

ECOSYSTEMS ECOLOGY (ESS311)

FALL 2020

LECTURE: Posted Weekly on Canvas

RECITATION:

Group A: M 3-3:30pm

Group B: M 3:45-4:15pm

Group C: W 3-3:30pm

Group D: W 3:45-4:15pm

* The group you have been assigned and the zoom link for that meeting can be found on the course Canvas page. Please only log on during your groups specified time. *

Instructor: Dr. Ed Hall

Office: A246 NESB (I will be mostly working from home this Fall)

Email: ed.hall@colostate.edu

Office hours: W 1300-1400 via Zoom or by appointment

Graduate Teaching Assistant: Katie Rocci

Office: NESB A105 (I will be mostly working from home this Fall)

Email: katie.rocci@colostate.edu

Office hours: Tuesday 12-1pm via Zoom or by appointment

COURSE OVERVIEW

Welcome to Ecosystems Ecology. In this course we will attempt to illustrate the diversity and defining characteristics of the earth's ecosystems, understand what drives those characteristics, and define how aspects of those ecosystems affect you and are affected by you. My goal for the course is to provide you with a deeper understanding of the natural world around us, through the illustration of ecological approaches, perspectives, and analyses of the world's ecosystems. One goal for the course is for you to increase your ability to objectively evaluate how human activities are influencing ecological systems and what that means for the future of the planet. The course will cover several themes including the earth's climate system; inputs, export, and cycling of elements; inputs and transformations of energy; the role of disturbance in ecosystems, and the interactions between communities and ecosystems. We will focus on the ecological patterns and processes in natural systems, as well as the causes and consequences of human-induced global changes on ecosystem functioning.

COURSE MATERIALS

Principles of Terrestrial Ecosystem Ecology, 2nd Edition. Chapin, Matson, & Vitousek. *Required* (PDF available on Canvas Course Site and as an ebook through the CSU library site lib.colostate.edu). There will be additional reading and those will also be made available on Canvas.

COURSEWORK AND GRADING

Lecture

In - class participation and discussion board	10 %
Discussion Activities and Quizzes	15 %
Homework Assignments	25 %
Midterm exams	30 %
Final exam	20 %

Course grades will be based on the following scale:

A+	≥98%	B+	≥88%	C	≥70%
A	≥92%	B	≥82%	D	≥60%
A-	≥90%	B-	≥80%	F	<60%

DESCRIPTION OF COURSEWORK

Note: additional information and grading criteria for assignments will be posted on Canvas

Exams: There will be two midterm exams and one final exam. Format for the exams will be primarily multiple choice and matching. The exams will cover the material presented in class, as well as information from the assigned readings. The exams will be designed to test your understanding of the course content with an emphasis on concepts and ideas rather than your understanding of quantities (e.g., the pathways through which carbon (C) moves between soils and the atmosphere vs. the absolute pool size of soil C and atmospheric C).

Discussion Papers: We will spend some class periods during the term reading and reviewing primary literature that relates to topics we are covering in class. These “case studies” will give you an opportunity to see how ecological research is implemented and reported. You will be asked to read the paper before coming to class and we will work in small groups to discuss and answer questions related to the paper. There will be quizzes associated with the case studies that will make up a portion of your participation grade. All assignments for this class are due at the start of lecture the day the assignment is listed as due in the syllabus.

Homework: There will be ~8 homeworks over the course of the semester. Approximately one every two weeks. Homeworks will be assigned individually although you are encouraged to work in groups outside of class. All work on the homeworks must be your own. Please carefully read the plagiarism section of the student conduct section of the student manual for all CSU students.

COURSE POLICIES Late assignments: All of the assignments are due at the designated time as listed on canvas. All assignments will be submitted through canvas before the due date and unless otherwise specified. You will lose 10% of the points for submitting the assignment up to 24 hours after the due date. After 24 hours, late assignments will be accepted up to one week after the due date for ½ credit. Assignments submitted after one week may receive credit based on instructors' discretion. Please talk with me as soon as possible if you know you must miss an exam or case study or any other assignment. *NOTE: I only grant extensions on assignments in the case of family or medical emergencies or other exceptional cases. **Regardless of the reason for your late assignment it is always a good idea to discuss it with Dr. Hall or Katie Rocci to see if there is an opportunity for credit.***

Readings: The syllabus lists the book chapter (CMV) most closely related to the scheduled lecture topic. I will require additional reading for lecture (primary literature articles, articles from the popular press, etc.) that will be posted on canvas prior to the lecture. All assigned readings must be ready to be discussed at the beginning of the class period, are fair game for quizzes at the beginning of lecture and is fair game for exams. The lecture schedule is posted on the course website and all associated reading are posted for each lecture. **** THE LECTURE SCHEDULE IS SUBJECT TO AND WILL MOST LIKELY CHANGE DURING THE SEMESTER — PLEASE RELY ON THE MOST RECENT LECTURE SCHEDULE ON THE COURSE CANVAS SITE ONLY****

Plagiarism: Plagiarism of any form is unacceptable and will result in loss of the credit for the entire assignment. Repeat instances of plagiarism will result in a failing grade for the course. The CSU student catalogue under Student's responsibility defines plagiarism as "Plagiarism includes the copying of language, structure, images, ideas, or thoughts of another, and representing them as one's own without proper acknowledgment, and is related only to work submitted for credit. Also included is the failure to cite sources properly; sources must always be appropriately referenced, whether the source is printed, electronic or spoken."

