

Biology 402 Course Outline

Aquatic Ecology- Fall 2009

Lecture: Tuesday and Thursday, 12:00, 40 FNH

Lab: Tuesday or Thursday, 2:00-6:00, 1220 BioSciences

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Textbooks: These are on reserve in Woodward Library but not required for the course. They are there to supplement the lectures in case you would like additional information or a different perspective

1. *Limnology* by J. Kalf, 2002
2. *Freshwater Ecology* by W. Dodds, 2002
3. *Limnology* by Horne and Goldman, 1994

All lecture presentations are posted at <http://www.zoology.ubc.ca/~shurin/402.html>

Biology 402 (*Aquatic Ecology*) provides an overview of the physical, chemical and biological processes that characterize inland waters (lakes and rivers). This course will introduce some of the dominant biota of lakes, rivers and streams, and how they are related to physical and chemical processes of the systems in which they reside. A series of case studies and contemporary issues will also be presented to highlight the interdisciplinary nature of this science, and its application to environmental problem solving and conservation.

Course Policies- ATTENDANCE AT LABS AND FIELD TRIPS IS MANDATORY! Your mark will be reduced by the proportion of labs that you miss for the assignment resulting from that lab. That is, if there are four lake labs and you miss one, 25% will be deducted from your mark. Assignments turned in late are penalized at 5% per day.

THE FIELD TRIP WILL TAKE PLACE SEPTEMBER 26-27 AT MALCOLM KNAPP RESEARCH FOREST NEAR MAPLE RIDGE.

Transportation, food and accomodation will be provided.

GRADING SCHEME:

	Percent of final grade
EXAMS	
Midterm	20
Final	20
Paper presentation (in lab)	20
Lake lab write-up	30
Stream lab write-up	10

COURSE OUTLINE

TOPIC	READING (chapter, text)	DATE
Introduction, history, relevance	2 (Kalff)	Sept 10
LAKES: PHYSICAL AND CHEMICAL LIMNOLOGY		
Global water cycle, lake origins and morphometry, succession	4-6 (Kalff)	Sept 15
Water movements, flow	12 (Kalff)	17
Lake thermal structure, Reynolds number	10-11 (Kalff)	22
Overview of lake chemistry, ions, oxygen in lakes	13,15 (Kalff)	24
The phosphorus cycle	17 (Kalff)	29
Guest lecture- Patrick Thompson, climate change in lakes	18 (Kalff)	Oct 1
The nitrogen cycle	14 (Kalff)	6
LAKES: BIOLOGICAL LIMNOLOGY		
pH and acid neutralizing capacity, CO ₂ , Fe, Si	22 (Kalff)	Oct 8
Bacteria and viruses	23 (Kalff)	13
Protists and procaryotes	21, 23 (Kalff)	15
Primary producers	18-20 (Dodds)	20
Zooplankton	18-20 (Dodds)	22
MIDTERM		27
Primary and secondary production, trophic structure	24-25 (Kalff)	29
<i>STREAM LAB REPORT DUE</i>		
RIVERS AND STREAMS		
Salmon in Pacific NW streams, Dr. Scott Hinch	8 (Kalff)	Nov 3
Food webs II	paper	5
Physical and chemical processes in streams, RCC	paper	10
HUMAN INTERACTIONS WITH AQUATIC ECOSYSTEMS		
Biology of stream organisms I- Jordan Rosenfeld	paper	12
Biology of stream organisms II	paper	17
Exotic species, Laurentian Great Lakes, Lake Victoria	paper	19
Toxicology- LAKE LAB REPORT DUE	16 (Dodds)	24
Guest Lecture- Dr. Hamish Greig	paper	26
Guest Lecture- Dr. Pavel Kratina	paper	Dec 1
FINAL EXAM		3

Lab Schedule

		Oct 27-29	more water chemistry
Sept 25-26	FIELD TRIP TO MKRF	Nov 3-5	Zooplankton
Sept 29-Oct 1	Lake benthos	Nov 10-12	Phytoplankton
Oct 6-8	FIELD TRIP TO MUSQUEAM CREEK	Nov 17-19	Lake data analysis, stats lab
Oct 13-15	Stream insects	Nov 24-26	Paper presentations
Oct 20-22	N, P, chlorophyll	Dec 1-3	Paper Presentation