integrity>) as found in the General Catalog and the Student Conduct Code (<https://catalog.colostate.edu/general-catalog/policies/students-responsibilities/#student-conduct-code>).

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, I will ask that you affirm the CSU Honor Pledge as part of completing your work in this course.

Further information about Academic Integrity is available at CSU's Practicing Academic Integrity: <https://tilt.colostate.edu/Integrity/StudentResources>

Title IX Information

CSU's Student Sexual Harassment and Violence policy, following national guidance from the Office of Civil Rights, requires that faculty follow CSU policy as a "mandatory reporter" of any personal disclosure of sexual harassment, abuse, and/or violence related experiences or incidents shared with the faculty member in person, via email, and/or in classroom papers or homework exercises. These disclosures include but are not limited to reports of personal relational abuse, relational/domestic violence, and stalking. While faculty are often able to help students locate appropriate channels of assistance on campus (e.g., see the CSU Health Network link below), disclosure by the student to the faculty member requires that the faculty member inform appropriate CSU channels to help ensure that the student's safety and welfare is being addressed, even if the student requests that the disclosure not be shared.

For counseling support and assistance, please see the CSU Health Network, which includes a variety of counseling services that can be accessed at: <https://health.colostate.edu/>. And, the Sexual Assault Victim Assistance Team is a confidential resource for students that does not have a reporting requirement and that can be of great help to students who have experienced sexual assault. Some helpful websites:

<https://safety.colostate.edu/sexual-assault-information/>

<https://wgac.colostate.edu/support/sexual-assault/>

Non-Discrimination Statement

Colorado State University does not discriminate on the basis of race, age, creed, color, religion, national origin or ancestry, sex, gender, disability, veteran status, genetic information, sexual orientation, gender identity or expression, or pregnancy. The University complies with the Civil Rights Act of 1964, as amended, related Executive Orders 11246 and 11375, Title IX of the Education Amendments Act of 1972, Sections 503 and 504 of the Rehabilitation Act of 1973, Section 402 of the Vietnam Era Veterans' Readjustment Assistance Act of 1974, as amended, the Age Discrimination in Employment Act of 1967, as amended, The Pregnancy Discrimination Act of 1978, Americans with Disabilities Act of 1990, the Civil Rights Act of 1991, the ADA Amendments Act of 2008,

the Genetic Information Nondiscrimination Act of 2008, and all civil rights laws of the State of Colorado. Accordingly, equal opportunity of employment and admission shall be extended to all persons. The University shall promote equal opportunity and treatment in employment through a positive and continuing affirmative action program for ethnic minorities, women, persons with disabilities, and veterans. The Office of Equal Opportunity is located in 101 Student Services. Source: <http://oeo.colostate.edu/non-discrimination-statement>

Mental Health and Wellness

CSU is a community that cares. You are not alone. CSU Health Network Counseling Services has trained professionals who can help. Your student fees provide access to a wide range of support services. Call Counseling Services at (970) 491-6053, and they will work together with you to find out which services are right for you. Visit <https://health.colostate.edu/about-counseling-services> to learn more and <https://health.colostate.edu/mhwb-resources/> for additional student mental health and well-being resources. If you are concerned about a friend or peer, use **Tell Someone** by calling (970) 491-1350 or visiting <https://supportandsafety.colostate.edu/tell-someone/> to share your concerns with a professional who can discreetly connect the distressed individual with the proper resources. Rams Take Care of Rams. Reach out and ask for help if you or someone you know is having a difficult time.

Student Case Management

Student case management (<https://studentcasemanagement.colostate.edu/>) is available to help students with extenuating life circumstances and connect them with resources. In some cases, after you and I discuss your situation, I may request verifiable documentation for class absences (<https://studentcasemanagement.colostate.edu/class-absences/>) from the SCM office if you request considerations for absences or missed coursework.

**** THE SYLLABUS, ASSIGNMENTS, READINGS, GRADE WEIGHTS, AND COURSE SCHEDULE ARE ALL SUBJECT TO CHANGE. THE INSTRUCTOR WILL NOTIFY THE STUDENTS AS SOON AS ANY SUCH CHANGES ARE MADE AND WILL PROVIDE UPDATED COURSE MATERIALS AS APPROPRIATE. ****

Week	Date	Topic	Assignments Due
1	Aug 23 Aug 25	Course introduction Capstone introduction and team-building	Intro Lab
2	Aug 30 Sep 1	Developing project concepts	Lab 1 Quiz 1
3	Sep 6 Sep 8	Analysis of ecosystem management plans	Lab 2 Plan Analysis
4	Sep 13 Sep 15	Adaptive management	Lab 3 Quiz 2
5	Sep 20 Sep 22	Strategic management, project goals and objectives	Lab 4 Quiz 3
6	Sep 27 Sep 29	Desired future conditions	Lab 5 Project proposal
7	Oct 4 Oct 6	Current conditions and ecological site description	Lab 6 Quiz 4
8	Oct 11 Oct 13	Systems Thinking and Resilience	Lab 7 Quiz 5
9	Oct 18 Oct 20	Stakeholder analysis, Conflict and collaboration	Lab 8 Midterm Exam
10	Oct 25 Oct 27	Implementation plan and project budget	Lab 9
11	Nov 1 Nov 3	Evaluation and monitoring plans	Lab 10 Quiz 6
12	Nov 8 Nov 10	Work Week	First draft plan
13	Nov 15 Nov 17	Peer reviews of management plans	Peer reviews
14	Nov 29 Dec 1	Work Week	Response to reviews
15	Dec 6 Dec 8	Final Presentations	Final Presentation Final plan Exit Assessment