

Syllabus for
BIO 312—Ecology Lecture
3.0 Credit Hours
Fall 2014

I. COURSE DESCRIPTION

A study of the interrelationships of plants and animals (including humans) with their environments. Topics include the ecosystems concept, biogeochemical cycles, energy flow, environmental factors, behavior, populations, communities, major ecosystems of the world, and Christian earthkeeping.

Prerequisites: One year each of general chemistry and introductory biology (with lab).

Corequisite: BIO 312 Lab.

II. COURSE GOALS

This course is designed as both an **integrating framework** and a synthesis for biology majors and minors who are preparing for careers in teaching, research, medicine, other health professions, agriculture, environmental science, and positions in government. Its comprehensive, integrative, and analytical theme is quite appropriate for the types of thinking, problem solving, reading comprehension, and ecological information required for success in the MCAT, GRE, and other exams required for admission to graduate training. A major goal is to show how every Christian is responsible for his or her part in promoting proper stewardship of the Earth.

Population interactions are the foundation of social biology. Many current political and social problems such as rain forest depletion, loss of biodiversity, acid rain, ozone depletion, global warming, overpopulation, food production, water and air pollution, urbanization, and radioactive fallout are basically ecological. Students are encouraged to develop an awareness of personal responsibility in helping conserve exhaustible and irreplaceable resources. Students successfully completing this course will have a solid understanding of population, community, and ecosystem ecology, with all of the varied interactions between plants, animals, and the environment that go on within these systems.

The concurrent laboratory course is used for development of techniques in measurement of environmental factors during the early part of the course. Local pond, stream, woodland, and grassland ecosystems are investigated in the lab and in the field. Selected laboratory bench exercises are used.

III. STUDENT LEARNING OUTCOMES FOR THIS COURSE

A. Terminal Objectives

As a result of successfully completing this course, the student will be able to do the following:

1. Discuss how Christians can be wise stewards of God's Creation.
2. Discuss the importance of and complex interrelationships between plants, animals, and the abiotic environment in all ecosystems.
3. Interpret graphical data collected in scientific studies.
4. Use the Internet to gather information for ecology and other topics.

B. Objectives for Students in Teacher Preparation Programs

The Teacher Preparation Program meets the competency-based requirements established by the Oklahoma Commission on Teacher Preparation. This course meets the following competencies: Subject Competencies (SC) 7.b.3, 7.b.4, and 7.b.9.

This course is designed to help students meet these subject competencies:

- SC 7.b.3: Is able to teach with a broad understanding of all content areas and understand the interaction between the sciences and the process skills as it relates to Life Science Content: Regulation and behavior.
- SC 7.b.4: Is able to teach with a broad understanding of all content areas and understand the interaction between the sciences and the process skills as it relates to Life Science Content: Population and ecosystem.
- SC 7.b.9: Is able to teach with a broad understanding of all content areas and understand the interaction between the sciences and the process skills as it relates to Life Science Content: The interdependence of organisms.

IV. TEXTBOOKS AND OTHER LEARNING RESOURCES

Required Textbook

Smith, R.L. and Smith, T.M. 2001. Ecology and Field Biology, 6th edition, New York: Addison Wesley Longman, Inc. ISBN-10: 0321068815.

V. POLICIES AND PROCEDURES

A. University Policies and Procedures

1. Attendance at each class or laboratory is mandatory at Oral Roberts University. Excessive absences can reduce a student's grade or deny credit for the course.
2. Students taking a late exam because of an unauthorized absence are charged a late exam fee.
3. Students and faculty at Oral Roberts University must adhere to all laws addressing the ethical use of others' materials, whether it is in the form of print, electronic, video, multimedia, or computer software. Plagiarism and other forms of cheating involve both lying and stealing and are violations of ORU's Honor Code: "I will not cheat or plagiarize; I will do my own academic work and will not inappropriately collaborate with other students on assignments." Plagiarism is usually defined as copying someone else's ideas, words, or sentence structure and submitting them as one's own. Other forms of academic dishonesty include (but are not limited to) the following:
 - a. Submitting another's work as one's own or colluding with someone else and submitting that work as though it were his or hers;
 - b. Failing to meet group assignment or project requirements while claiming to have done so;
 - c. Failing to cite sources used in a paper;
 - d. Creating results for experiments, observations, interviews, or projects that were not done;
 - e. Receiving or giving unauthorized help on assignments.By submitting an assignment in any form, the student gives permission for the assignment to be checked for plagiarism, either by submitting the work for electronic verification or by other means. Penalties for any of the above

