

**Syllabus:**  
**Biology 404 - Aquatic Ecology - Fall 2015**

Lecture: Monday & Friday 11AM – 11:50AM

Laboratory: Wednesday 8AM – 11:50AM

**INSTRUCTOR:**

Dr. Mandy Banet

Office: Holt Hall 250

Email: abanet@csuchico.edu

Office Hours: Monday 1-3pm & by appointment

**ABOUT THIS COURSE:**

Aquatic ecology is a fascinating, but often challenging field of study, as the processes and organisms are not always readily observable. Freshwater habitats form an integral part of the cycle of life on our planet. In this course you will learn about the physical, chemical and biological processes that create, shape and transform freshwater habitats. You will learn how to study these systems, as well as learn to identify major groups of aquatic invertebrates within the systems. **A background in ecology is very helpful for this course. If you have not had an introductory ecology course, see me after the first class.**

**LEARNING GOALS FOR THE COURSE:**

By the end of this course, students should be able to...

1. Identify aquatic environments based on their physical, chemical, and biological characteristics.
2. Describe the life history and ecology of many of the aquatic insects, plants, fish, and other aquatic organisms found in California.
3. Predict how changes in biotic and abiotic factors will influence freshwater habitats.
4. Use a dichotomous key to identify aquatic insects to the family level.
5. Proficiently use field techniques to collect aquatic insects.

**GRADE DISTRIBUTION:**

Midterm 1 .....	100 pts
Midterm 2 .....	100 pts
Final Exam (Cumulative) .....	200 pts
Insect Collection.....	100 pts
Bioassessment Lab .....	..50 pts
Quizzes/In-class Activities .....	150 pts
<b>Total .....</b>	<b>700 pts</b>

*Grading is based on the percentage of points earned, according to the following scale:*

A .....	>93%
A-.....	90-92%
B+ .....	88-89%
B .....	83-87%
B-.....	80-82%
C+ .....	78-79%
C .....	73-77%
C-.....	70-72%
D+.....	68-69%
D.....	60-67%
F.....	<60%

**TEXTBOOK AND LAB EQUIPMENT:**

**Mandatory Lab & Field Tools:** 2 Swiss Style Forceps, 1 Featherweight Forceps, and vials/lids/ethanol for your bug collection. Detail on how to obtain these will be provided on the first day of class.

**Textbook**

Lectures in this course are supported by the following textbook:

- Dodson, S. 2005. Introduction to Limnology, McGraw Hill Companies Inc. New York. (ISBN 0-07-287935-1)

Exams will be based off of the material presented in lecture. I will place a copy of the book on reserve in the library for you to access, and you are also welcome to come by and read my copy during office hours or by appointment.

**Other Required Readings**

Several times in the term, you will be asked to do readings that are not in the textbook. These readings are noted in the lecture schedule and will be posted on Blackboard. You are required to read them *before* the related lecture. **This may be checked with a simple quiz at the beginning of the class period.**

**DETAILS ABOUT COURSE ACTIVITIES:**

**Exams, Quizzes, & In-Class Activities**

You will have two midterms and a final exam. The final is cumulative, but it will have more questions from material that was not tested on the earlier midterms. You will also have several quizzes and/or in-class activities throughout the term. These may or may not be announced and can happen in either the lecture or laboratory sections. Both exams and quizzes will be a mix of question types, including multiple choice, matching, short answer, and short essay.

### **Laboratory Section**

The lab focuses on aquatic insects, and for most labs we will either be outside on field trips (rain/shine, hot/cold we go!) learning how to collect Aquatic Insects, or we will be in the lab learning to identify aquatic insects and working on your collections. More detailed information on is available on the Lab Syllabus.

- **Aquatic Insect Collection:** You are required to make an aquatic insect collection of 50 families from aquatic insects in this area. You will have to ID and label each in a small sample vial with alcohol. Collecting aquatic insects outside of lab field trips is supported and our limited number of kick nets will be available to check out.
- **Stream Bioassessment Lab:** This activity will be graded based on participation. The class will be divided into field crews and CDFW field data sheets will be completed.

### **AMERICANS WITH DISABILITIES ACT**

If you need course adaptations or accommodations because of a disability or chronic illness, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Please also contact Disability Support Services (DSS) as they are the designated department responsible for approving and coordinating reasonable accommodations and services for students with disabilities. DSS will help you understand your rights and responsibilities under the Americans with Disabilities Act and provide you further assistance with requesting and arranging accommodations.

