

Ecology (BIO 341)

Lecturer: Stanton Belford, Ph.D.

Office Hours: M-F 11-12 noon, M, W 1-3 p.m.

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Lecture: MWF 9-9:50 a.m. (A203) Office Phone: 931-424-4621 (Ext.3621)

Lab: Tues. 2-4:50 p.m. Field or Computer Lab (JC203)

Teaching Philosophy

Motto: *Explore, Discover, Empower*

I believe that students are explorers possessing prior knowledge from experiences, seeking to add to an already existing foundation to what they know. Students learn in a variety of ways, and the skills and knowledge obtained are key facets to becoming a productive member of society. Students can learn in any environment, but environments that enhance their curiosity and interest, and related to their life are effective in adding scientific concepts to their growing knowledge. The teaching environment in Science is one that emphasizes open-ended questions, which initiate student discussion, and emphasize learning for all levels of diverse learners.

My role as a science educator is to expand students' science literacy by increasing their skills and knowledge of the natural world around them. Students will gain a better sense of environmental stewardship as their present and future behaviors toward the environment will have both direct and indirect effects on it. With this in mind, my instructional methods are based on a constructivism paradigm. Ultimately, my goals focus on (a) determining the quantity and quality of students' prior scientific knowledge (b) using science-inquiry to initiate student-centered discussion and problem-solving, and (c) increasing student interest in science by illustrating the importance of the scientific process in their lives and the environment around them.

Course Description: Lectures on the basic concepts of the ecosystem and community, aquatic and terrestrial habitats, and population ecology will be complemented by field and laboratory exercises.

Course Objectives: Students will develop and improve ecological literacy by learning the basic facts, principles and concepts in ecology. Students will improve their understanding of scientific literacy by learning how ecologists use knowledge to understand how the abiotic component of an environment relates to the biotic relationships. Students will improve analytic and writing skills through analysis and interpretation of ecological data.

Learning Objectives: (1) Students will demonstrate an understanding in statistical skills used to analyze data collected from the field. They will understand how to formulate rational hypotheses, test them experimentally, gather and analyze data, and present their results professionally. (2) Students will demonstrate an understanding of ecological principles, ecosystem structures, and human impact on ecosystems.

Textbook: Biology Molles, M.C. (2013). *Ecology: Concepts and Applications*, 7th Edition. McGraw-Hill, Boston, Massachusetts.

Study techniques:

- Summarize what the concept means, and DO NOT re-read and memorize
- Quiz yourself, and use the end of the chapter questions/problems to assist you
- Seek tutoring from the Student Resource Center, and discuss the concepts with the tutor
- Visit the course faculty during office hours if you are unsure of a concept

Lab Manual: Analysis of Biological Data for Ecology (Required)

Grading:	Lecture Knowledge Experience #1:	100 pts	_____
	Lecture Knowledge Experience #2:	100 pts	_____
	Lecture Knowledge Experience #3:	100 pts	_____
	Lecture Knowledge Experience #4:	100 pts	_____
	Lecture Knowledge Experience #5:	100 pts	_____
	Lecture Knowledge Experience #6:	100 pts	_____
	Final Knowledge Experience:	100 pts	_____
	Lab: (2 LAB PAPERS + FINAL)	<u>300 pts</u>	_____
		1000 pts	_____ Your Score/Grade

Note: Scores made on your lecture knowledge experiences (1-6), and lecture final will count as **70 %** of your overall course grade. Your lab grade will count as **30 %** of your course grade.

Grade Scale (Knowledge Experience)
(Lecture+Lab)

- A (≥ 90)
- B (≥80-89)
- C (≥70-79)
- D (≥60-69)
- F (Below 60)

Overall Course Grade Scale

- A = 900-1000
- B = 800-899
- C = 700-799
- D = 600-699
- F = <599

Attendance

It has been scientifically shown that the more classes you attend, the higher your grade. See the policy on attendance set forth in the College Catalog.