infractions may result in disciplinary action including failing the assignment or failing the course or expulsion from the University, as determined by department and University guidelines.

4. Final exams cannot be given before their scheduled times. Students need to check the final exam schedule before planning return flights or other events at the end of the semester.
5. Students are to be in compliance with University, school, and departmental policies regarding the Whole Person Assessment requirements. Students should consult the Whole Person Assessment handbooks for requirements regarding general education and the students' majors.
 - a. The penalty for not submitting electronically or for incorrectly submitting an artifact is a zero for that assignment.
 - b. By submitting an assignment, the student gives permission for the assignment to be assessed electronically.

B. Course Policies and Procedures

1. Evaluation Procedures

a.	Type of Work	<u>Points</u>
	Exams (3 at 100 points each)	300
	Final examination over entire course	200
	Term paper	200
	Quizzes (3 at 10 points each)	<u>30</u>
	TOTAL	730 (+ 10 pts. max. extra credit)

b. Grading

Semester Grade	Percent
A	≥90.0
B	80-89.9
C	70-79.9
D	60-69.9
F	≤59.9

c. When grading the term paper, the instructor generally emphasizes the following:

- (1) Ecological content
- (2) Scientific style of writing
- (3) Use of references in the paper
- (4) Number and quality of references (**at least 8 from pri. journals**)
- (5) Spelling/punctuation errors
- (6) Whether all or most of these references were obtained from Dr. Korstad or another professor, vs. the student spent extra time obtaining references on his or her own (e.g., through Google Scholar search, the ORU Library, reprint requests, etc.). In other words, it is better for the student to get most references on his or her own!
- (7) Inclusion and discussion of figures and tables with data in paper
- (8) In-depth coverage of topic
- (9) Following directions given in this syllabus, the lecture outline, and in class
- (10) Whether this is an original paper (i.e., not one submitted before

- to other classes)
- (11) The term paper must be submitted to the D2L Dropbox for plagiarism check by Turnitin.com. No final paper will be accepted with an 'Originality Report' greater than 20% (excluding quotes and bibliography), so revise and resubmit by the deadline as appropriate!
 - (12) A **9-10 page paper** copy should also be turned with pages numbered; 2-sided printing is fine; stapled; no plastic or other binding, etc. – see Lecture Outline for more details).
2. Whole Person Assessment Requirements
None
 3. Other Policies and/or Procedures
 - a. Exams are generally about 50-60% multiple choice, true/false, and matching; and about 40-50% short answer, fill-in-the-blank, and essay.
 - b. Late exams can be made up without penalty if a valid excuse (illness, death in family, out of town, or administrative duty) is given ahead of time, unless unavoidable. Unexcused late exams will be marked down **at least** 10% per day depending on the discretion of the instructor.
 - c. Term Paper
 - (1) Detailed information about the guidelines for the term paper are included in the Lecture Outline and on D2L.
 - (2) When grading the term paper, the following point breakdown is used:

10 points	Term paper topic and ten references ("Primary Ref's" = original research from journals) with ecological focus.
10 points	Annotated bibliography. One or two sentences describing each paper, along with how you obtained the article (ORU Library, Dr. Korstad, OSU, TU, Interlibrary Loan, etc.) and outline of paper, including inclusion of several figures and tables with data that you plan to discuss in your paper).
180 points	Finished term paper 8-10 pp. (200 points total)
- NOTE: See Course Calendar below for due dates for each part mentioned above.

