

PRINCIPLES OF ECOLOGY BIOL 3309
SUMMER II 2016
MON—FRI, 12:00—1:50 PM
BIOL 101

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BIOL 407
HRS: MON, 2-3 PM OR BY APPOINTMENT

SYLLABUS

REQUIRED TEXTBOOK: *Ecology Concepts and Connections, 7th ed. M. Molles. 2015.*
(6th edition acceptable, e-textbook format also acceptable)

PRE-REQUISITES: BIOL 1305, or 1401, or 1402, or 1404.

TEACHING ASSISTANT: Jeffrey Clerc, Office Biol 503A, Hours: Thurs 11am–12pm

FINAL EXAM: THURSDAY, AUG 11 @ 8 AM --10:30 AM

COURSE OVERVIEW

“An examination of ecological systems emphasizing populations, communities, and ecosystems”

Humans are only one part of an interconnected world, the biosphere. While we have an ability to strongly influence the global biosphere, our existence is interdependent upon every aspect of that environment from bacteria to climate, and only relatively recently have we begun to more fully grasp this interdependence. The biosphere is an incredibly complex web of connections and relationships between living and non-living things. Broadly, ecology examines these relationships between organisms, and of organisms to their environment. This class serves as a general introduction to ecological principles, underlying theory and concepts, and systems at every level of the biosphere. It provides the groundwork for those students who wish to pursue a career in a related field, as well as a foundation of knowledge and skills that every person should have to make informed evaluations of issues related to ecology and the environment.

EXPECTED LEARNING OUTCOMES

After completing this course, students should be able to:

- *Identify and define* key terms and ecological principles and *explain* the theoretical, experimental, and applied concepts that define the science
- *Understand and explain* the ways in which organisms interact, and how these interactions, as well as those with their environment, influence individuals, populations, and patterns of species abundance, distribution, and biodiversity

- *Describe* and *discuss* patterns of environmental variation at all ecological levels and how patterns at one level influence other levels
- *Discuss* how both natural and anthropogenic activities impact the biosphere at different ecological scales, and *evaluate* how these impacts cycle back to affect humans
- *Evaluate* information presented on ecological, environmental, and scientific issues

EVALUATION OF EXPECTED OUTCOMES (ASSESSMENTS)

Evaluation of expected learning outcomes will be through use of in-class exams that are a mix of multiple choice, fill-in-the-blank, and short answer questions.

The class will be graded out of a total 500 points.

Exams (total 500 points)

- 3 midterm exams (100 pts each)
- Final comprehensive exam (200 pts)

Grading

A = 90—100%, B = 80—89%, C = 70—79%, D = 60—69%, F < 60%

If you feel your grade has an error, I require all students to follow a “24/7” policy: you must wait 24 hrs after receiving your graded work before contacting me *in writing (email)* to set up a meeting. During this time, thoroughly compare your work to the key, textbook, or other relevant materials to ensure your answer is correct. You have 7 business days after receipt of the returned work to bring a grading issue to my attention.

COURSE OUTLINE

Tips for Success

Attend class daily. This course is so time-compressed that your chances of success decline greatly if you miss classes.

Readings Read the assigned sections *prior* to the lecture for that material, since I build on textbook material in lecture. Jot down a note on the things you’re confused about so you can ask for clarification of concepts during the lecture. (This is not quite a “flipped” lecture class, but may share some elements of one).

Lecture Handouts I will provide handout versions of my Powerpoint slides on Blackboard, and you should print or download them *prior* to the lecture for that material. ***These handouts are NOT a substitute for attending class: they will be missing information.***

Schedule

Day	Date	Chapters	Topics	Textbook Reading
Tu	12-Jul	Intro/Chap 1	Intro to Ecology	p. 1 - 12 (Ch. 1 & Ch. 2 Intro)
W	13-Jul	Chap 2	Climate, Soil, & Terrestrial Biomes	p. 12 - 44 (Ch 2.1 - ch. end)
Th	14-Jul	Chap 3	Hydrologic Cycle & Aquatic Environments	p. 45 - 76 (Ch. 3)
F	15-Jul	Chap 4	Genetic Variation, Natural Selection, etc.	p. 77 - 98 (Ch. 4)
M	18-Jul	Chap 5 & 6	Temperature & Water Relations	p. 99 - 148 (Ch. 5 & 6)
Tu	19-Jul	Chap 7	Energy & Nutrient Relations	p. 149 - 172 (Ch. 7)
W	20-Jul	---	EXAM 1	
Th	21-Jul	Chap 8	Social Relations	p. 173 - 197 (Ch. 8)
F	22-Jul	Chap 9	Population Distribution & Abundance	p. 198 - 217 (Ch. 9)
M	25-Jul	Chap 10 & 11	Population Dynamics & Growth	p. 218 - 256 (Ch. 10 & 11)
Tu	26-Jul	Chap 12	Life Histories	p. 258 - 279 (Ch. 12)
W	27-Jul	Chap 13	Competition	p. 282 - 302 (Ch. 13)
Th	28-Jul	Chap 14 & 15	Exploitative Interactions & Mutualism	p. 303 - 351 (Ch. 14 & 15)
F	29-Jul	---	EXAM 2	
M	1-Aug	Chap 16	Species Abundance & Diversity	p. 352 - 371 (Ch. 16)
Tu	2-Aug	Chap 17	Species Interactions & Community Structure	p. 372 - 391 (Ch. 17)
W	3-Aug	Chap 18	Primary & Secondary Production & Energy Flow	p. 392 - 413 (Ch. 18)
Th	4-Aug	Chap 19 & 20	Nutrient Cycling, Succession, & Ecosystem Stability	p. 414 - 459 (Ch. 19 & 20)
F	5-Aug	---	EXAM 3	
M	8-Aug	Chap 21 & 22	Landscape Ecology & Geographic Ecology Part I	p. 460 - 494 (Ch. 21 & Ch. 22.1-2)
Tu	9-Aug	Chap 22 & 23	Geographic Ecology Part II & Global Ecology	p. 495 - 528 (Ch. 22.3-4 & Ch. 23)
W	10-Aug	---	Final Exam Review	
Th	11-Aug	---	FINAL EXAM 8 -- 10:30 am	

