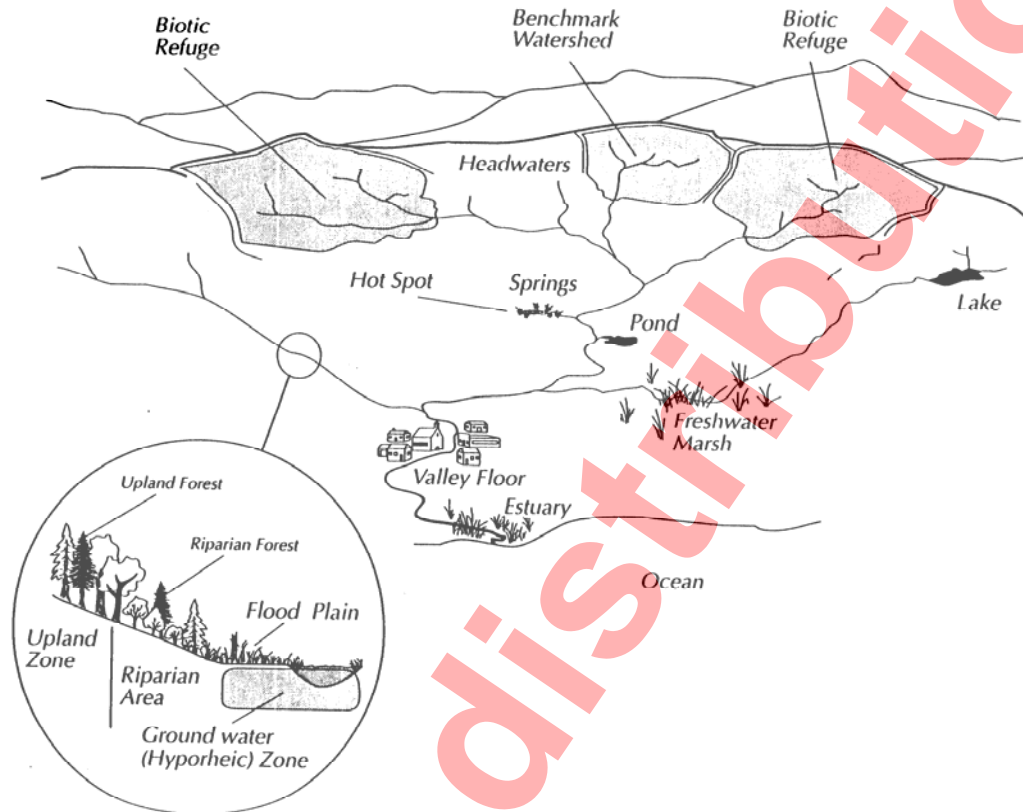


Biology 464: Stream & Watershed Ecology



Instructor: Dr. R. J. Haro

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Email: haro.roge@uwlax.edu

Office hours: Mondays & Wednesdays 2:15 p.m. – 4:15 p.m.

Class time: Monday, Wednesday & Friday from 1:10 p.m. – 2:05 p.m.

Where: Cowley Hall, Room 405

Course Objectives

Educating students about the dynamics of fluvial ecosystems and their watersheds is becoming increasingly important as society grapples with how to manage and conserve our dwindling aquatic resources. This course will provide students with an understanding of how ecological, hydrological, and geomorphologic processes affect the functional and structural characteristics of fluvial ecosystems. The course serves as a logical follow-up to Limnology (BIO 343) and will complement elective courses in both the Aquatic and Environmental Science Concentrations.

This course has particular relevance to the University of Wisconsin – La Crosse because of the school's proximity to North America's largest river system: the Mississippi. The course will use the Mississippi River and the knowledge of regional river scientists to provide students with a "real-world" view of stream/watershed ecology.

Course Materials

1. Textbooks -- obtained from Textbook Rental Service in Cartwright Center.

Required: Allan, J. D. 1995. Stream Ecology – Structure and Function of Running Waters. Chapman & Hall, New York, New York.

Optional: Hauer, F. R. and Lamberti, G. A. 1996. Methods in Stream Ecology. Academic Press, New York, New York.

2. BIO 464/564 - Course Documents. PowerPoint lecture slides, homework exercises and grades will be distributed over the semester through D2L. [See the section below titled Electronic Mail and from the Stream & Watershed Ecology (D2L) Homepage]

3. When possible, I will place primary literature readings on the D2L website for download. These will be pdf files requiring Adobe Reader.