VI. COURSE CALENDAR

Week	Date	Topic	Chapter
	No class on Aug. 15		(Note: Read pages in textbook appropriate to notes as discussed in class)
1	Aug. 18, 20, 22	Orientation to course Overview—Ecology as a Science	1
2	25, 27, 29	Ecosystem Basics Solar Radiation & Climate The Phy. Environment - Moisture	24 2 3 & 8

Week	Date	Topic	Chapter
	Sept. 1	No classes	
3	3, 5	Temperature Light	3, 7, 8 6 & 8
4	8, 10, 12	Nutrients Soils & Decomposition Quiz 1	4, 5, 7 4 & 9
5	15, 17, 19	EXAM 1 (Ch's 1-8 & 24: through "Nutrients") Freshwater Ecosystems Start focusing on Term Paper	30
6	22, 24, 26	Freshwater Ecosystems (cont'd)	
	Oct.		
7	29, 1, 3	Marine Ecology	31
8	6, 8, 10	Ecosystem Productivity (Energy Flow)	24
		Spring Break	
9	20, 22 (no class), 24	Biogeochemistry I: Nutrient Cycling Biogeochemistry II: Global Cycles & Human Impact; & Global Environmental Change Exam 2 (Ch's 4, 7, 9, 24, 30, 31)	25 26 32
10	27, 29, 31	*Term Paper Topic and Ten References due (Minimum 10 primary journal ref's) Pop. Genetics; Properties of Populations Population Growth	19, 10 11
	Nov.		
11	3, 5, 7	Behavior and Social Systems Intraspecific Competition: Pop. Regulation	19 12
12	10, 12, 14	Life History Patterns Interspecific Competition Concepts of Predation	13 14 15
13	17, 19, 21	Predators & Their Prey *Term Paper Outline and Annotated Bibliography due (Min. 10 pri. journal ref's & inclusion of several figures and tables with data that you plan to discuss in your paper) Quiz 3; EXAM 3 (Ch's 10-16, 19, 25-26, & 32)	16
14	24 (no class on 26 & 28)	Coevolutionary Interactions: Parasitism & Mutualism TERM PAPERS DUE!	17
	Dec.		
15	1, 3, 5	Community Structure Community Dynamics (& Paleoecology) Processes Controlling Community Dynamics (Succession) Grassland to Tundra; Forests	20 21 22 28; 29
	_____	FINAL EXAM (Ch's 17, 20-22, 28, 29 + Cumulative)	

Course Inventory for ORU's Student Learning Outcomes

Ecology Lecture – BIO 312 Fall 2014

This course contributes to the ORU student learning outcomes as indicated below:

Significant Contribution – Addresses the outcome directly and includes targeted assessment.

Moderate Contribution – Addresses the outcome directly or indirectly and includes some assessment.

Minimal Contribution – Addresses the outcome indirectly and includes little or no assessment.

No Contribution – Does not address the outcome.

The Student Learning Glossary at <http://ir.oru.edu/doc/glossary.pdf> defines each outcome and each of the proficiencies/capacities.

OUTCOMES & Proficiencies/Capacities		Significant Contribution	Moderate Contribution	Minimal Contribution	No Contribution
1	Outcome #1 – Spiritually Alive Proficiencies/Capacities				
1A	Biblical knowledge		X		
1B	Sensitivity to the Holy Spirit		X		
1C	Evangelistic capability		X		
1D	Ethical behavior		X		
2	Outcome #2 – Intellectually Alert Proficiencies/Capacities				
2A	Critical thinking		X		
2B	Information literacy	X			
2C	Global & historical perspectives	X			
2D	Aesthetic appreciation			X	
2E	Intellectual creativity		X		
3	Outcome #3 – Physically Disciplined Proficiencies/Capacities				
3A	Healthy lifestyle			X	
3B	Physically disciplined lifestyle				X
4	Outcome #4 – Socially Adept Proficiencies/Capacities				
4A	Communication skills		X		
4B	Interpersonal skills		X		
4C	Appreciation of cultural & linguistic differences		X		
4D	Responsible citizenship		X		
4E	Leadership capacity		X		