

Spring 2-1-2018

BIOE 447.01: Terrestrial Ecosystem Ecology

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Syllabus

BIOE 447: Terrestrial Ecosystem Ecology

Spring 2018: Tues/Thurs, 12:30 PM-1:50 PM, CHCB 452

Instructor information:

- Instructor: Ben Colman
- Email: ben.colman@umontana.edu
- Phone: (406) 243-6315
- Office Hours: Monday 5 PM-6 PM, Thursday 2 PM-3 PM, Clapp 449

Overview:

In this course on Ecosystem Ecology, I will provide an introduction to: systems thinking; the “ecosystem” concept; water, energy, carbon, and nutrient cycling; the role of disturbance in ecosystems; trophic dynamics; and species effects on ecosystem function. All concepts will be explored across both terrestrial and aquatic ecosystems by using a blend of readings, lectures, discussions, problem-solving, and field trips.

Outcomes:

1. For an ecosystem, students will be able to identify its structure, function, dynamics, and controls
2. Students will be able to compare top down and bottom up controls on ecosystem structure and function
3. Students will be able to construct a mass balance of nutrients and water of an ecosystem given basic information on ecosystem pools and fluxes
4. Students will be able to compare and contrast energy and nutrient cycling in aquatic and terrestrial ecosystems

Class format:

The class will be conducted largely through regularly scheduled class periods and supplemented with two integrative field trips. Assignments must be submitted through the Moodle learning management software interface. Moodle will also be used for distribution of feedback on assignments, distribution of supplemental reading assignments, and documenting modifications to the course. If you have any questions about how to use Moodle, it is your responsibility to ask me or call/email the [UM Online help staff](#).

There will be two field trips during the semester. Due to the nature of spring in Montana, these trips will necessarily be pushed into April, will be all day, and will require some flexibility on the part of students and the instructor.

Assessments:

There are several types of assessments and assignments in this class, including quizzes on assigned readings (in class), field journals, and a synthesis project. Detailed descriptions of expectations and rubrics for grading these assignments will be posted on the Moodle site for this course. Assignments must be turned in before the start of class by using Moodle.

Course guidelines and policies:

Grading:

Rubrics for each assignment will be posted along with the descriptions of those assignments on Moodle. The overall distribution of points is summarized in the table below. My goal will be to return all assignments and quizzes no later than the next class period.

Assignment	Total Points	Description
Field journals	30	2 points for each field journal entry, 13 regular, 2 field trip
Quizzes	30	12 quizzes, 2.5 points each
Synthesis project	40	Paper proposal, annotated bib (5 ea.); rough draft & final draft (15 ea.)
Attendance and participation	10	10 points for attendance, 10 points for participation

Academic Honesty:

All students must practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University. I can honestly say that if you email me and tell me about a time that you were honest, and put "honest" as the subject, I will give you a point of extra credit. All students should read and be familiar with the policies contained in the Student Conduct Code (http://www.umt.edu/vpsa/policies/student_conduct.php).

Adjustments for Students with Disabilities:

Students with disabilities may request reasonable modifications by contacting me. The University of Montana assures equal access to instruction through collaboration between students with disabilities, instructors, and Disability Services for Students. "Reasonable" means the University permits no fundamental alterations of academic standards or retroactive modifications. Disability Services for Students (<http://life.umt.edu/dss>) will assist in the accommodation process.

Communication:

All course communications outside of class will be sent to students' University of Montana email accounts. It is your responsibility to regularly check your University account. Beware: If your email account is full, you will not be able to send messages (but Griz mail will not tell you that the message has not been sent). In general, my policy is to respond to email within 24 hours (except on the weekend).

Illness policy:

If you come down with symptoms including either fever or vomiting, please do not come to class unless you are free of fever or vomiting for 24 hours before class time. Do email me, as per the schedule and attendance policy.

Syllabus, BIOE 447, Terrestrial Ecosystem Ecology

Schedule and attendance policy:

We will meet every Tuesday/Thursday from 12:30-1:50. Because of the nature of this class, attendance is mandatory, and points will be deducted for absences. I may excuse brief and occasional absences for reasons of illness, injury, family emergency, religious observance, or participation in a University-sponsored activity. (University sponsored activities include, for example, field trips, ASUM service, music or drama performances, and intercollegiate athletics.) I will also excuse absences for reasons of military service or mandatory public service. Requests for excused absences require an email before class with "BIOE 447 absence request" in the email subject, and a description of why you will be absent.

Wk	Date	Readings	Assignments	Class
1	Jan 23	None		Overview, introductions
1	Jan 26	Ch 1		Ecosystem concept and history
2	Jan 30	Ch 2	Field journal 1	Primary producers I, Reading primary lit
2	Feb 1	Paper 1		Primary producers II, Quiz 1
3	Feb 6	Ch 3	Field journal 2	Secondary production
3	Feb 8			Consumer energetics and importance, Quiz 2
4	Feb 13	Ch 4	Field journal 3	Organic matter decomposition
4	Feb 15	Ch 5		Element cycling, Quiz 3
5	Feb 20	Ch 6	Field journal 4	The carbon cycle I
5	Feb 22	Paper 2		The carbon cycle II, Quiz 4
6	Feb 27		Field journal 5	The carbon cycle III
6	Mar 1	Ch 7		The N cycle I, Quiz 5
7	Mar 6	Paper 3	Field journal 6	The N cycle II
7	Mar 8	Ch 8		The P cycle I, Quiz 6
8	Mar 13		Field journal 7, Synth prop	The P cycle II
8	Mar 15	Ch 9		Revisiting the Ecosystem concept, Quiz 7
9	Mar 20	Ch 10	Field journal 8	Ecosystems in a heterogeneous world
9	Mar 22	Ch 11-12	Anno bib	Ecosystem Structure, function, and sustainability, Quiz 8
10	Mar 27			Spring Break!
10	Mar 29			Spring Break!
11	Apr 3	Ch 13-16	Field journal 9	Four case studies
11	Apr 5	Ch 17	Meet with instructor by Fri	Frontiers in ecosystem science, Quiz 9
12	Apr 10	Paper 4	Field journal 10	Biodiversity and ecosystem function
12	Apr 12	Paper 5		Biodiversity and ecosystem function II, Quiz 10
13	Apr 17	Paper 6	Rough draft	Disturbance, resistance, resilience
13	Apr 19	Paper 7	Field journal 11	Disturbance, resistance, resilience II, Quiz 11
14	Apr 24	Paper 8	Field journal 12	Revisiting nutrient limitation
14	Apr 26	Paper 9	Field trip journals 1 and 2	Revisiting nutrient limitation II, Quiz 12
15	May 1		Field journal 13	Final presentations
15	May 3		Final draft	Final presentations