Class Attendance: We will take attendance during our weekly zoom recitation meetings. Your attendance will factor in to your participation grade (part of the 10%). All lectures with audio and slides will be posted on Canvas. However we may cover material in recitation which you will be responsible for that will not be in the lectures. If you do miss lecture it is your responsibility to get the lecture notes from someone in class. If you miss class on a day where there is a graded activity please see the instructor or teaching assistant as soon as possible.

"Classroom" conduct: All students have the right to a civil, productive, and stimulating learning environment. In turn, instructors have a responsibility to maintain such an environment. Lively discussion is not disruptive behavior. Both instructors and students have a fundamental obligation to respect each other and to foster civil, courteous behavior. This is particularly important during weekly group meetings, student presentations, class participation, and peer evaluation of writing. Please feel comfortable asking questions in recitation (the more questions the better!) and make sure that you respect your classmates' rights to do the same. **Please stay on point during synchronous discussion.**

Week	Dates	Topic For Weekly Recitation	Lecture	Reading	Assignments & Activities
Part I: Catabolism					
1	8/24 & 8/26	Course Introduction & Overview	Hullo from Ed (video)	<i>No assigned reading</i>	Investigate Canvas Site
2	8/31 & 9/02	Ecosystem Concept; Ecosystem Ecology History & Perspectives	Lecture #1 Lecture #2	CMV 1 Lindeman 1942	<i>Discussion #1 Open</i> <i>Assignment #1 Due</i>
3	9/09 (only)	Tools of Ecosystem Ecology; Earth's Climate System; The Hydrological Cycle & "Energy" Budgets	Lecture #2b Lecture #3 (a&b)	CMV 2 & 4	<i>Discussion #1 Closed</i>
4	09/14 09/16	Ecosystem C Cycling & Autotroph C Budgets	Lecture #4 (a&b)	CMV 5&6	<i>Assignment #2 Due</i> <i>(Units and C Budgets)</i> <i>Mid-Term I Review Released</i>
5	09/21 09/23	Nutrients: Sources and Limitations To Primary Productivity Decomposition	Lecture #5	CMV 8 & CMV 9 (259-271)	
6	09/28 09/30	Decomposition: Soils and SOM formation Mid-Term I Review	Lecture #6	CMV 3	Mid-Term I Due <i>Assignment #3 Due</i>
7	10/05 10/07	Redox & Microbes: The Engines of Ecosystems	Lecture #7	<i>Falkowski et al. 2008</i> S&B 2	
8	10/12 10/14	The N-Cycle <i>Connectivity and Eutrophication</i>	Lecture #8 (a&b)	<i>Burgin et al. 2011</i> CMV 271-286 S&B (445-462)	<i>Discussion #2</i> <i>(Burgin et al. 2011)</i> <i>Discussion #2 open</i>
9	10/19 10/21	P-Cycle & The Lesser Studied Elements	Lecture #11	CMV 9 287-296 S&B 12 (462-467)	<i>Discussion #2 closed</i> <i>Assignment #4 Due (Oct. 23rd)</i>
10	10/26 10/28	Ecological Stoichiometry: Putting the Pieces together	Lecture #12	Elser 1996	<i>Assignment #5 released</i>
11	11/02 11/04	Species Effects on Ecosystems Biodiversity & Resource Competition	Lecture #13	CMV11	<i>Discussion Paper #3</i> <i>Review for Midterm 2</i> <i>Assignment #5 Due</i>

					<i>Discussion #3 Open</i>
12	11/16 11/18	Trophic Dynamics & Cascades Mid-Term II review	Lecture #14	CMV10	Midterm II Exam
13	11/23 11/25	No Classes Fall Break			<i>Discussion #3 closed</i>
14	11/30 12/02	Succession & Disturbance; Landscape Heterogeneity and Ecosystem Dynamics	Lecture #15	CMV 12&13	<i>Assignment #6 Due</i>
15	12/07 12/09	Anthropocentrics: Interactive Global Change Agroecology	Lecture #16 Lecture #17 (GL) K.Rocci	CMV 14	<i>Discussion Paper #4</i> <i>Discussion #4 open</i> <i>Discussion #4 closed</i> <i>Final Review Released</i>
16	12/14	Big Science, Remote Sensing, Metadata and More	Lecture #18	CMV 15	<i>Assignment #7 Due</i> <i>(Ecosystems Revisited)</i>
17	12/16	Final Exam Wednesday, December 16 th 2020 11:50 – 1:50 pm			<i>Final Exam</i>