RS 351
Wildland Ecosystems in a Changing World

Monday, Wednesday 1-2:50 Forestry 127

Overview: In this class, students will learn the general principles of ecosystem ecology. We will also examine how natural and anthropogenic drivers/disturbances affect dominant ecosystem processes and the services these systems provide. The class will emphasize a systems approach to understanding and managing ecosystems under change. We will also consider humans as integral components of ecosystems through the study of coupled human-natural systems.

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Office hours: Mondays 10-11, or by appointment

Student Performance Objectives:
By the end of this class, you should

1) Understand the basic principles of ecosystem ecology;
2) Understand how both natural and anthropogenic drivers affect ecosystem processes;
3) Understand the coupled human-natural systems approach to managing under change;
4) Possess the skills and knowledge to sustain stated ecosystem processes and to recognize the ecosystem tradeoffs involved in management decisions;
5) Develop skills for successful communication about ecosystems and their sustainability

Course Materials

A. Canvas (required): Course information, assignments, grades, readings and other important information will be posted on Canvas (http://info.canvas.colostate.edu/login.aspx). It will be updated on a regular basis. Also, feel free to post your comments about the course and course material on the discussion forum. The webpage will contain links to lecture materials, homework assignments, grades, and other important links.

B. SimUText Simbiotic software (required). Selected lab simulations. Total cost ~ $30

It is important that you review the information below *before* you subscribe to the SimUText for **Wildland Ecosystems in a Changing World** at **Colorado State University**. **To avoid possible problems, do not wait until the last minute.**

- CHECK YOUR TECH! Visit https://simutext.zendesk.com/hc/en-us/categories/200170134-Check-Your-Tech- to confirm that the SimUText application will work on your computer, and/or to explore your options if there is a problem.
- If you purchased a SimUText Voucher from your bookstore, be sure to have it with you when

subscribing, as you will need to enter your voucher code.
- When you are ready to subscribe and download installers, follow this link to initiate the process: https://www.simutext2.com/student/register.html#/key/qTkx-nfqc-wqD2-DKWb-yAya
- After you have completed the subscription process, if you need to download the SimUText application installers again, you will be able to access them by logging into the SimUText Student Portal (https://www.simutext2.com/student).

Save this email! Should you encounter problems, you may need your course-specific Access Key. It is: **qTkx-nfqc-wqD2-DKWb-yAya**
Problems or questions? Visit SimUText Support (http://simbio.com/support/simutext)

Format and Evaluation
This class will consist of lectures, student-led discussions and presentations, and active learning exercises.

Grading:

Examinations	15% (each) x 2 = 30%
Homework Assignments	5% (each) x 5 = 25%
Student led Discussion	15%
Rangeland Storymap & Presentation	20%
Class Participation	10%

The exams are scheduled for October 5 and December 7. There will be no make-up exams. Homework assignments are due at class time on the due date. Late homework assignments will not be accepted. There will be no opportunity to make up points for missed class periods.

Educational Philosophy: My role in the learning process is to present material to you in an interesting and understandable manner. I will work hard to do this and to help you achieve the student performance objectives listed in this syllabus. I expect you to attend all classes, to actively participate in class, to do all assignments on time, and to regularly check the course website.

Classroom Environment and Etiquette: It is very important that you be courteous and respectful to the instructors, the other students, and our guest lecturers. To do so, you must be prompt for class, turn off your cell phones, and not speak when others are speaking. Feel free to ask questions in and out of class. Also, feel free to provide feedback on class materials, assignments and readings throughout the semester.

I expect that students will adhere to the CSU principles of academic integrity (refer to http://www.catalog.colostate.edu/front/policies.aspx). Failure to do so may result in a zero for an assignment or a failure of the class.

Talk to me: If you do not understand something I present in class, please let me know – chances are someone else also does not understand. I welcome all questions regarding the course material, assignments, and the application of the course material to the REAL WORLD!!