4. I recommend that you set-up your UW-L on-line file storage system and also become acquainted with the Locker feature on D2L. For additional portability and back-up, students may want to purchase some sort of large memory storage media for the course (e.g., a flash stick).

Saturday Field Trip

On Saturday, April 9th we will be conducting a physical/chemical/biological survey on a local stream reach. We will meet in the Cowley Hall lobby at 8:00 a.m. and car pool to go to the survey site. We will work through the morning, take a lunch break (plan to bring a sack lunch), and finish the survey around 2:30 p.m. We will travel back to campus to store and record samples and to stow gear. We will finish between 4:30 – 5:00 p.m. Please make arrangements now with your employer and family to attend this field trip. The quality of your involvement in the field will be factored into the class participation portion of your grade (see the section below on Grading).

Bio 464/564 Homework Assignments*

Assignment #	Title	Point Value	Date Assigned	Due Date
1	Excel Worksheet: Mathematical Functions and Graphs	25	01/26/05	02/02/05
2	A Hortonian Analysis of the Coon Creek Watershed, Wisconsin	50	02/04/05	02/11/05
3	Flow Regime Analysis: hydrological data acquisition, manipulation & analysis	75	02/11/05	02/25/05
4	Whitewater River Nutrient Analysis	75	03/21/05	04/04/05
5	Literature Search & Review: Primary Productivity & Community Metabolism in Running Water Ecosystems	75	04/04/05	04/11/05
6	Estimation of Secondary Production	75	04/11/05	04/18/05
7	Analysis of Macroinvertebrate Survey Data	125	04/18/05	05/02/05
Total Points Possible for Homework		500		

* The sequencing of these assignments should be considered tentative. I reserve the right to alter the sequence and value depending on the progress of the class.

Submission of Homework:

All assignments will be turned-in by 5:00 p.m. on the due date.

Assignments will be electronically deposited into D2L's Dropbox. When the D2L Dropbox can not be used because of the nature of the assignment, for example if you're turning-in a map tracing, the non-electronic portion of the homework should be placed in my faculty mailbox in Room 3010 of Cowley Hall].

Using D2L's Dropbox:

The Dropbox is the submission box available for you with D2L for you to submit assignments. The assignments are electronically sent to me (your instructor) when you place them in the Dropbox. I will then pick up assignments that you have dropped off. Each assignment will have a labeled folder on the Dropbox screen. You will be able to upload the file from a disk into the Dropbox folder.

YOU MUST NAME YOUR FILES AS FOLLOWS TO GET CREDIT: If you're depositing a MS Word document for the first homework assignment and your last name is Smith, your file should be named "smith-HW1.doc. Sometimes you may have to submit a spreadsheet file in addition to a MS Word document. You will use a similar naming procedure for spreadsheets (e.g., smith-HW1.xls).

You will only see the Folder List and a history section showing when and what you have submitted. Note: You will be sent an email confirming their submission to the Dropbox. You can also click the History button to see that your file has been submitted.

Return of Graded Homework Assignments and Exams:

I will do my level best to return your assignments and exams back to you one full week after they have been submitted. However, there are times when things get busy and I will need additional time. Please be patient.

Grading Policies

Design:

There will be three equally weighted examinations administered during the semester. I will present examinations in a combination of short answer questions, calculations, and graphical questions. The third or “final” examination will not be comprehensive and will only cover material presented since the midterm and will be administered during finals week. I will generate examination questions from lectures, your reading assignments (texts and **primary literature**) and from concepts presented in the homework assignments.

I will assign a number of graded-homework assignments during the semester (approximately once every one or two weeks). The majority of these exercises will address quantitative issues in stream ecology. They will require some background in descriptive and inferential statistics and computer software packages (Microsoft Excel spreadsheet and graphics). I encourage you to work together in small groups to undertake the analyses. However, I will expect students to submit individual reports (answers with interpretations and discussions of your results). You will be given a full week for each exercise. Deadlines for these exercises will be firm. You are required to type all exercises in MicroSoft Word and deposit the assignments in their appropriate folders in the D2L Dropbox. I will deduct points for poorly written responses and poorly constructed or designed graphics.

