

WATS/BIOL 2220 - General Ecology

Spring 2017 • Tuesday & Thursday 10:30-11:45 am • Widtsoe 007

Instructor: Dr. Trisha Atwood
NR 134
Office hours: Tuesday & Thursday 3:00-4:00 or by appointment
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Course Objectives

Ecology is the study of relationships between organisms and their environment. These relationships can be understood by investigating the factors that influence the abundance and distributions of organisms. Because these factors range in scale from characteristics of individuals to global processes, ecology is necessarily interdisciplinary. Throughout this course, you will learn the principles and application of ecological theory. You will also learn how the major ecological theories have developed and the evidence that supports them. This will provide you with an understanding of the scientific process and scientific analysis. By the end of this course, you should be able to describe basic ecological concepts and how they were developed, relate these concepts to observations in nature, and be able to interpret data in light of these concepts to draw conclusions about ecological processes.

General Ecology Objectives	IDEA Student Rating of Instruction Objectives
Learn the principles and application of ecological theory	<ul style="list-style-type: none">✓ Gaining factual knowledge (terminology, classifications, methods, trends)✓ Learning fundamental principles, generalizations, or theories
Understand how the major ecological theories have developed and the evidence that supports them	<ul style="list-style-type: none">✓ Gaining factual knowledge (terminology, classifications, methods, trends)✓ Learning fundamental principles, generalizations, or theories
Understand the scientific process and scientific analysis	<ul style="list-style-type: none">✓ Learning fundamental principles, generalizations, or theories✓ Learn to apply course material (to improve thinking, problem solving, and decisions)
Be able to related basic ecological concepts to observations in nature	<ul style="list-style-type: none">✓ Learning fundamental principles, generalizations, or theories✓ Learn to apply course material (to improve thinking, problem solving, and decisions)
Be able to interpret data in light	<ul style="list-style-type: none">✓ Learning fundamental principles, generalizations, or

<p>of ecological theory and draw conclusions about ecological processes</p>	<p>theories ✓ Learn to apply course material (to improve thinking, problem solving, and decisions)</p>
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Materials

Assigned reading

Most assigned readings come from Ecology in Action by Fred Singer. I will base most of my lecture material on material from the textbook, and exams will be based on lecture material.

i>clickers

I will make extensive use of in-class assessment activities. You can use an i>clicker (\$45 at USU bookstore) or your own laptop or smartphone with a subscription (price depends on length of subscription). **Register your device with your student ID by January 17.** There is a link to i>clicker registration on CANVAS. If you are using a laptop or smartphone, please register when you download the app (app.reef-education.com).

ASSESSMENT

You will have the opportunity to demonstrate and reinforce your understanding of ecological principals with a variety of assessment activities throughout the semester.

Exams [200 points possible (50% of grade)]

There will be four exams. All exams are worth 50 points each. Make-up exams will only be given in the most extenuating of unexpected circumstances, and will not likely be the same format as the in-class exam.

In ecology, many concepts build upon others. Every exam is therefore comprehensive in this sense. The primary focus of each exam, however, will be centered on material covered since the last exam. Most of the final exam will be focused on the last unit of the semester, but it will also cover material presented earlier in the semester.

Exam questions are designed to measure your progress toward meeting the class objectives and will reflect material presented in lecture, movies, and problem sets. Exams will be multiple choice, short answer, true/false, and/or fill-in-the-blank. **You are required to bring a blue (full sheet) scantron, a #2 pencil, and a calculator (need to be capable of doing log and natural log).** The use of notes, books, electronic mobile devices and all other materials are prohibited during the exams.

Exam Dates:

Exam 1 (Ch. 1-5): February 2

Exam 2 (Ch. 8-11): February 28

Exam 3 (Ch. 13-17): April 4

Final Exam (All Chapters):

In-class problem sets [80 points possible (20% of grade)]

There will be a total of four problem sets, worth 20 points each. One of the most important objectives of this class is that you learn to think like an ecologist. This means learning to design experiments to test hypotheses, interpret the results of those experiment, and synthesize these results with other ecological concepts. These problem sets can be done individually or in small groups (some of the exercises will require you to have a partner). You have the option of either turning in one assignment per person or one assignment per group. If you turn in a group assignment all names must be on the assignment when it is turned in, the addition of a group member after the assignment is turned in or graded will not be accepted!

Problem Set Due Dates:

Problem Set 1: Life History Tables- Due Feb 14

Problem Set 2: Mark Recapture- Due Feb 23

Problem Set 3: Functional Responses- Due March 23

Problem Set 4: Food webs- Due April 4

Posters and poster presentation [80 points possible (20% of grade)]

Working in small groups you will select an animal or plant from either the ISSG Global Invasive Species Database (<http://www.iucngisd.org/gisd/>) or an endangered or critically endangered species from the IUCN Red List of Threatened Species. You will then create a poster that 1) explains the ecology of the species [e.g., what physical environments does it live in, what is its global distribution, life history traits, what is its current population trend, what other species does it interact with (i.e., competition, facilitation, exploitation)], 2) Why is the species endangered or invasive and what are the ecosystem-level effects of this, 3) what are the current solutions to the problem, and 4) Is there opposition to this issue? For the poster you will work in groups of no more than 4 and no less than 2. You will then present your poster to the class on April 20 or 25. In addition to your own poster, you will review 8 other posters from your fellow students. Instructions and the grading rubric for the posters will be available on Canvas by March 1. **Groups and topics must be finalized by March 1.**

Grading of posters: Your poster grade will consist of three components 1) The poster itself (How well does the poster meet the criteria, aesthetics, correctness of information). This is a group grade and is worth 64 points (80% of the poster grade). 2) Your groups overall presentation of the poster (ability to explain and answer questions during the poster session). This is also a group grade and is worth 8 points (10% of the poster grade). Your reviews of other posters. This is individually graded and is worth 8 points (10% of the poster grade).

