

MOREHEAD STATE UNIVERSITY
DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES
COURSE SYLLABUS

COURSE: Biology 461. Ecology. (2-2-3); I. Interrelations of organisms and environment. Some all day field trips required. *PREREQUISITES:* BIOL 210, BIOL 215, MATH 152 or higher, eight hours of college chemistry.

PROFESSOR: Dr. Reeder. 327C Lappin Hall, 3-2957, b.reeder@moreheadstate.edu

REQUIRED TEXTS: Molles, M.C. 2008. Ecology: Concepts and Applications
Brower et al. 1998. Field and Laboratory Methods for General Ecology

COURSE GOAL: The purpose of the course is to gain an understanding of the structures and functions of biological systems at the population, community, and ecosystem levels.

COMPETENCIES: Students will be expected to:

- be proficient with common aquatic and terrestrial ecosystem component sampling and analysis techniques
- be capable of accurately and clearly analyzing, and scientifically reporting, ecological data and information
- have a demonstrated competency and understanding of ecosystem processes, included food webs, energy flow and modeling, biogeochemistry, and the effects of macro and microclimate on ecosystem structure
- have a demonstrated competency and understanding with concepts in community ecology, including stages and processes of succession, interspecific interactions, niche theory, and biodiversity
- have a demonstrated competency and understanding of population ecology, including growth models and life tables, intraspecific competition, and speciation
- have a demonstrated competency and understanding of adaptations of plants and animals to varied environmental conditions at cellular, organismal, and population levels
- Demonstrate reliability and honesty.

COURSE ACTIVITIES: Students will be asked to listen, think, and interact with the teacher in regard to course material presentations, take quizzes and exams that require critical thinking and writing skills, read assigned materials, and interact with classmates and the teacher to answer questions/solve problems/conduct field and laboratory experiments. Students will use mathematical and chemical skills, computer technology, and lab methods to study a variety of aquatic and terrestrial ecosystems. Students will formulate hypotheses, collect and analyze data and the literature, formulate conclusions, and present results.

Professional Courtesy: You are expected to conduct yourself as a professional during class. Conduct that inhibits or disrupts the learning of others is rude, and will not be tolerated. Electronic devices can not be used during class (e.g. cell phones, beepers, tape recorders, etc.). The classroom and laboratory are not suitable environments for children; therefore, in accordance with University regulations, children are not permitted. To be counted as attending on a day, you must be seated and ready when class starts, and stay until the end of the class. You may not leave your chair unless instructed by the professor or for medical emergencies.

ASSESSMENTS:

Average of mid-term Exams	50% of grade
Laboratory assignments, reports, and proficiency evaluations	30% of grade
Comprehensive Final Exam	20% of grade
Grading Scale: 90 - 100, A; 80 - 89, B; 70 - 79, C; 60 -69, D; <59, E.	
U- more than 6 total absences (lecture or lab), or any unexcused exams.	

Exams: Exams are to help me evaluate what you have learned, and to motivate you to study. Exams may test lecture and laboratory knowledge, and will be primarily objective. Exam questions test your ability to integrate material and assess novel situations--rather than simply testing your factual recall. The instructor's decisions on grading are not debatable.

Laboratory Assignments: You are all responsible for keeping a safe and clean environment. Some activities will be done with groups in lab or the field. You are responsible for your helping your team. I will specify when reports or assignments are to be completed individually. If a number of pieces of individual work have identical answers, or otherwise demonstrate collusion, then all parties involved lack professional and personal integrity and character; therefore they will not receive any points for the assignment. Lab reports and assignments must be turned in on time. There is no partial credit for late assignments. If you have mastered time travel, you may go back into the past and complete an assignment or task.

Attendance: Attendance is **required**. Treat this course like you would a job. Exams, quizzes, and labs can not be made-up. “Legitimate absences do not excuse students from class responsibilities” (MSU Student Handbook). Students with official university excuses should present them to Dr. Reeder before the absence. Medical excuses are only valid if the condition required hospitalization. Funeral excuses are only valid for the day of the funeral, and with the following qualifications: 1) it is your death; or 2) the death is of your immediate family member. To maintain fairness, I do not want to be put into the position of judging the validity or seriousness of your excuses.

Tentative Lecture Schedule

Day	Topic--activity	Molles
12-Jan	Scope of Ecology-Library Resources	1
14-Jan	Scale and Experiments	1
19-Jan	Martin Luther King Day	
21-Jan	Population Characteristics	8,9
26-Jan	Naughty Behavior	7
28-Jan	Population Dynamics	10
2-Feb	Population Growth	11
4-Feb	Life History	12
9-Feb	Competition and Niche	13
11-Feb	EXAM 1 Population Ecology	
16-Feb	Predators and Prey	14
18-Feb	Mutualism	15
23-Feb	Community Diversity	16
25-Feb	Food Webs and Keystone Species	17
2-Mar	Community Development	20
4-Mar	Landscape Ecology	21
9-Mar	Island Biogeography and Succession	22
11-Mar	EXAM 2 Community Ecology	
16-Mar	Spring Break	
18-Mar	Spring Break	
23-Mar	Macroclimate	2
25-Mar	Terrestrial Biomes	2
30-Mar	Aquatic Systems	3
1-Apr	Aquatic Systems	3
6-Apr	Aquatic Systems	3
8-Apr	Microclimate and organisms	4
13-Apr	Ectotherms, Endotherms, Heterotherms	5
15-Apr	Energy and Nutrients	6
20-Apr	Primary Production and Energy Flow	18
22-Apr	Nutrient Cycling and Energy Flow	19
27-Apr	Global Warming, El Nino	23
29-Apr	EXAM 3 Ecosystem Ecology	
8-May	Friday, Comprehensive Final Exam 8:00-10:00	

