

## **BIOL/NR 2220 - General Ecology**

Fall 2016 • Tuesday & Thursday 1:30-2:45 pm • Widtsoe 007

**Instructor:** Dr. Karen Kapheim  
BNR 251  
Office hours: Tuesday & Thursday 3:00-4:00 or by appointment  
(435) 797-0685  
[karen.kapheim@usu.edu](mailto:karen.kapheim@usu.edu)

### **Graduate teaching assistant:**

Alice Ruckert  
Office location: BNR 111  
Office hour: by appointment  
Phone: (435) 757-4492  
Email: [alice.ruckert@usu.edu](mailto:alice.ruckert@usu.edu)

### **Undergraduate teaching fellows:**

Melanie Aston  
Office location: BNR 111  
Office hour: Thursday 12:15-1:15  
Email: [melanie27aston@gmail.com](mailto:melanie27aston@gmail.com)

Blake Christensen  
Office location: BNR 111  
Office hour: Wednesday 1:30-2:30  
Email: [Bchris641@gmail.com](mailto:Bchris641@gmail.com)

**Website:** CANVAS  
✓ Be sure to adjust your settings so that you are automatically notified of updates, announcements, and deadlines

### **Lecture Recordings:**

All of my lectures will be recorded and available via Panopto on CANVAS.

### **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.

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

## **Materials**

### *Assigned reading*

Most assigned readings come from Ecology Concepts and Applications by Manuel Molles. I will base most of my lecture material on material from the textbook, and exams will be based on lecture material. You are free to use an older edition of Molles, but if there is something in lecture that you can't find in an older edition of the textbook, you might want to borrow a copy of the newer edition to make sure you understand it properly. The textbook also comes with online learning materials. You can link to these through the McGraw-Hill Connect tab on CANVAS.

I will also occasionally assign supplemental readings from the internet. I will post these to CANVAS.

In this class, you will begin learning skills needed to read and interpret the primary literature. We will have one assignment based on a scientific journal article for each unit. These articles will be provided on CANVAS.

### *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). Please register your device with your student ID by **September 6**. 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](http://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.

### *In-class clicker questions* [25 points possible]

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 with your peers. Most of these activities will be graded based on participation alone, but others will not be graded at all. There will be no make-ups for i<clicker points. You must be present in lecture to earn these points.

### *In-class problem sets* [56 points possible]

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 experiments, and synthesize these results with other ecological concepts. You will have a chance to practice these skills by working in small peer groups on problem sets in class. There will be 8 problem sets, worth 8 points each. Each group will turn in a single problem set on CANVAS. This is to ensure that you work together in your peer groups. These problem sets are designed to be completed during the class period. These points cannot be made up if you are absent from class, but I will drop the lowest grade.

### *Reflections* [24 points possible]

One of the primary objectives of this course is to learn to think like an ecologist. One way to achieve this goal is to practice making connections between concepts discussed in lecture and the world around you. In these homework assignments, you can choose from a variety of ways to make these connections. In CANVAS, you will submit one of the following:

- A photograph, painting, or other piece of artwork that reflects an observation you made in nature
- A link to media (e.g., a news article, blog post, excerpt from a book, etc.)

Along with this submission, you must provide an explanation of the ecological concept from the unit the submission relates to and how. Be sure to fully explain both the concept we discussed in class and the relationship to your submission. Be thorough in your explanation in order to receive full credit (see rubric on CANVAS). You will turn in one reflection assignment toward the end of each unit. Each assignment is worth 6 points. Assignments are due by 1:30 pm (i.e., beginning of class) on their listed due date. I will not accept late assignments.

### *Literature comprehension quizzes* [16 points possible]

Reading comprehension of the scientific literature is an important skill that will carry you through the rest of your studies in Biology. In this class, we will begin learning how to read and identify major elements of studies published in scientific journals. I will assign two different papers for you to read and answer some questions about on CANVAS. Each quiz will be worth 8 points. Please feel free to work with others and to ask the instructors and TAs for help as you read these papers. Assignments are due by 1:30 pm (i.e., beginning of class) on their listed due date. I will not accept late assignments.