Tips for Success (cont'd)

Time Management

- Block out your study/reading and course prep time at a set time as if it were another class, your job, or other “hard” time commitment.
- Get a *study group* together at a *regular time* 1-2x a week to go through topics and quiz each other—meeting other people you are accountable to makes you more likely to do it!
- Put your study schedule in a *calendar app* with a reminder *alert* (I use multiple alerts). *Sync* the calendar between your phone and computer.
 - I like *Wunderlist* (wunderlist.com) for making *to-do lists* and creating *reminders* to complete tasks on the lists, for example: create a list for a chapter, with subtasks of topics, and strike things off (with a satisfying “ding”!) once you completely understand the topic.

Mind-mapping / Concept Maps This course deals with a lot of concepts that can be hard to visualize and relate to one another. While lists and textbook images are useful, most people learn material better if they write or draw it themselves. *Flash Cards* are great for strict memorization, but may not be the best for most material in Ecology.

- “*Mind-mapping*” diagrammatically connects ideas and can be manual or digital.
- I’ve used *Xmind* (XMind.net), which has lots of templates and options.
- Another is *CMapTools* (cmap.ihmc.us/) which also has tutorials on how to make *good & useful* concept maps (<http://cmap.ihmc.us/docs/learn.php>). It offers only a basic template, but otherwise has similar options, and can be quicker to build maps. Also, collaboration appears to be free.
- Both are *free*, but require email registration to download. Both sites have many good examples. Both can save maps in proprietary formats, or export as jpg images, etc. CMapTools requests a donation (they’re a non-profit), and XMind offers more features for an upgrade price.

CLASSROOM POLICIES

Email Email is my preferred mode of communication. I answer emails Mon—Fri, 9 am – 6 pm. Please allow 24 hrs for a response on weekdays, and 48 hrs on weekends, as I do not answer emails over weekends. Students must contact me using their TTU email, and I expect students to check TechMail regularly, at least 1x a day is a good guide.

Blackboard I will use Blackboard in this course (www.blackboard.ttu.edu) primarily for important course announcements, reminders, and PowerPoint handouts (posted prior to the lecture). I recommend checking BB at least 1x per day, before lecture.

Electronics

Phones: NO phone use is allowed. You must inform me of expected emergency calls (ongoing family medical emergency, sick child, etc.) *prior* to the start of class. When you get the call/message, take your call in the hall & away from the doors.

Tablets & Laptops: I allow tablets and laptops for note-taking purposes only. You should NOT be checking social media, watching videos, playing games, etc. If a peer complains that your computer use is distracting, then you will be asked to discontinue using it & to take notes by hand instead.

Attendance Arrive on time and prepared for class. If you arrive late, please enter through the back doors (between Biol 101 & 106), and quietly close the door behind you—*do not let it slam!* Take a seat in the back, even if your normal seat is elsewhere. Attendance is not used in grade calculations, but students that do not attend classes tend to have poor performance.

Excused vs. Unexcused Absences Students with *instructor-approved documentation* of an excused absence are allowed to make up assessments in a manner agreed upon by the student and instructor. Excused absences include, but are not limited to: medical emergencies, family death, university-sponsored activity, religious observance, etc. If the reason for absence is known in advance, you must inform me *in writing* as far in advance as possible prior to the absence so arrangements can be made in a timely manner. Students with unexcused absences will *not* be allowed to make up assessments.

Civility in the Classroom Respect. This word should always guide your actions in the classroom. The classroom is a place of learning and discussion of many views (some of which will differ from yours). Opening your mind to new perspectives is always a goal of learning. People should feel safe to voice their views, so avoid personal attacks. Also, avoid creating lots of noise or other disruptions, as this distracts everyone. Students that behave inappropriately and disrupt the learning environment will be, at a minimum, requested to leave class, and any assessments missed as a result will be considered missed as though it were an unexcused absence. For more information, consult the *Student Code of Conduct* and *TTU Ethics Center*.

Academic Integrity (OP 34.12) My favorite Texas Tech motto is “Strive for Honor”. This means holding yourself (and others) to high standards of honesty, integrity, and professionalism. Academically, this means certain actions are serious offenses and will not be tolerated, including, but not limited to: “cheating, plagiarism, collusion, falsifying academic records, misrepresentation of facts, and any act designed to give unfair academic advantage to the student” (TTU OP 34.12). Please refer to OP 34.12 or the *Student Code of Conduct* for more detail. If you have knowledge of misconduct committed by other students, you should bring it to my attention.

Students determined to have been academically dishonest will receive *at a minimum*: zero (0) points for that assessment, and a verbal and written reprimand. Additional action(s) will depend on the severity of the offense(s).

Disabilities & Academic Accommodations (OP 34.22 & OP 10.88)

"Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as possible to make necessary arrangements. Students must present appropriate verification from Student Disability Services during the instructor's office hours. Please note that instructors are not allowed to provide classroom accommodation to a student until appropriate verification from Student Disability Services has been provided. For additional information, please contact Student Disability Services office in 335 West Hall or call 806-742-2405."

Syllabus Changes: I reserve the right to make reasonable changes to this syllabus following timely notification to the students.