If you are physically or otherwise learning disabled, please let me know how I can best accommodate you and help maximize your learning experience in this class.

Date	Class Topic	Assignment Due
	I. Fundamentals of Ecosystem Ecology	
Aug. 22 (M)	Welcome, course introduction, and introduction to the field of Ecosystem Ecology	
24 (W)	Earth's Climate System & Feedbacks between Climate and Ecosystems	Reading: Chapin chapters 1 & 2
Aug 29 (M)	Carbon Inputs: Photosynthesis	SimUText Ecosystem Ecology, Section 1
Aug. 31 (W)	Carbon Inputs: GPP, NPP and Plant Respiration (assign students wedges groups and assignments)	Reading: Chapin chapters 5 & 6
Sept. 5	LABOR DAY	
Sept 7 (W)	Litter and SOM Decomposition (Matt Ramlow)	SimUText Ecosystem Ecology, Section 2 Reading: Chapin ch. 7
Sept 12 *(M)*	Stella Lab – *meet in NR Computer Lab West* (second floor of WCNR building)	SimUText Decomposition, Section 2
Sept 14 (W)	Global Carbon Cycle - Wedges exercise I	
Sept 19 (M)	Global Carbon Cycle - Wedges exercise II	Stella Lab
Sept 21 (W)	Nitrogen Cycling I	Reading: Chapin chapter 9
Sept 26 (M)	Nitrogen Cycling II	SimUText Nutrient Cycling, Section 2
Sept 28 (W)	Species traits and ecosystem processes / Nutnet (to be confirmed)	Reading: TBD
Oct 3 (M)	Big Data and Introduction to the Final Storymap Project (assign groups/region/contacts); preview storymaps	Hampton et al. 2013
Oct 5 (W)	MID-TERM EXAM (exam covers material through 09/28)	Mid-term exam
Oct 10 (M)	Storymaps *Meet in Morgan Library Computer Lab 173*	
	II. Drivers and Impacts of Global Change on Ecosystems and their Processes	
Oct12 (W)	Work on Student-led Discussions	
Oct 17 (M)	Species Loss, Conservation and Ecosystem Processes, Laramie Foothills Bison Conservation *Student-led Discussion #1*	Reading: Allred et al. 2011
Oct 19 (W)	Fire, Grazing & Rangeland Ecosystem Processes *Student-led Discussion #2*	Reading: Fuhlendorf 2001
Oct 24 (M)	Climate change: ecosystem processes *Student-led Discussion #3*	(1) Storymap evidence & checklist; (2) Reading: Briske et al. 2015
Oct 26 (W)	Predators and herbivores as top-down controls *Student-led Discussion #4*	Readings: (1) Chapin chapter 10 (2) Ripple et al. 2014
Oct 31 (M)	Group Storymap	
	III. Ecosystem Science for Sustainability	
Nov 2 (W)	Sustainability Science & carbon sequestration in drylands, *Student-led Discussion #5*	Readings: (1) Miller 2013; (2) Follett & Reed 2010

Nov 7 (M)	Ecosystem Services approach and PES (Xoco) *Student-led Discussion #6*	Reading: Yahdjian et al. 2015
Nov 9 (W)	Group Storymap	
Nov 14 (M)	Multiple Knowledge Systems - Tibetan Plateau case study	(1) Storymap confirmation checklist; (2) Reading: Cash et al. 2003
Nov 16 (W)	Rangeland Scenarios, in-class exercise	
Nov 21 (M)	Thanksgiving Break	
Nov 23 (W)	Thanksgiving Break	
Nov 28 (M)	Class presentations and feedback Group 1	Draft storymaps
Nov 30 (W)	Class presentations and feedback Group 2	
Dec 5 (M)	Class presentations and feedback Group 3	
Dec 7 (W)	FINAL EXAM (in class)	Final exam
Dec 14 (W)	FINALS WEEK	Final storymap