MOREHEAD STATE UNIVERSITY
DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES
COURSE SYLLABUS

COURSE: Biology 409. Limnology. (2-2-3); II. Ecology and biota of inland waters. Some all day field trips required.

PREREQUISITES: BIOL 210, BIOL 215, MATH 152 or higher, eight hours of college chemistry.

PROFESSOR: Brian C. Reeder, Ph.D., 327C Lappin Hall, 3-2957, b.reeder@morehead-st.edu

REQUIRED TEXT: Wetzel, R.G. 2001. Limnology. Academic Press
Wetzel, R.G., and G.E. Likens 1991. Limnological Analyses. Springer-Verlag

COURSE GOAL: The purpose of the course is to gain an understanding of the complexities of inland freshwater ecosystem structures and functions, measurement and analysis of surface freshwater, and management of aquatic ecosystems.

COMPETENCIES: Students will be expected to:

1. Demonstrate proficiency at mapping and measuring watersheds, lakes, and streams, and developing hydrologic budgets.
2. Be proficient with common physical, chemical, and biological aquatic sampling and analysis techniques.
3. Be capable of accurately and clearly analyzing, and scientifically reporting, limnological data and information.
4. Have a demonstrated competency and understanding of lake ecosystems, including geologic formation, unique properties of water, energy flow, material dynamics, ecological interactions, and biological adaptations.
5. Be able to identify and quantify common aquatic organisms.
6. Have a demonstrated competency and understanding of how to effectively manage lakes and watersheds.

ASSESSMENTS: Grades will be roughly based on the weighted average of:

Mid-term Exams	30%
Quizzes and Homework	20%
Laboratory Assignments and Proficiency	30%
Comprehensive Final Exam	20%

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 may test lecture and laboratory knowledge, and will be primarily objective. The instructor's decisions on grading are not debatable.

ATTENDANCE: Attendance is **required**. Treat this course like you would a job. Exams, quizzes, and labs cannot 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.

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.). If your cell phone rings in class, I will answer it. 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.

LABORATORY WORK: This class has a small enrollment, which will allow us to do some unique labs. You will not have to wait for people to get on equipment, and you will gain extensive hands-on experience with the most modern field and laboratory equipment available. There will be a lot of time that you will be "on your own" taking samples in remote regions. You will always go as pairs, for safety.

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, and electronic balances.

VARIFIED PHYSICAL OR MENTAL DISABILITY: "Professional staff assists students with physical or learning disabilities in the acquisition of academic aids such as textbooks on tape, note-takers, and tutoring. The staff coordinates efforts to address the accessibility needs and classroom accommodations with instructors of students with physical or learning disabilities. Services are offered on an individualized basis." (MSU Eagle Handbook).**:** In compliance with the **Americans with Disabilities Act (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/

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

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. There are also large posters with safety information posted in classrooms.

Tentative Lecture and Laboratory Schedule

Day	Topic	Chapter(s)	Lab or Field Activity
12-Jan	Introduction-What is a Lake?	1	Into to Lappin 243
14-Jan	Properties of Water	2	
19-Jan	**Dr. King Day**		
21-Jan	Lake Formation-Geology	3	
26-Jan	Morphometery	3	Calibrating Datasondes
28-Jan	Watersheds and Water Budgets	4	
2-Feb	Light transmission and absorption	5	Flow, Discharge, and Loading
4-Feb	Heat and Seasonal Mixing	6	
9-Feb	Flow and Currents	7	Lake Field Trip
11-Feb	**Exam 1-Physical Limnology**		
16-Feb	Oxygen Changes-local, daily, seasonal	9	Dissolved Oxygen Measurement
18-Feb	Hard, Soft, and Salty	10	
23-Feb	Inorganic Carbon--The Carbonate Cycle	11	Lake Field Trip
25-Feb	Nitrogen and its many transformations	12	
2-Mar	Phosphorus Dynamics	13	Total P and N, Alkalinity
4-Mar	Nutrient Management	13	
9-Mar	Iron, Sulfur, and Silica	14	Nutrient Limitations in Eagle Lake
11-Mar	**Exam 2-Chemical Limnology**		
16-Mar	**SPRING BREAK**		
18-Mar	**SPRING BREAK**		
23-Mar	Bacterioplankton	17	Iron and Sulfur Measurement
25-Mar	Major Groups of Phytoplankton	15	
30-Mar	Nutrient-Algae Interactions	15	Primary Productivity
1-Apr	Phytoplankton Growth and Succession	15	
6-Apr	Zooplankton-Protozoa	16	Chlorophyll *a*
8-Apr	Intro to Rotifers, Cladocera, Copepods	16	
13-Apr	Zooplankton Ecology	16	Analysis of Phytoplankton
15-Apr	Zooplankton and Fish	16	
20-Apr	**Exam 3-Plankton**		Analysis of Zooplankton
22-Apr	Aquatic Plant Evolution and Adaptation	18	
27-Apr	Wetland Ecosystems	19	Wetland Productivity
29-Apr	Aquatic Plant Management	20	
7-May	**Comprehensive Final Exam, 10:15-12:15**		

NOTE: The professor may change or amend rules, regulations, or schedules as necessary to enhance your educational experience.