### **ACADEMIC INTEGRITY**

You are expected to be familiar with and to comply with CSUC's policy on academic integrity. It is available to review at: <http://www.csuchico.edu/prs/EMs/2004/04-036.shtml>

### **ADD/DROP POLICY**

Students may drop this course during the first two weeks of the semester without restriction or instructor approval. Students may add if room is available through the instructor only. During the 3rd and 4th weeks of classes, Change of Program (COP) forms are needed to add/drop, and require the instructor's signature. After the 4th week of classes, all COP forms to add/drop require a serious and compelling reason (see University Catalog) and require approval signatures from the instructor, department chair, and dean of the college. Do not assume you will be automatically dropped for not attending class; however, failure to attend the first two days may lead to being dropped. It is your responsibility to make a commitment to dropping or staying in class by the second week. If you do not follow the appropriate drop procedure, you risk getting a failing grade for the class.

**LECTURE SCHEDULE:**

Week	Day	Date	Topic	Readings
1	M	24-Aug	Introduction: Aquatic Ecology & Course Overview	
	F	28-Aug	Introduction: Structure of Aquatic Ecosystems	Ch 11
<b>Unit 1: Aquatic Organisms</b>				
2	M	31-Aug	Phytoplankton & Zooplankton	Ch 3
	F	4-Sep	Aquatic Insects	Ch 4
3	M	7-Sep	<b>Labor Day – No Classes</b>	
	F	11-Sep	Freshwater Fish	Ch 5
4	M	14-Sep	Other Vertebrates, Molluscs, & Plants	Ch 5
	F	18-Sep	Aquatic Insect Life History	Resh & Rosenberg*
5	M	21-Sep	Guest Lecture: California Bioassessment	
	F	25-Sep	<b>Midterm 1: Covers Introduction &amp; Unit 1</b>	
<b>Unit 2: Abiotic Factors</b>				
6	M	28-Sep	Running Waters, Nutrients & Energy	Allan*
	F	2-Oct	River Continuum & Flood Pulse	Allan*
7	M	5-Oct	Ground Water & Aquifers	Pielou*
	F	9-Oct	Properties of Water	Ch 2
8	M	12-Oct	Characteristics & Origins of Lake Basins	Ch 11
	F	16-Oct	Thermal Stratification & Heat Budgets	Ch 2
9	M	19-Oct	Carbon & Oxygen	Ch 10
	F	23-Oct	Nitrogen & Phosphorous	Ch 10
10	M	26-Oct	<b>Midterm 2: Covers Unit 2</b>	
<b>Unit 3: Interactions between and among Organisms &amp; Abiotic Factors</b>				
10	F	30-Oct	Plankton Cycles in Lakes	Ch 8
11	M	2-Nov	Community Patterns in Lakes & Streams	Ch 7
	F	6-Nov	Movement Patterns in Streams	Ch 7
12	M	9-Nov	Predation & Herbivory	Ch 6, 7, 8
	F	13-Nov	Competition	Ch 7
13	M	16-Nov	Adaptations to Life in Water	Not in text
	F	20-Nov	Community Assembly & Disturbance	Ch 8
<b>Thanksgiving Week, No Classes</b>				
14	M	30-Nov	Conservation of Streams and Lakes	Not in text
	F	4-Dec	Flow Alterations in California	Not in text
15	M	7-Dec	Course Wrap-Up, part I	
	F	11-Dec	Course Wrap-Up, part II	
	TBA	TBA	<b>Final Exam: Cumulative, with emphasis on Unit 3</b>	

\* **Required Readings:** These will be posted on Blackboard and should be completed before the related lecture.

**LAB SCHEDULE (DRAFT – DATES AND LOCATIONS MAY CHANGE):**

<b>Week</b>	<b>Day</b>	<b>Date</b>	<b>Activity</b>
1	W	26-Aug	Introduction, Safety, & Collecting Techniques
2	W	2-Sep	Field Trip 1: Butte Creek @ Cherry Hill Campground
3	W	9-Sep	Lab Day: Insect Identification
4	W	16-Sep	Field Trip 2: Big Chico Creek @ HWY 32
5	W	23-Sep	Bioassessment Methods – Big Chico Creek @ CSUC
6	W	30-Sep	Lab Day: Insect Identification
7	W	7-Oct	Field Trip 3: Deer Creek @ Alder Campground
8	W	14-Oct	Lab Day: Insect Identification
9	W	21-Oct	Field Trip 4: Feather River Hatchery
10	W	28-Oct	Field Trip 5: Butte Creek @ Willow Creek
11	W	4-Nov	Lab Day: Insect Identification
12	W	11-Nov	<b>No Classes – Veterans Day</b>
13	W	18-Nov	Field Trip 6: Teichert Ponds @ Kohl's Parking Lot, Chico
14	W	2-Dec	Lab Day: Insect Identification
15	W	9-Dec	Lab Day: Collections due at end of lab