*Exams* [80 points possible]

There will be four exams. All exams, including the final exam, will be worth 20 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.

Exam questions are designed to measure your progress toward meeting the class objectives and will reflect material presented in lecture, case studies, and assigned readings. 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 and a #2 pencil and you may bring a calculator. The use of notes, books, electronic mobile devices and all other materials are prohibited during the exams.

Exam Dates:

Exam 1 – September 22

Exam 2 – October 13

Exam 3 – November 15

Final Exam – December 13 (1:30-3:20pm)

*Final grades*

Your final grade will be determined based on the percent of total possible points earned out of the total points possible 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, over one-third of your final grade is based

on in-class activities, which cannot be made up. In the event that you cannot make it to class, I encourage you to watch the recorded lectures on CANVAS (via Panopto).

#### *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, phone, or tablet, 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.

**Schedule [Important Note:** This schedule is subject to change. Check CANVAS regularly for updates.]

Week	Date	Topics, activities, and deadlines	Assigned reading
<b>Unit 1 – Physiological Ecology</b>			
1	Aug 30	Introduction – What is Ecology?	Ch. 1
	Sep 1	Climate and Biomes	Ch. 2 & 3
2	Sep 6	[You should have your i>Clicker registered] Population Genetics and Natural Selection	Ch. 4
	Sep 8	Introduction to Physiological Ecology and Homeostasis <a href="#">Problem Set 1.1</a>	See CANVAS
3	Sep 13	Water Relations <a href="#">Problem Set 1.2</a>	Ch. 6
	Sep 15	Temperature Relations	Ch. 5
4	Sep 20	Energy and Nutrient Relations <b>Reflections 1 due before class</b>	Ch. 7
	Sep 22	<a href="#">Exam 1</a>	
<b>Unit 2 – Populations</b>			
5	Sep 27	Population Distribution and Abundance	Ch. 9
	Sep 29	Life Histories	Ch. 12
6	Oct 4	Population Dynamics I <a href="#">Problem Set 2.1</a>	Ch. 10
	Oct 6	Population Dynamics II <a href="#">Problem Set 2.2</a> <b>Literature Comprehension Quiz 1 due before class</b>	Ch. 10
7	Oct 11	Population Growth <b>Reflections 2 due before class</b>	Ch. 11
	Oct 13	<a href="#">Exam 2</a>	
<b>Unit 3 – Community Ecology</b>			
8	Oct 18	Competition I	Ch. 13
	Oct 20	<b>NO class. Pretend it is Friday!</b>	
9	Oct 25	Competition II & Mutualism	Ch. 13 & 15
	Oct 27	Exploitation	Ch. 14
10	Nov 1	Species Abundance and Diversity	Ch. 16
	Nov 3	Biogeography <a href="#">Problem Set 3.1</a> <b>Literature Comprehension Quiz 2 due before class</b>	Ch. 22
11	Nov 8	Community Structure I <a href="#">Problem Set 3.2</a>	Ch. 17
	Nov 10	Community Structure II <b>Reflections 3 due before class</b>	Ch. 17
12	Nov 15	<a href="#">Exam 3</a>	
<b>Unit 4 – Ecosystems, Landscapes and Global Change</b>			
12	Nov 17	Primary and Secondary Production	Ch. 18
13	Nov 22	Nutrient Cycling and Retention	Ch. 19
	Nov 24	<b>No class. Thanksgiving Day.</b>	
14	Nov 29	Succession and Stability <a href="#">Problem Set 4.1</a>	Ch. 20
	Dec 1	Landscape Ecology I	Ch. 21
15	Dec 6	Landscape Ecology II <a href="#">Problem Set 4.2</a>	Ch. 21
	Dec 8	Global Change <b>Reflections 4 due before class</b>	Ch. 23
16	Dec 13	<a href="#">Final Exam</a>	