

**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 ecosystems 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 competition, 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)

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.

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.

KENTUCKY TEACHER STANDARDS: Biology 461 will offer methods of instruction that provides a **learning climate (NTS II)** that fosters the development of discipline-specific core **concepts (NTS VIII)** at high level of expectation and with the **use of multiple teaching strategies (NTS III)**. **Team building skills (NTS VI)** are developed in the lab portion of this course. The **effectiveness of instruction (NTS V)** and **learning (NTS VI)** are evaluated by **multiple assessments**. The comprehension of core concepts, effectiveness of multiple teaching strategies/instruction, integration of learning are evaluated by exams, quizzes, in-class responses, outside assignments, and during discussion/review sessions. The **Constructivist** approach and the awareness of the "**Educator as an Architect**" of student development fits the conceptual framework of professional education and New Teacher Standards for the Commonwealth of Kentucky.

NEW TEACHER STANDARDS: This course is for students to gain intellectual control relevant to NTS VIII, and NTS VII; yet there will be an opportunity for students in this course to develop awareness and synthesize components relative to NTS I, II, IV, and V.

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>

Tentative Schedule

Day	Topic--activity	Molles
14-Jan	Scope of Ecology	1
16-Jan	Scale and Experiments-Library Resources	1
21-Jan	Martin Luther King Day	
23-Jan	Macroclimate--Climate Measures, Climatograms	2
28-Jan	Terrestrial Biomes	2
30-Jan	Aquatic Systems--Wetland Field Trip	3
4-Feb	Aquatic Systems	3
6-Feb	EXAM 1	
11-Feb	Microclimate and organisms	4
13-Feb	Ectotherms, Endotherms, Heterotherms--N v. S slopes	5
18-Feb	Energy and Nutrients	6
20-Feb	Naughty Behavior--CHN soil, water, air	7
25-Feb	EXAM 2	
27-Feb	Population Characteristics--Goose Behavior and Energy Use	8,9
3-Mar	Population Dynamics	10
5-Mar	Population Growth--Pop Distribution	11
10-Mar	Life History	12
12-Mar	EXAM 3--Growth and Life Tables	
17-Mar	Spring Break	
19-Mar	Spring Break	
24-Mar	Competition and Niche	13
26-Mar	Predators and Prey--Spring Wildflowers	14
31-Mar	Mutualism	15
2-Apr	Community Diversity--Stream Benthos Diversity	16
7-Apr	Food Webs and Keystone Species	17
9-Apr	Primary Production and Energy Flow--Diel DO	18
14-Apr	Nutrient Cycling and Energy Flow	19
16-Apr	Community Development--Succession Measurement	20
21-Apr	EXAM 4	
23-Apr	Landscape Ecology--Sampling Animals, GIS	21
28-Apr	Island Biogeography and Succession	22

30-Apr Global Warming, El Nino--Habitat Assessment

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9-May **Friday, Comprehensive Final Exam 8:00-10:00**

Always come prepared to go outside on laboratory days!

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