Oct. 19, 2011

Limnology Lab

Biology 692
Autumn 2011

Instructors Dr. Ishi Buffam: ishi.buffam@uc.edu
Dr. Eric Maurer: eric.maurer@uc.edu

Office Hours: One half-hour after class or by appointment

Time and Location: Wed 2-3:50 (Riev 411), Sat 8:15-1:00 (varies – see schedule)

Summary: *Biology 692, Limnology Lab,* is a course focusing primarily on research techniques used in the study of freshwater ecosystems. Different labs focus on freshwater ecology, hydrology, and chemistry. You will also learn to identify and characterize some of the most common organisms found in local stream, lake and river ecosystems. The last part of the course will be devoted to field trips exploring urban water cycling and stormwater runoff management in the Cincinnati region.

Course Goals: Students successfully completing this course will be able to:

1. Describe and explain the fundamental physical and chemical drivers in freshwater ecosystems and how they typically vary in space and time
2. Carry out fundamental stream and lake characterization using basic limnological equipment
3. Identify some of the most common organisms found in lakes and streams
4. Describe some of the stormwater runoff management issues facing the city of Cincinnati, and identify approaches to addressing those issues
5. Integrate field data with theory learned in class lectures

What to wear: For the Saturday field trips, be prepared to get wet and muddy. Depending upon our luck with the weather, you may be exposed to sun and heat or biting cold or rain. Thus, be aware that you will want to take precautions and dress appropriately: long pants and sturdy shoes for getting to the sites, and sandals or old sneakers for wading in streams. You should also have access to extra layers, a hat, and a rain jacket or poncho if it's raining. For the Wednesday field trips towards the end of the quarter, we will still be outside much of the time so dress accordingly – but we are less likely to get muddy on those days.

Grading Policy: Grades will be based on lab exercises, a lab report, a field notebook, a critter quiz, and participation. Points will be assigned as described below.

Attendance and Participation: 14 days @ 5 pts. each	70 pts.
Lab Exercises (Assignments): 6 @ 10 pts. each	60 pts.
Field Notebook	30 pts.

Written Lab Report (Doe Run Lake) _____ 40 pts.
Critter Quiz_____ 50 pts.

Total_____ 250 pts.

Your final grade will be determined based on the total points which you accumulate, expressed as a percentage of 250 possible points, with the breakdown planned as follows.

A	94-100%
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D	60-69
F	<60

Excercises: Lab exercises are designed to guide you through each day's activities and will be largely done during the instructional day, but will usually require work at the end of the day to get them in shape and then be handed in the next class period. They will primarily be based on what we've done in the lab but may also include questions on related limnology concepts. You should also write a summary of each day's experiences in your field notebook, as well as recording field data and notes relevant to the day's exercises.

Written Lab Report: A grading rubric is posted on the blackboard site describing the expectations for the written lab report. Feel free to contact the instructor for further details.

Field notebook: Many professional ecologists, fisheries biologists, and environmental scientists are required to keep a field/lab notebook as a part of their duties. This is an actual record of events, not something to be constructed after the fact, although information (such as analysis) can be added. These books are professional records of your work. They are considered legal records and have been subpoenaed in a court of law. Thus, we hope to build good professional scientific work habits with this requirement. The purpose of the lab notebook is to record data and field observations as well as to document results and state conclusions. You will not be graded on neatness, but results must be readable. Take as many field notes as you can because they frequently come in handy when analyzing data later. The lab/field notebook is required for completion of the course, and you will need to purchase your own; water proof "Rite in the Rain" notebooks are a good option, and available in the UC bookstore. Specific rules for format and what to include are found on the class Blackboard site.

Academic Integrity Statement: University rules, including the Student Code of Conduct and other policies related to academic integrity will be strictly enforced. While we will work in groups to gather data, and sometimes analyze data together, you will prepare your assignments independently. If you are writing or putting together a graph, you should be doing it by yourself. Anyone suspected of academic misconduct will be referred to UC Judicial Affairs.

Additional Student Responsibility: Class information and communications will be disseminated online through Blackboard. It is your responsibility to download and read the required readings and print out the lab prior to the beginning of class.

Special Needs Statement: If you have any special needs related to your participation in this course – including identified visual, hearing or physical impairments, a communication disorder, and/or a specific learning disability that may influence your performance in this course – please contact me to arrange for reasonable provisions to ensure an equitable opportunity to meet all course requirements. Some accommodations may require prior approval by Disability Services (513-556-6823).

Schedule:

Date		Location	Topic	Assignment Due
9/21	W	Lab	Introduction, Limnology field gear	
9/28	W	Lab	Heating and cooling of water	
10/1	**S**	**UC/UC Center for Field Studies***	**Stream flow and geomorphology**	
10/5	W	Lab	Light penetration in water	Exercise #1
10/8	**S**	**UC/Doe Run Lake***	**Lake survey, stratification**	Exercise #2
10/12	W	Lab	Water chemistry analysis	Exercise #3
10/19	W	Lab	Intro to River Continuum Concept and Macroinvertebrates	Reading#1: RCC; Field notebook check
10/22	**S**	**UC/UC Center for Field Studies***	**Stream macroinvertebrate survey**	Written Report (Doe Run L.) ***Due 10/24***
10/26	W	Lab	Intro to organism ID using microscopes: algae and zooplankton	Invert drawings due
11/2	W	Lab	Critter quiz	Exercise #4
11/5	**S**	**UC/Thomas More Field Station**	**Electrofishing on Ohio River (optional)**	
11/9	W	UC/MSD Gest St.*	Urban wastewater treatment tour	
11/16	W	UC/Civic Garden Center*	Realtime environmental water monitoring tour	Exercise #5; Field notebook
11/23			THANKSGIVING HOLIDAY	
11/30	W	UC/Cincinnati Zoo*	Controlling urban runoff and energy use, and more, tour	Exercise #6

***NOTE: This syllabus is subject to change, but I will keep you informed of any changes I make. Assignments should have been done by the beginning of class; Items that are due are due at the beginning of class, with -25% per day late.*