

## COURSE INFORMATION

### INSTRUCTOR

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### TEACHING ASSISTANT

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### COURSE OBJECTIVES

Ecologists study the distributions and abundances of organisms and how organisms interact with each other and with their environment. In this course you will have the opportunity to learn about ecological patterns and the mechanisms that generate those patterns. You should come out of this class with an ability to integrate knowledge you've already gained from other courses, as understanding ecological processes requires information and concepts from many areas of biology as well as math, physics, and chemistry. Additionally, you should be able to evaluate popular literature, TV, and radio shows on ecological and environmental issues more critically. If you are interested in ecology and natural resources for your career, this class leaves you well positioned to take more specialized courses, and to get jobs or internships.

### LECTURES

#### GETTING QUESTIONS ANSWERED

Stacy and I love to talk about Ecology. Email is a great way to contact us, either to answer your question directly or to set up a time to meet. *If you can't make it to the regularly scheduled office hours, we are happy to meet at other times. Please let us know!*

Ruth: ruth.hufbauer@colostate.edu OR rahufbauer@gmail.com

Stacy: stacy.endriss@colostate.edu

When you email us put **Life 320** in the subject line!

#### REQUIRED TEXTBOOK

The Economy of Nature, Seventh Edition by Robert E. Ricklefs. The book store has the book, and you can also use an electronic book (which is less expensive) through the publisher's website. This class will follow the book closely for some chapters, and for others there will be only small sections assigned. One copy of the text will be on reserve in the library. You should buy the book, however! There will be (nearly) weekly, open book reading quizzes on Canvas to encourage you to read carefully.

#### COURSE WEB PAGE

The class webpage is listed on the **CANVAS** site (<http://info.canvas.colostate.edu/login.aspx>). The webpage will have quizzes, lecture outlines, additional lecture materials, grades, study guides, links to PDFs of required articles, etc. If you have any troubles accessing it or the materials posted there, please let us know! Also, please do tell us if you see problems or have constructive suggestions for making the course website run smoothly.

## **LECTURE OUTLINES**

Lecture outlines will be available on the course website. They will generally be posted by 4:30 PM the day before. Outlines are NOT sufficient to perform well in this course. If you want to get an A or B in the course, you should come to class and take notes. If you miss a class, get notes from someone else, and make sure you understand them. Powerpoint slides will be posted as relevant after class, and Echo 360 captures will be posted as well. Because I use the white board extensively, the Echo 360 won't be sufficient.

## **iCLICKERS**

You are required to use an iClicker remote for in-class participation. As most of you know, iClickers allow you to respond to questions I ask in class. You will be graded on participation. Sometimes things come up that make it difficult if not impossible for you to attend class every day. Taking this into consideration, a 100% iClicker participation score will be awarded for participating in 70% or more of the days that iClicker questions are given (e.g. if I use them on 20 days throughout the semester, 100% credit would be given for 14 days or more. I do it this way to try to balance out rewarding participation with creating a relaxed atmosphere good for learning. Please let us know if you're having technical difficulties with the clickers. We're here to help.

Please take advantage of the clicker questions! Thinking about and answering the questions should help you understand and remember the material, with no risk involved. If you don't yet own a clicker, you can purchase one at the bookstore. In order to receive credit, you will need to register your iClicker remote online within the first week of class. We will be using them the first week. To register, go to <http://clicker.colostate.edu/registration.aspx>. Login with your eIdentity (eName and password). In the iClicker ID field, enter the ID number (on the back of your remote) and select the "Register" button.

**If the number has worn off, bring your clicker to the bookstore and they can help you recover it.**

iClickers will be used fairly frequently in class, and you are responsible for bringing your remote daily. **DO NOT** bring your friends' clickers on days they cannot make it to class. If we catch anyone doing that, you and your friend will get **NO iclicker participation points** for the entire semester. Remember, 100% is given for participating in 70% of the days!

## **BEGINNING and END OF SEMESTER KNOWLEDGE BASE "QUIZZES"**

At the beginning and at the end of the semester, there will be a very short quiz to take on the course website. The first one will enable us to evaluate how much general ecology you already know. The second one will enable us to evaluate how much general ecology you've learned in the semester. You will get **10** points each time just for taking the quizzes. While we want you to do your best in choosing the correct answers, you will not be graded on the quizzes themselves, just on whether you took them or not.

## **READING QUIZZES**

There will be (nearly) weekly quizzes on the readings for you to take on the course website. They are due before class on Thursday, and they are open book.

### IN-CLASS EXERCISES

There will be several in-class exercises worth 1-2 points each. Most exercises will use writing or drawing graphs. For these exercises, we expect that you will do your best to write in grammatically correct, complete sentences, but we will not grade the writing, just the content. Regarding the content, generally we will be asking questions that focus on having you formulate your understanding in words or in graphics. We will not grade these exercises as right or wrong, but rather on how thoughtful your response is, on a plus, check, minus basis.