Point distribution:

Graded Item	Max Point Values	Percentage of Grade
HW 1	25	1.92%
HW 2	50	3.85%
HW 3	75	5.77%
HW 4	75	5.77%
HW 5	75	5.77%
HW 6	75	5.77%
HW 7	125	9.62%
Exam 1	250	19.23%
Exam 2	250	19.23%
Exam 3	250	19.23%
Participation*	50	3.85%
Total	1300	100.00%

***Class participation**

Although a small percentage of the grade, I consider a minimum level of participation to be necessary in this UPPER DIVISION class. Class participation includes (1) being in attendance and on time to lecture, (2) keeping up with the reading assignments, (3) asking questions and responding to directed questions, (4) turning in non-graded assignments, and (5) being a team player in the field and in the classroom.

My grading scale is fixed and follows these cut-off percentages:

A \geq 92.0%

87.0% \leq AB \leq 91.9%

80.0% \leq B \leq 86.9%

77.0% \leq BC \leq 79.9%

70.0% \leq C \leq 76.9%

60.0% \leq D \leq 69.9%

59.9% \leq F

I will round to the nearest tenth of a percentage.

Not for distribution

Tentative Lecture and Reading Schedule for Stream and Watershed Ecology: Spring 2005

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature Assignment
1/24/2005	Monday	Course Introduction			Vannote, R. L., G. W. Minshall, K. W. Cummins, J. R. Sedell, and C. E. Cushing. (1980). The river continuum concept. <i>Canadian Journal of Fisheries and Aquatic Sciences</i> 37:130-137.
1/26/2005	Wednesday	Lotic ecosystems as physical entities	Chp. 1		
1/28/2005	Friday	Geomorphologic View of a River		Chp. 3	
1/31/2005	Monday	Horton's Drainage Basin Laws		Chp. 2	Poff, N. L., J. David Allan, Mark B. Bain, Jame R. Karr, Karen L. Presteggaard, Brian D. Richter, Richard E. Sparks, and Julie C. Stromberg. (1997). The Natural Flow Regime. <i>BioScience</i> 47:769-784. 97.
2/2/2005	Wednesday	Hydraulic Geometry	Sec. 11.2.2		
2/4/2005	Friday	Flow Regimes			

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
2/7/2005	Monday	The Channel Bed			Frissell, C.A., Liss, W.J., Warren, C.E., & Hurley, M.D. (1986) A hierarchical framework for stream habitat classification: viewing streams in a watershed context. Environmental Management 10:199-214.
2/9/2005	Wednesday	Boundary Layer Conditions (Microhabitat Scale)			
2/11/2005	Friday	Stream Power		p. 75 - 84	
2/14/2005	Monday	Sediment Dynamics in lotic ecosystems		p. 123-127	
2/16/2005	Wednesday	Sources of Sediment			
2/18/2005	Friday	Channel Forms, Patterns and Adjustments with Sediment Load			
2/21/2005	Monday	Exam 1			

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
2/23/2005	Wednesday	Temperature in lotic ecosystems	Sec. 3.3.0		
2/25/2005	Friday	Oxygen in lotic ecosystems	Sec. 2.1.0		
2/28/2005	Monday	Biological Oxygen Demand (BOD)			Mulholland, P. J. et. al. (2001). Inter-biome comparison of factors controlling stream metabolism. <i>Freshwater Biology</i> 46:1503-1517.
3/2/2005	Wednesday	Dissolved Load: Associated Products of the Hydrological Cycle	Sec. 2.2.0;2.2.3;2.3.0		
3/4/2005	Friday	The Inorganic Carbon Complex in lotic ecosystems			
3/7/2005	Monday	pH Dynamics and the impact of acid precipitation on lotic ecosystems			
3/9/2005	Wednesday	Nitrogen Dynamics with Eric Strauss	Chp. 13		

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
3/11/2005	Friday	Phosphorus Dynamics	Chp. 13		
3/14/2005	SPRING BREAK	03/12/05 - 3/20/05			
3/21/2005	Monday	Nutrient Spiraling Vs Nutrient Cycling			
3/23/2005	Wednesday	Total Maximum Daily Loads (TMDLs)			
3/25/2005	Friday	Exam 2			
3/28/2005	Monday	The Ecology Benthic and Pelagic Algae in lotic ecosystems	Sec. 4.1 & 4.3	p. 269-278	Mallin, M. A. (2000). Impacts of Industrial Animal Production on Rivers and Estuaries. American Scientist 88:26-37.
3/30/2005	Wednesday	Ecological impacts of eutrophication on lotic ecosystems	Sec. 14.3		