You are expected to attend all lectures and labs, and to complete all the assigned reading. PowerPoint class lecture presentations and chapter guides will be available online ([access via website](#)), and you will be responsible for getting notes from a classmate if you miss class. A significant proportion of the assessment material will not be exclusively evident from the PowerPoint presentations, so attendance and quality note-taking are important (do not simply copy the words on the PowerPoint – you can review that later)

You are responsible for all materials if you miss class lectures or labs. You must have a legitimate excuse if you are absent on the day of scheduled lecture or lab KNOWLEDGE EXPERIENCES. Should you have to make-up any assessment, the instructor has the right to determine if you can or cannot. You have 1 week, but points will be subtracted after this allotted time.

Academic Misconduct

Academic misconduct is a violation of the College’s Academic Honor Code.

Responsibilities

It is imperative that you come to class to expand your scientific knowledge because your textbook is only one resource that you will use to prepare yourself for the various concepts that will be introduced in class. There will be many discussions during each class. Your questions are welcomed! **Please be respectful and turn-off/silence all smart devices.**

Students with Disabilities: Any student who feels she/he may need an accommodation based on the impact of a disability should contact the Provost’s Office immediately to report their disability and qualify to receive accommodations from your professors. Once you have done this, you may meet privately with me, to discuss your specific needs. Although you may report your disability at any time, please attempt to make arrangements within the first two weeks of the semester so all appropriate academic accommodations can be arranged for you. It is important that you do this as soon as possible because accommodations are not retroactive and any grade you make prior to such notification will stand. For additional information, contact the Provost’s office.

Tentative Course Calendar Fall

Week	Lecture Topic	Lab Topic
August 21-23	Course Objectives Introduction: What is Ecology (Ch. 1)	
Aug. 26-28	Life on Land (Ch. 2) Life in Water (Ch. 3)	Working with Ecological data using Microsoft Excel (Computer Lab)
30	Study Day	
September 2	Labor Day (Holiday)	
3		No Lab: Lab Report 1 due
4	Life in Water (Ch. 3)	

6	Knowledge Experience I Chapters 1, 2, 3	
9-13	Temperature Relations (Ch. 5) Water Relations (Ch. 6)	Estimation of Population Size using Aquatic Snails (East Campus: Site 1)
16-20	Temperature Relations (Ch. 5) Water Relations (Ch. 6)	Estimation of Population Size using Aquatic Snails (Pleasant Run: Site2)
23-25	Population Genetics and Natural Selection (Ch. 4)	Statistics: Computer Lab
27	Knowledge Experience II (Chapters 4, 5, 6)	
30-Oct. 2	Population Distribution & Abundance (Ch. 9)	Computer Lab First draft of Lab paper 1 DUE October 1
4	Fall Break	
7-11	Population Dynamics (Ch. 10)	Estimation of Population Size using Crayfish (East Campus: Site1)
14-16	Population Growth (Ch. 11)	Estimation of Population Size using Crayfish (Pleasant Run: Site2) Final draft of Lab paper 1 DUE October 15
18	Knowledge Experience III Chapters 9, 10, 11	
21-25	Life Histories (Ch. 12) Competition (Ch. 13)	Estimation of Population Size using Crayfish (Magazine Road: Site3)
28-Nov. 1	Competition (Ch. 13) Exploitative Interactions (Ch.14)	Aquatic Invertebrates and Stream Biomonitoring Site1
4-6	Exploitative Interactions (Ch.14)	Aquatic Invertebrates and Stream Biomonitoring Site2
8	Knowledge Experience IV Chapters 12, 13, 14	
11-15	Mutualism (Ch. 15) Species Abundance and Diversity (Ch. 16)	Adaptive Leaf Size: East Campus
18-20	Species Abundance and Diversity (Ch. 16) Species Interactions and Community Structure (Ch. 17)	Computer Lab
22	Tennessee Academy of Science (Columbia State)	

25	Knowledge Experience V Chapters 15, 16, 17	Lab Paper 2 due Nov. 26 Annotated Bibliography
27	Study Day	
29	Thanksgiving	
Dec. 2-4	Geographic Ecology (Ch. 22) Global Ecology (Ch. 23)	Lightening talks
6	Knowledge Experience VI Chapters 22, 23	Website Link Due
9	Reading Day	
11	Final Comprehensive 8-10 A.M.	

Belford