-**Plus** means great job, thanks for putting in the effort (2 points)

-**Check** means good job, but you could put in a little more effort next time (1 points)

- 0 points for not being present or for not putting any effort in

### PARTICIPATION

Research shows that when people hear something, they may or may not remember it. If they hear it and write it, chances of remembering it increase. If they hear it, write it, plus read and talk about it, they're pretty likely to remember it down the line. In this class, despite the size, I will ask you to participate in several activities. I know that not everyone learns best this way, but it does help most people if they make an honest effort at participating. Even if you're one of the rare people who can sit and listen and absorb it all passively, I bet you'll find you get even more out of the class if you take notes and participate fully in activities.

### HOMEWORKS

There will be 4 homework assignments that will give you practice with some of the mathematical components of the course, and greater familiarity with conceptual issues. **LATE HOMEWORK WILL NOT BE ACCEPTED.** Late is defined as any time after the BEGINNING of class on the due date.

### EXAMS

Exams will contain mostly short-answer and multiple-choice questions, with 1-3 short essays or problems to work. Essays will be graded on the quality of your answer. The quality of your writing (organization, clarity, grammar) matters in that if we don't understand what you are trying to say, we may not be able to reward your knowledge. There will be **three** exams during the semester. Exams will be given during the regularly scheduled class period. **THERE WILL BE NO MAKE-UP EXAMS** unless there is clear documentation 2 or more weeks in advance of an academic conflict, or a doctor's written confirmation of a medical emergency. Make-up exams typically will be in an essay format. The lowest of the three exam scores may be replaced by doing the optional seminar assignment described below.

**The final will be cumulative.** It will focus about half on the material from the end of the semester, and about half on material presented throughout the semester.

### OPTIONAL SEMINAR ASSIGNMENT

You may replace your lowest exam grade with three seminar write-ups (see below for details) **OR** you may replace your lowest homework grade with two seminar write-ups. You may not do both. Attend seminars off the approved list posted on the course website and write up a one-page essay about each seminar. Each essay will be graded out of 25 points. Guidelines will be posted on the course website.

Essays are due two weeks after the seminar that you attended, or the day of the final, whichever is earlier.

Many of the seminars are at the beginning of the semester. If you think you would like to take this opportunity, then don't wait until after the second exam to attend seminars. To get credit for a seminar, first sign up with Stacy by email. A maximum of 15 to 20 people can get credit for a single seminar (depending upon the size of the room).

There will be more detailed information about the assignment and when appropriate seminars will be held posted on the course website once the seminar schedules for the relevant departments are known. If you hear about a seminar that isn't on the list, but that you think might be appropriate, please just ask, as we might not have heard of it yet.

### **COURSE GRADING**

	Points Each	Total Points	Approx. Percent
On-Line Pre- and Post- Knowledge Surveys (2)	10	20	2.9
Homeworks (4, lowest score can be replaced by your grade from the optional 2-seminar assignment)	50	200	29.0
In-Class Exercises (Approx. 5)	2	10	1.5
Class Participation (iClickers)	70% gives full credit	35	5.0
Syllabus and reading quizzes (10-12 total)	5-10	~100	14.5
Exams (3, lowest score can be replaced by your grade from the optional 3-seminar assignment)	75	225	32.6
Final (~50% cumulative, ~50% last section of course)	100	100	14.5
<b>Total</b>		<b>~645</b>	<b>100</b>

Letter grades will be calculated as percentages of the total. A = 90-100%, B = 80-89%, C = 70-79%, D = 60-69%, F < 60%. I will use a +/- to distinguish between grades in the ranges. The bottom 2% in a range will get a minus, and the top 2% will get a plus (e.g. A- is for scores between 90% and 92%, while an A+ is greater than 98%).

**Re-grading.** We will gladly re-grade any question(s) you feel are needed; however, it is your responsibility to follow these rules:

1. When exams/homework are handed back in class, you have 24 hours to identify arithmetic errors on our part.
2. If you would like to have an exam or homework question re-graded, you must submit it with a written explanation of your arguments and the entire exam or homework within one week after it was returned in class. We may choose to regrade the entire exam.
3. We will gladly speak with you about the material thereafter but absolutely no grade changes will be made once the one-week period has elapsed.

### **CLASSROOM ETIQUETTE**

- Come to class on time.
- Please DO ask questions!! This keeps the class more interesting and easy to understand.

- Stop talking when the lecture starts, and raise your hand if you'd like to ask a question or contribute an idea.
- **No computers allowed opened during class.**
- **No cell phone use during class.**
- Let me know if I'm going to slowly or too quickly. It is hard to hit the right balance in a large class, and if you provide some feedback, I can do a better job.

### **ACADEMIC INTEGRITY**

Cheating is unethical, and damaging to you and to your fellow classmates. While I encourage group work and helping each other understand homework assignments, you need to solve problems yourself in the end, and to write down your own answers. Copying from another student is cheating.

Plagiarism is the unauthorized or unacknowledged use of another person's academic or scholarly work. **WRITE OUT YOUR WORK, AND USE YOUR OWN WORDS.** Plagiarism is a theft of intellectual property and a violation of an ironclad rule demanding that credit be given where credit is due.

