

## AQUATIC ECOLOGY (303-47900)

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**Text** Dodds, Walter K. 2002. Freshwater Ecology: Concepts and Environmental Applications. Academic Press. ISBN 0-12-21-9135

### **Course description**

This course explores the biological, chemical and physical features of lakes and streams, and relates them to general ecological concepts and environmental concerns. The course focuses on the physiological adaptations of species to the aquatic environment, and invertebrate and fish community structure. Both theoretical approaches and practical techniques are incorporated.

### **Attendance policy**

Class attendance is expected. If you miss class, you are still responsible for any assignments announced and for all material presented during class. Although some of the lecture material is available in the textbook and/or through a course web page, it will be very difficult to get a grade better than a C in the course without attending class consistently.

### **Plagiarism**

Please be aware of plagiarism: if you take a sentence from someone else's work and only change one or a couple of words, it is still plagiarism even if you cite the source. You **must** rewrite it in your own words. Plagiarism is a serious offense of academic misconduct: check the student handbook for details, but it can lead to judicial proceedings and even expulsion from the college. **Each** idea has to be referenced (and in the sentence where the idea appears), you **cannot** simply cite the reference once at the end of a paragraph containing many ideas from the same source. In such cases, you can avoid referencing each idea yet still indicate your source through careful writing,

e.g.:

“Roberts and Janovy (1985) were the first to study this phenomenon. They found that ..., further, when the ... . Roberts and Janovy go on to state that ... and their conclusion was... .”

Or,

“Roberts and Janovy (1985) were the first to study this phenomenon. In the following paragraph, I will review their work. ....”

**Accommodation policy**

We will make reasonable accommodations for any students with disabilities. The student must inform us of their need for accommodation, and be registered with the Office of Academic Support Services for Students with Disabilities. If tests or exams are to be written under supervision of Academic Support Services, appointments have to be made with their office at least 1 week prior to the test, and we also need to be notified at that time.

**Laboratory exercises**

The laboratory portion of this course will take place both in the lab and in the field. We will be conducting labs in nearby streams as early as February. You should be prepared for staying outside for 2-3 hours and dress accordingly.

**Grading**

Insect identification (lab quiz)	10%
Midterm exam	15%
Poster presentation	10%
Lab write-ups	45% (3labs; 15%, 10% and 20% each)
Final exam	20%

Both the midterm and final exam include a written component (ca. 75%) and an oral component (ca. 25%). The written component will involve essay answers; this could be wholly or partly in "take-home" format or as questions given ahead of time and answered in the classroom. The oral component is conducted as a discussion, involving two students at a time and both instructors.

**LABORATORY SCHEDULE**

**DISCLAIMER:** *This is our best prediction for the order of exercises. Because a number of the laboratory sessions are conducted outdoors in streams, we may have to adjust our plans to accommodate for adverse weather conditions and/or high water levels.*

**Labs:**

Week 1	Real Time and Historical Data	S. Allen-Gil
Week 2	Introduction to Aquatic Invertebrates	B. Smith
Week 3	Lake simulation/Chapel Pond 1	B. Smith / S. Allen-Gil
Week 4	Chapel Pond 2 (GPS) / Insect ID test	S. Allen-Gil / B. Smith
Week 5	Stream Experiment	S. Allen-Gil / B. Smith
Week 6-9	River Continuum	B. Smith
Week 10 - 11	Chapel Pond 3 & 4	S. Allen-Gil
Week 12 - 13	Temporary and Perennial Pools	B. Smith
Week 14	Chapel Pond 5	S. Allen-Gil

**Lab write-ups: you must submit a lab report for the following lab exercises**

(1)	River Continuum	B. Smith (15%)
(2)	Temporary and Perennial Pools	B. Smith (10%)
(3)	Chapel Pond Study	S. Allen-Gil (20%)

**LECTURE SCHEDULE**

**Disclaimer:** This schedule reflects our best forecast at this time of the pace at which we will cover material, and the subject of critical thinking assignments and discussion groups. **IT IS NOT A FIXED SCHEDULE.** Deviations from this schedule will be announced in class.

<b>Week</b>	<b>Topic</b>	<b>Professor</b>
Jan. 17	Stream water chemistry (Chaps. 1 & 2) Physical factors (Chaps. 3 & 5)	S. Allen-Gil S. Allen-Gil
Jan. 24	Introduction to aquatic invertebrates (Chap. 7) Introduction to aquatic invertebrates (Chap. 9)	B. Smith B. Smith
Jan. 31	Nutrient dynamics - N and P (Chaps. 11, 13, 16, 17) Nutrient dynamics - N and P (Chaps. 11, 13, 16, 17)	S. Allen-Gil S. Allen-Gil
Feb. 7	Autotrophs (Chap. 8) Heterotrophic and Organic Carbon (Chap. 12)	S. Allen-Gil B. Smith
Feb. 14	Heterotrophic and Organic Carbon (Chap. 12) Herbivory (Chap. 19)	B. Smith B. Smith
Feb. 21	Trophic Relationships (Chaps. 18 & 19) Predation (Chap. 19)	B. Smith B. Smith
Feb. 28	<b>Midterm Exam (Tues. in class, + oral)</b> Competitive Interactions (Chap. 20)	B. Smith & S. Allen-Gil B. Smith
March 7	<b>SPRING BREAK</b>	
March 14	Community Structure (Chap. 20) Introduced and Invasive Species (Chap. 10)	B. Smith S. Allen-Gil
March 21	Threatened and Endangered Species (Chap. 10) Drift / Migration / Dispersal	S. Allen-Gil B. Smith
March 28	<b>POSTER SESSION</b> Fish Migration	<b>Students!!</b> S. Allen-Gil
April 4	<b>TBA</b> Weird waters - unique systems (Chap. 15)	TBA B. Smith
April 11	Weird waters - unique systems (Chap. 15) Modification of running waters	B. Smith S. Allen-Gil
April 18	Impact of Pollutants (Chap. 14) Issues in Fisheries (Chap. 21)	S. Allen-Gil S. Allen-Gil
April 25	Issues in Fisheries (Chap. 21) Wrap-up	S. Allen-Gil B. Smith & S. Allen-Gil
<b>May 6</b>	<b>(FRIDAY) at 1:30 PM FINAL EXAM</b>	