

FRESHWATER ECOLOGY
FALL 2007, BIOLOGY 4004
DRAFT

TIME AND PLACE: Lecture -- 8:00-9:15 T,TH; Room 2003 Pamplin
 Lab -- 2:30-5:20 Mon, Wed and 2:00-4:50 Tue, Thur; Room 1065 Derring

INSTRUCTOR: Dr. J.R. Webster, 1000 Derring Hall, 231-8941(jwebster@vt.edu)

LAB ASSISTANTS: Beth Cheever, 1027 Derring Hall, 231-6679 (Tue and Thur labs) (bcheever@vt.edu)
 April Hughes, 1027 Derring Hall, 231-6679 (Mon and Wed labs) (aprile@vt.edu)

TEXTS: The following textbook is required:
 Freshwater Ecology. W.K. Dodds. 2002. Academic Press

LAB MANUAL: Webster, J.R., B. Cheever, and A. Hughes. 2007. Methods for use in Freshwater Ecology. Department of Biology, Va Tech. Available at the bookstore.

EXAMS:

First midterm	25 Sep
Second midterm	8 Nov
Final	10 Dec, 3:25 pm

GRADE:

Midterms	20%
Quizzes and homework	15% (I'll drop your lowest quiz.)
Final Exam	20%
Project	30% (first draft 5%; written report 15%, oral report 10%) (written report – 10% group, 5% individual)
Laboratory	15%
Total	100%

PREREQUISITES: Principles of Ecology, Senior or Graduate Standing

LECTURE SCHEDULE

Topic	Chapters in textbook
Introduction	1
Physics and Chemistry of Lakes and Streams	
Physical Properties of Water, Water Chemistry	2 (skip the heavy stuff)
Origin and Physical Structure of Lakes	6
Light, Heat, and Water Movement in Lakes	3, 6
Physical Structure of Streams	2, 4 (first couple pages), 5
Dissolved Gasses, Carbonates	12 (to page 235)
Freshwater Organisms	
Overview	7
Phytoplankton	8
Zooplankton	9, 19
Macroinvertebrates	9
Fish	9, 19, 21
Lake and Stream Ecosystems	
Nutrients in Lakes	11
Nitrogen and Phosphorus	13
Nutrients in Streams	22 (pages 456-464)
Trophic Dynamics in Lakes and Streams	17
Paleolimnology	

COURSE PROJECT: A major emphasis of the course will be student projects. The projects will be done in groups of 3-4 students working with their lab assistant. All members of each project must be in the same lab section. Topics will be discussed in lab.

OTHER NOTES: We run this class by the Virginia Tech Honor System. However, the instructor will generally be present during exams to answer questions. Your attendance at lecture and labs is expected, and you are expected to be at class on time. Don't miss class and then ask me if you missed anything important. Any student with special needs or circumstances should make arrangements to meet with the instructor during the first week of classes. All handouts, lecture notes, and some homework will be distributed using Blackboard. You'll also be able to use Blackboard to check your grades.

LABORATORY SCHEDULE

DATE (week beginning ...)	TOPIC
27 Aug	Sampling and water chemistry techniques
3 Sep	Mountain Lake field trip
10 Sep	Analysis of Mountain Lake samples
	Project group meetings with lab instructor, discussion of journal article
17 Sep	Duck Pond field trip
	Submit project prospectus
24 Sep	Analysis of Duck Pond samples (alternate field trip date)
	Discuss projects with lab instructor
1 Oct	Stream field trip
8 Oct	No scheduled labs. Each project group must plan meeting with instructor.
15 Oct	Stream field trip
22 Oct	Analysis of stream samples (Back up field trip date)
	Oral report of research project progress
29 Oct	Analysis of stream samples
5 Nov	Field trip oral reports, draft of Introduction and Methods sections due
12 Nov	Project group meetings with lab instructor, draft of complete report (not including discussions) due on Friday, 16 Nov
26 Nov	Lab exams
3 Dec, 7:00 pm	Annual Virginia Tech Freshwater Ecology Symposium
5 Dec	Final project reports due

Each project group will be responsible for preparing an oral report for one or more of the class field trips. These oral reports will be the week of 5 Nov.

When we go on field trips, come to class dressed appropriately.

Our expectations of you in this course:

1. Demonstrate a basic understanding of the physical, chemical, and biological characteristics of lakes and streams
2. Understand and properly use limnological terminology
3. Demonstrate the ability to interpret limnological data
4. Demonstrate the ability to communicate limnological data
5. Know where to find information about freshwater ecosystems
6. Demonstrate a basic understanding of how to design and conduct freshwater research
7. Gain a familiarity with the basic tools of freshwater research
8. Work effectively in a group
9. Demonstrate a professional attitude

How will we help you meet these expectations?

1. Exciting, stimulating, and organized lectures
2. The best textbook available
3. Field trips and laboratory experiences
4. A course project
5. Oral and written reports
6. Homework, quizzes, and exams