Tentative Laboratory Schedule

Day	Topic	Unit
14-Jan	Library Resources, Journals	1
21-Jan	Populations: Growth, Life Tables	4
28-Jan	Population Dispersion, Sociality	4c
4-Feb	Ecological Statistics + Mark Recapture	1b,3f
11-Feb	Aquatic Insect Diversity	3e,2d,5b
18-Feb	Tree Density and Diversity	3b,3c,5b
25-Feb	Phytoplankton Communities	3e,2f,5b
4-Mar	Bird Transect Sampling	3a,3c
11-Mar	Spring Wildflower Sampling	3a,3b,5b
18-Mar	SPRING BREAK	
25-Mar	Macroclimate and Microclimate	2a,2b
1-Apr	Lake Sampling	2d
8-Apr	Flow and Water Sampling	2d,2e
15-Apr	Primary Productivity	6b
22-Apr	Nutrient Analysis: water, soil, biota	2
29-Apr	Goose Behavior and Energy Budgets	

Always come prepared to go outside on laboratory days!

USE OF TECHNOLOGY: Students will be expected to use Internet and World Wide Web for literature searches of lab projects as well as use e-mail, word processing, and appropriate ecological modeling and data analysis software as assigned. In various labs, students will use technical procedures involving spectrophotometers, multiparameter probes, pH meters, titrators, and electronic balances.

DIVERSITY ISSUES: Inherent in this course is the discussion of the abundance and distribution of species (biodiversity); however, human diversity is not addressed.

Americans with Disabilities Act (ADA):

In compliance with the ADA, all students with a documented disability are entitled to reasonable accommodations and services to support their academic success and safety. Though a request for services may be made at any time, services are best applied when they are requested at or before the start of the semester. To receive accommodations and services the student should immediately contact the Disability Services Coordinator in the Office of Academic and Career Services, 223 Allie Young Hall, 606-783-5188, www.moreheadstate.edu/acs/

Campus Safety Statement:

Emergency response information will be discussed in class. Students should familiarize themselves with the nearest exit routes in the event evacuation becomes necessary. You should notify your instructor at the beginning of the semester if you have special needs or will require assistance during an emergency evacuation. Students should familiarize themselves with emergency response protocols at <http://www.moreheadstate.edu/emergency>

The instructor may change or amend the schedules and rules to enhance your educational experience.

Addendum for NCATE Review
MOREHEAD STATE UNIVERSITY
PROFESSIONAL EDUCATION UNIT
COLLEGE OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES
BIOLOGY 461 – ECOLOGY
COURSE SYLLABUS – SPRING 2009

COURSE: BIOL 461; Ecology (2-2-3) I

TIME AND PLACE: Lecture 9:10-10:10 MW in Lappin 307; Laboratory 12:40-2:50 W in Lappin 243

LECTURE INSTRUCTOR: Dr. Brian Reeder

OFFICE: 327C Lappin Hall

PHONE: 783-2957

EMAIL: b.reeder@morehead-st.edu

OFFICE HOURS: 3:00-5:00 M and 10:20-12:30 T

Conceptual Framework for Educator Preparation Program:

“Community Engagement: A Light to and from the Mountains.” The Professional Education Unit at Morehead State University delivers rigorous, high quality programs that prepare professionals informed by best national and international scholarship, plus research, literature, and experiences specific to Appalachia- preparing professionals to improve the schools, quality of life, and the communities in which they live and serve. This statement is not only the strategic mission for the Unit, but it also incorporates the conceptual framework that guides all our activities.

The following objectives have been established for Biology 461. These objectives are consistent with standards listed by the National Science Teachers Association (NSTA), Kentucky Department of Education Core Content for Assessment (KDECCA), and the Kentucky Teacher Standards (KTS).

COURSE OBJECTIVES:

1. to develop a personal, well-structured, interconnected understanding of the principles of ecology. KTS 1; KDECCA 3, 3, 4, 4.
2. to understand what science is as a “way of knowing”. NSTA 2.
3. to see science as a process where hypotheses are tested, and then either accepted or rejected on the basis of evidence. NSTA 2.
4. to relate structure and function at the physiological, population, community, and ecosystem levels. KTS 1, KDECCA 3.
5. to develop a foundation of ecological vocabulary, concepts, and principles related to structure of the energy and nutrient flow, heredity, evolution, and ecology. KTS 1; NSTA 1, 2; KDECCA 3, 4.
6. to see the relevance of ecological principles to everyday life. KTS 1.
7. to use, and interpret data obtained from, scientific instrumentation (microscopes, pH meters, spectrophotometers, CHN Analyzer, multiparameter datasondes). KTS 6; NSTA 5.
8. to participate in laboratory both as an individual and as part of a group. KTS 8; NSTA 3.
9. all of these objectives are geared toward generating a student experience that will integrate skills and knowledge from other biology courses in the major. KTS 1, NSTA 1, 2; KDECCA 3, 4.