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
4/1/2005	Friday	(MRRC - No Class)	Sec. 4.2 & 4.4		
4/4/2005	Monday	Lotic Macrophytes	Chp. 5; Sec. 6.0 & 6.1	p. 217-218	Rogers, S. and Theiling, C. (1998). Submersed aquatic vegetation. Ecological Status and Trends of the Upper Mississippi River System. A report of the Long Term Resource Monitoring Program, USGS.
4/6/2005	Wednesday	Heterotrophic Pathways in Lotic Ecosystems (CPOM)			
04/08/05 ⁽²⁾	Friday	FPOM & DOM			
4/11/2005	Monday	Macroinvertebrate Feeding Guilds in Lotic Ecosystems	Chp. 8	p. 409-412	
4/13/2005	Wednesday	Herbivory in streams			
4/15/2005	Friday	Foraging behavior among lotic grazers	Chp. 9		

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
4/18/2005	Monday	Macroinvertebrate Shredders, Gougers, and Filter Feeders	Chp. 7	p. 371-379	
4/20/2005	Wednesday	Macroinvertebrate Predators & Parasites	Sec. 6.3 & 6.4	511-519	
4/22/2005	Friday	Ecology of Lotic Fish			Woodward, G. & Hildrew, A.G. (2002) Food Web Structure in Riverine Landscapes. <i>Freshwater Biology</i> 47, 777-798
4/25/2005	Monday	Trophic cascades in lotic ecosystems			
4/27/2005	Wednesday	Stream Drift	Chp. 10	p. 431-437	
4/29/2005	Friday	Muller's Colonization Cycle			Allan, J.D., A. S. Flecker, & G. R. Smith. (1995). Biodiversity conservation in running water. <i>BioScience</i> 1-26
5/2/2005	Monday	Applied Issues in Stream and Watershed Ecology - Evaluating the Anthropogenic Degradation of Lotic Ecosystems	Chp. 11; Chp. 14	Chp. 31	

Date	Day	Topic	Allan	Hauer & Lamberti	Primary Literature
5/4/2005	Wednesday	Biotic Indices			
5/6/2005	Friday	Conservation Issues Facing Lotic Ecosystems			
5/12/2005	Thursday	Exam 3 , Final Exam Period (7:45 a.m. – 9:45 a.m.)			

⁽¹⁾ Additional readings from the primary literature will be assigned.

⁽²⁾ Saturday Field Trip Scheduled for April 9, 2004

INFORMATION ABOUT Desire2Learn (D2L)

You can reach our course by logging into D2L (Desire2Learn) at <http://uwlax.courses.wisconsin.edu/> or by going to the UW-L homepage, Faculty & Staff, and the D2L link under the Technology heading. There is a similar link on the Current Students page.

Login Username: Your username is the same as the first part of your UW-L email address (for example, haro.roge is my D2L username, since my UW-L email address is haro.roge@uwlax.edu).

Passwords: D2L passwords depend on if a D2L user has changed his or her default password. If a user has never used D2L at UW-L before, his or her password SHOULD be:

last 4 digits of ID number + 2-digit month of birth + 2-digit day of birth

(nnnnmdd)

Getting Help with D2L Logins: You have a variety of ways to get help logging onto D2L for the first time this semester if you don't remember their password OR if they just can't seem to get their password to work.

1. On the D2L login screen, click the "Forgot password?" link. The user will receive email at his or her UW-L email address (the default email address imported for new user accounts). If students have already changed their email address within D2L, that is the address the login email will be sent to. The email that students receive will specify their D2L username, their password, and a link to the D2L login page.
2. Stop by the ITS Support Center, 103 Wing Technology Center, and ask a consultant there to send them or help them change the password. Students can also call the help desk at 608.785.8774 for assistance during normal operating hours (usually 8 am-5 pm; during Fall and Spring hours, there are some evening hours as well).
3. Evenings after the ITS Support Center is closed, and on weekends, students may Call the toll-free number for the Learn@UW help desk (the UW System Utility located at Madison's DoIT) to ask for help with their password. That number is not known at this time, but will be a toll-free number. We will publicize this in some manner once we get the number from Learn@UW. When students call, they should identify their campus and either that they are using "D2L" or that they are a "Learn@UW participant".

FYI: Remember that if you change your D2L password, this does not affect your password on ANY other system you are using. Their UW-L email and Blackboard

accounts are separate and will only have the same password if they reset those separately.

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