Movie Quizzes [20 pnts possible (5% of grade)]

Occasionally we will watch a movie in class to help drive home important concepts. While watching the movie you will be given a multiple choice quiz to complete and turn in before the end of that class. Movies and movie quizzes cannot be made-up. Material covered in the movies is fair game for the exams.

Participation [20 pnts possible (5% of grade)]

In-class clicker questions and surveys [up to points possible for extra credit, this is worth 1 test grade!]

I will make extensive use of in-class activities to assess and reinforce your understanding of reading and lecture material. This will give you the opportunity to reflect on what you have read before class, the notes you have taken in class, and to discuss these concepts you're your peers. Most of these activities will be graded based on participation alone, but some may be graded for content. There will be no make-ups for i<clicker points. You must be present in lecture to earn these points.

Extra credit (max of 5% of grade)

Occasionally I may offer extra credit for attending scientific seminars or for completing online surveys for the University (e.g., IDEAS survey or Freshmen survey). These opportunities will be announced in class.

Final grades

Your final grade will be determined based on the percent of total possible points earned out of the total points possible (400 total) throughout the semester. This percentage will translate to a letter grade based on the scale below. This is the guaranteed scale, but I may adjust this scale in your favor.

Percent	Letter Grade
93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
less than 60	F

Classroom Conduct

Attendance

You are adults and responsible for establishing your own priorities. I do not take attendance in lecture, but it is in your very best interest to come to class on a regular basis. The material presented in lecture will expand upon that covered in the reading or which can be garnered from lecture notes. In addition, extra credit is based on in-class activities, which cannot be made up.

Mobile electronic devices

The use of mobile electronic devices is very distracting to those around you. I would prefer if you did not use these in class at all. If you prefer to take notes on your laptop, please mute the sound and sit on the west side of the lecture hall so that those who wish to remove themselves from this distraction can sit on the east side of the lecture hall. Electronic mobile devices are NOT allowed in exams.

ADA Compliance

Students with Americans with Disabilities Act (ADA)-documented physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations. Veterans may also be eligible for services. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, (435)797-2444. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print, digital, or audio) are available with advance notice.

Academic Integrity

Cheating, falsification of information and plagiarism constitute academic dishonesty and will not be tolerated. It is your responsibility to review and adhere to USU’s Academic Integrity Standard <http://www.usu.edu/studentervices/studentcode/article6.cfm>. Any student found in violation of this standard will be reported to the Vice President of Student Services and will not receive credit for assignments on which infractions occur.

The instructor, Trisha Atwood reserves the right to alter this syllabus at any time.

Schedule

Important Note: This schedule is subject to change. Check CANVAS regularly for updates.

Week	Date	Topics, activities, and deadlines	Assigned reading
Unit 1 – Physiological Ecology and Ecology of Individuals			
1	Jan 10	Introduction – What is Ecology/ The Physical Environment	Ch. 1 & 2
	Jan 12	The Physical Environment	Ch. 2
2	Jan 17	[You should have your i>Clicker registered] Evolution and Adaptation	Ch. 3
	Jan 19	Rise of Animals: Triumph of the Vertebrates	other
3	Jan 24	Acquiring nutrients and energy	Ch. 4
	Jan 26	Temperature and Water Relations	Ch. 5
4	Jan 31	Graphing/ Test review	
	Feb 2	Exam 1	Ch. 1-5
Unit 2 – Populations			
5	Feb 7	Life History Evolution Problem set 1 handout: Life History tables	Ch. 8
	Feb 9	Distribution and Dispersal	Ch. 9

6	Feb 14	Population abundance and growth Problem set 1 due!	Ch. 10
	Feb 16	Mark recapture lab/ Problem set 2 handout	other
7	Feb 21	No class! Go to Monday classes	
	Feb 23	Conservation Ecology/ Test review day Problem set 2 due!	Ch. 11
8	Feb 28	Exam 2	Ch. 8-11
Unit 3 – Community Ecology			
8	March 2	Interspecific competition	Ch. 13
9	March 7	No Class- Spring Break	
	March 9	No Class-Spring Break	
10	March 14	Predation and Exploitation	Ch. 14
	March 16	Functional Responses lab/ Problem set 3 handout	other
11	March 21	Facilitation	Ch. 15
	March 23	Complex interactions & Food webs Problem set 3 due!	Ch. 16
12	March 28	Food web lab/ Problem set 4 handout	Other
	March 30	Biological Diversity and Stability	Ch. 17
13	April 4	Test Review/ Poster work day Problem set 4 due!	
	April 6	Exam 3	Ch. 13-17
Unit 4 – Ecosystems, Landscapes and Global Change			
14	April 11	Ecosystem structure and energy flow	Ch. 19
	April 13	Nutrient Cycles	Ch. 20
15	April 18	Chasing Ice	other
	April 20	Poster Presentations	
16	April 25	Poster Presentations	
	April 25	Global Change/ Test Review	
17	May	Final Exam (Exam #4): 9:30 -11:20 am, Location TBA	All Chapters