

Sul Ross State University Spring 2015
BIOL 4406 Principles of Ecology (4 credit hours)

Instructor: Anne Marie Hilscher **Office:** WSB 220
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Lecture: MWF 9:00-9:50am WSB 107 **Lab:** W 3:00-4:50 WSB 107
Office hours: Mon 2-4; Tues/Thurs 11:00-12:30

GENERAL COURSE INFORMATION: This course provides a broad introduction to the science of ecology. We will explore interactions between organisms and their abiotic and biotic environments, from the level of individual organisms and populations to communities and ecosystems to global processes. In addition to studying natural history and learning some of the critical experiments, we will address ecological theory. Examples will be drawn from a diversity of organisms and habitats, from both basic and applied research. Laboratories provide the opportunity to investigate ecological questions, and to practice techniques through lab and field activities.

****Required Text:** *Ecology: Concepts and Applications* by Manuel C. Molles (5th or 6th edition)

THE GENERAL COURSE GOALS AND EXPECTATIONS ARE TO:

- explain the scientific method and cite basic approaches for collecting data for ecological studies,
- explain fundamental ecological processes such as adaptation, nutrient cycling, symbiosis, population growth, competition, and primary production,
- describe abiotic and biotic factors affecting ecological processes at the individual, community, and ecosystem levels, and
- conduct basic field and laboratory techniques in ecology such as habitat sampling and characterization of populations and communities.

PROGRAM LEARNING OUTCOMES (PLOs) FOR BIOLOGY:

1. Demonstrate a mastery of aerobic respiration and its significance for living organisms.
2. Be able to identify evolution and the processes that influence it.
3. Be able to identify the components of cell structure and their functions.
4. Compare the fundamental concepts of Mendelian genetics.
5. Compare and contrast the process of photosynthesis to other cellular processes.
6. Be able to identify the processes of molecular biology.

GRADING:

Comprehension Tests (3 @ 100 pts ea)	300	(39%)
*Discussion Summaries (4 @ 20 pts ea)	80	(10%)
Ecological Footprint	20	(3%)
Final lecture exam	125	(16%)
Lab	250	(32%)
TOTAL	775	points

The use of books, notes, cell phones, etc. during exams is not permitted. The only thing allowed at your desk during an exam is a writing implement.

I see and I wonder
 I hear and I forget
 I do and I understand.
 -Confucius

Tentative Schedule (subject to change) **Note: Randomness is rife, so expect changes.**

Week	Date	Topic	Chapters/HW
1	W Jan 21	Intro to Course; Introduction to Ecology	1
	F Jan 23	Introduction to Ecology, cont.	
2	M Jan 26	Life on Land	2
	W Jan 28	Life and Water	3
	F Jan 30	Temperature Relations	5; Ecological Footprint due
3	M Feb 02	Water Relations	6
	W Feb 04	Water Relations, cont.	
	F Feb 06	Energy and Nutrient Relations	7
4	M Feb 09	Discussion #1	Discussion Summary due
	W Feb 11	Exam 1 (Chapters 1-3, 5-7)	
	F Feb 13	Population Distribution and Abundance	9
5	M Feb 16	Population Distribution and Abundance, cont.	
	W Feb 18	Population Dynamics	10
	F Feb 20	Population Dynamics, cont.	
6	M Feb 23	Population Growth	11
	W Feb 25	Population Growth, cont.	
	F Feb 27	Life Histories	12
7	M Mar 02	Life Histories, cont.	
	W Mar 04	Competition	13
	F Mar 06	Competition, cont.	
8	M Mar 09	Discussion #2	Discussion Summary due
	W Mar 11	Exam 2 (Chapters 9-13)	
	F Mar 13	Mutualism	15
9	NO CLASSES—SPRING BREAK		
10	M Mar 23	Mutualism, cont.	
	W Mar 25	Species Abundance and Diversity	16
	F Mar 27	Species Abundance and Diversity, cont.	
11	M Mar 30	Species Interactions and Community Structure	17
	W Apr 01	Species Interactions and Community Structure, cont.	
	F Apr 03	Succession and Stability	20
12	M Apr 06	Succession and Stability, cont.	
	W Apr 08	Primary Production and Energy Flow	18
	F Apr 10	Primary Production and Energy Flow, cont.; <i>April 10th by 4:00 pm: Deadline to drop a class with a "W"</i>	
13	M Apr 13	Discussion #3	Discussion Summary due
	W Apr 15	Exam 3 (Chapters 15-18, 20)	
	F Apr 17	Nutrient Cycling and Retention	19
14	M Apr 20	Nutrient Cycling and Retention, cont.	
	W Apr 22	Geographic Ecology	22
	F Apr 24	Geographic Ecology, cont.	
15	M Apr 27	Global Ecology	23
	W Apr 29	Global Ecology	
	F May 01	Discussion #4	Discussion Summary due
16	M May 04	Graduate Student Presentation(s)	
	W May 06	Wrap-up and Review	
	F May 08	NO CLASSES—STUDY DAY	
17	May 11-14 FINALS (Ecology Comprehensive Final Time TBA)		

***Discussions and Discussion Summaries (4 @ 20 points each = 80 points):**

You will have at least four opportunities to participate in active discussions of assigned readings. Each discussion (n=4) is worth a total of 20 points. **Active participation is essential** for each discussion and accounts for 10 of the 20 points. Merely showing up for class that day will not earn you 10 points. Each of the assigned readings also will require a **typed summary**—approximately half-page, single spaced hard copy—(worth 10 of the 20 points) due at the beginning of class. The summary should be a brief description of the primary points of the paper, and include *at least one idea or question for discussion*. No late assignments will be accepted without university-approved, officially documented excuses (i.e. medical emergencies, excused campus activities, religious observances or family emergencies).

These discussion summaries should always be in your own words. Do not plagiarize the authors of the articles (or each other!) in your summaries.