If you cheat in this class, you will get negative points on the assignment (-40 points), and risk failing the course. Cheating could result in expulsion from the university. Each instance of plagiarism, classroom cheating, and other types of academic dishonesty will be addressed according to CSU guidelines. Details can be found on the TILT website (<http://tilt.colostate.edu/integrity/index.cfm>)

Life 320 002/232 class schedule  
(not set in stone - stay tuned for possible updates)

Lec	Date	Topic	Readings. The Economy of Nature	In class - quantitative ecology practice	Homework
	January				
1	19	Introduction to ecology and to this course	<b>Ch1</b> beginning up to <b>Different organisms play diverse roles</b> 1-10, <b>Scientists use several approaches</b> 20-26, <b>THE ROLE OF ECOLOGISTS</b> 27-28	means and variances <b>Ch1</b> 24-25	
2	21	Global climate	<b>Ch3</b> <b>Sunlight provides energy for photosynthesis</b> 64-66 (stop with description of photosynthesis) <b>Ch5</b> beginning up to section on soils stop at " <b>Climate and the ...</b> ") 114-129		
3	26	Biomes and adaptations to them	<b>Ch6</b> whole thing. 138-156 <b>Ch2</b> <b>Animals and plants face the challenge of water and salt balance</b> 40-45 <b>Ch3</b> <b>Most terrestrial plants obtain nutrients and water from the soil</b> 58-60 skip <b>OSMOTIC PRESSURE</b> then continue with <b>TRANSPIRATION AND THE COHESION-...</b> 62-64	standard deviation and SE <b>Ch2</b> 44-45, different types of variables <b>Ch3</b> 74	
4	28	Ecosystems I	<b>Ch3</b> <b>PHOTOSYNTHESIS</b> 66 <b>Ch20</b> beginning up to <b>Net production efficiency</b> 467-482		
	February				
5	2	Ecosystems II	<b>Ch21</b> beginning up to <b>The phosphorous cycle...</b> 491-500		
6	4	Climate Change	108-109, 133-134, 496-497		#1 due
	9	<b>Exam review</b>			
	11	<b>Exam 1 (lectures 1-6)</b>			
7	16	Life histories	<b>Ch8</b> whole thing 185-204		
8	18	Evolution, adaptation and reproductive strategies	<b>Ch7</b> beginning up to <b>Macroevolutio operates at the</b> 161-176		
			<b>Ch9</b> beginning to <b>Sex ratios of offspring are typically...</b> 207-216, <b>Mating systems describe the patterns...</b> to the end. 220-228		
9	23	Population distributions	<b>Ch11</b> whole thing 247-266	mark-recapture <b>Ch11</b> 258	
10	25	Population growth and regulation	<b>Ch12</b> beginning to <b>Population growth rate is influenced by...</b> 271-283		
	March				
11	1	Population projections and life tables	<b>Ch12</b> from <b>Population growth rate is influenced by...</b> to end 283-282	population projection Tables 12.1-12.7; life tables <b>Ch12</b> 289	
12	3	Population dynamics: temporal and spatial	<b>Ch 13</b> whole thing 295-314		#2 due
	8	<b>Exam review</b>			
	10	<b>Exam 2 (lectures 7-12)</b>			
		Spring break			
13	22	Predation and herbivory: models	<b>Ch1.</b> beginning to <b>Predation and herbivory favor...</b> 318-331		
14	24	Predation and herbivory: biology	<b>Ch14</b> <b>Predation and herbivory favor...</b> to end 313-340		
15	29	Invasion biology	<b>Ch11</b> 267, <b>THE INVASION OF THE EMERALD ASH BORER</b> 267-268 <b>Ch14</b> <b>THE TROUBLE WITH CATS AND RABBITS</b> 339-340 <b>plus TBA</b>		
15	31	Parasitism and infectious diseases	<b>Ch15</b> whole thing 344-364	comparing groups <b>Ch15</b> 360-361	
	April				
	5	Guest lecture: Dr. Lindsay Beck-Johnson	Ecological perspectives on malaria and foot and mouth disease		
16	7	Competition	<b>Ch16</b> beginning to <b>Graphing the Population of Each...</b> 367-375, <b>COMPETITION FOR MULTIPLE RESOURCES</b> to end 378-385 (skip stats box)		#3 due
17	12	<b>Exam review</b>			
18	14	<b>Exam 3 (lectures 13-18)</b>			
	19	Mutualisms	<b>Ch17</b> whole thing 391-410 (skip stats box)		
18	21	Community structure	<b>Ch18</b> whole thing 413-439	diversity indices <b>Ch18</b> 422-423, quantifying community similarity <b>Ch19</b> 453	
19	26	Landscape ecology	<b>Ch22</b> whole thing 513-538	estimating the number of species in an area <b>Ch22</b> 522-523	
20	28	Guest lecture: Dr. Chris Myrick	Linking aquatic landscapes		
	May				
22	3	Global conservation and diversity	<b>Ch23</b> whole thing 541-564		
23	5	Our ecological footprint and where to go from here	<b>TBA</b>		#4 due
	12	<b>FINAL EXAM (9:20 AM)</b>			