

**ECOSYSTEM ECOLOGY** (Bio 386/586)

Lecture 1:50-2:50 Mon., Wed. (HS 457) Lab 3:00-5:00 Mon (HS 201)

Instructor: Dr. Bob Stelzer

**Contact Information**

<u>Office Hours</u>	<u>Location</u>	<u>Phone</u>	<u>E-mail</u>
Mon. 10:30-11:30	Halsey 150	424-0845	stelzer@uwosh.edu
Wed. 11:30-12:30			
and by appointment			

**Textbooks/Readings**

*Principles of Terrestrial Ecosystem Ecology*, 2<sup>nd</sup> edition. 2011. F. Stuart Chapin, Pamela A. Matson, and Peter M. Vitousek.

Various papers for discussion or background reading on D2L (see syllabus)

Lab descriptions on D2L (see syllabus)

**Overview and Goals of Course**

Ecosystem Ecology focuses on how aquatic and terrestrial ecosystems operate with emphasis on the flow of energy and matter and the factors that regulate these processes. Because ecosystems cannot be understood without some knowledge of other fields such as chemistry and hydrology, we will borrow from these disciplines when appropriate. Understanding the roles of species and communities in ecosystem dynamics is important so we will also draw on other areas of ecology. Considerable time will be spent investigating the methods scientists use to study ecosystems. The labs will introduce you to some of these methods. The goals of the course are: 1) to develop an introductory-level understanding of ecosystems and ecosystem processes, 2) to learn a variety of approaches and methods used in the study of ecosystems, 3) to be able to apply knowledge about ecosystems and the factors regulating them to new situations, and 4) to further your training as scientists.

**Evaluation**

You will be evaluated based on 2 lecture exams, 2 lab reports, the quantity and quality of your discussion and overall participation during lecture and lab activities, and problem sets. The breakdown is as follows:

Activity	Percentage of Grade
Lecture exam 1	25%
Lecture exam 2	25%
Metabolism lab report (long)	15%
Phosphorus lab report (short)	10%
Class Discussions and Participation	15%
Problem Sets	10%

### Lecture and Lab Schedule

Week	Readings	Lecture	Lab
30 Jan-3 Feb	Chp. 1 PTEE	Introduction; Historical development of ecosystem concepts	
6-10 Feb	Chp. 6 PTEE  Chp. 5 PTEE (optional)	Primary production in terrestrial and aquatic ecosystems; Introduction to metabolism in streams	Lecture cont'd
13-17 Feb	<i>Rubbo et al. 2006</i>	Discuss <i>Rubbo et al.</i> paper	<i>Metabolism Lab-- Stream Biofilms*</i> (Halsey Greenhouse)
20-24 Feb	Chp. 10 PTEE	Secondary production; Trophic-level interactions	<i>Metabolism Lab:</i> processing; Lab report guidelines; <b>Metabolism Problem Set due</b>
27 Feb-2 March	Chp.7 PTEE	Decomposition; Nutrient cycling in ecosystems: theory	discussion of <i>Metabolism Lab</i> results; Introduction to <i>Nutrient Limitation Lab</i>
5-9 March	Chp. 9 PTEE	Nutrient cycling in ecosystems: theory (cont'd); <b>Mass Balance Problem Set due (March 7)</b>	<b>Metabolism Long Lab Report due;</b> Begin <i>Nutrient Limitation Lab*</i> and <i>Phosphorus Lab</i> (field)
12-16 March		<b>Exam 1 (March 12);</b> Nutrient cycling in ecosystems: measurement	
19-23 March		Spring Break *****	Spring Break *****
26-30 March	<i>Lewis et al. 2011;</i> <i>Conley et al. 2009</i>	Eutrophication of freshwater and marine ecosystems; Discuss papers	<i>Phosphorus Lab:</i> Preparation of standards (ERIC)
2-6 April		Ecosystem Experiments	<i>Phosphorus Lab:</i> P analysis* (ERIC); <b>Nutrient Limitation Problem Set due</b>
9-13 April		Discuss results from <i>Phosphorus Lab</i>	<i>Nutrient Limitation Lab:</i> substrate retrieval* (field)
16-20 April	Chp.14 PTEE	Global climate change: pattern and process	<b>Phosphorus Short Lab Report Due;</b> <i>Nutrient Limitation Lab:</i> Chlorophyll <i>a</i> analysis* (ERIC)
23-27 April		Discuss results from <i>Nutrient Limitation Lab</i> ; Use of stable isotopes in ecology	Discuss results from <i>Nutrient Limitation Lab</i>

Week	Readings	Lecture	Lab
30 April- 4 May	Paper TBA; Chp.12 PTEE	Discuss paper about stable isotopes TBA; Temporal dynamics of ecosystems	<i>Field Trip to Terrell's Island Wetland</i> ; <b>Nutrient limitation final data due</b>
7-11 May		<b>Exam II (May 7)</b>	

An asterisk in the schedule indicates 3 hr lab (regular lab slot on Monday + lecture slot)

Final grades will be based on the following grading scale:

A	91-100
A-	89-90
B+	87-88
B	80-86
B-	78-79
C+	76-77
C	70-75
C-	68-69
D+	66-67
D	60-65
D-	58-59
F	< 58

Exams must be taken and assignments must be turned in at the beginning of the class period on the due dates indicated in the Lecture and Lab Schedule. Make-up exams or extensions of due dates will only be given if there is a valid, documented excuse (e.g. illness, family emergency). You will need to contact me within 24 hrs of the missed activity if you have an excused absence so that you can arrange to make up a missed assignment without penalty. If assignments are turned in late for an unexcused reason (e.g. oversleeping; needing more time to complete the assignment because of busyness; auditions for American Idol) 15% will be deducted from the earned points for every day an assignment is late. After the second late assignment, no further late assignments will be accepted (therefore you will get 0 points for those assignments). Make-up exams must be taken within one week of the missed exam. Make-up exams will not be identical to regular exams.

For the Long lab reports you should use the traditional format for scientific reports (Abstract, Introduction, Methods, Results, Discussion, and Literature Cited). I will post "Guidelines for Full Lab Reports" on D2L. The short lab report will entail answering a series of questions. All lab reports must be turned in as hard copies. E-mailed lab reports will not be accepted.

**Students with Disabilities:** Students who have physical or learning disabilities who wish to request academic adjustments should notify Disabilities Services so that appropriate accommodations can be made. For more information call or visit Disabilities Services (424-3100, Dempsey 125A) or see me.

**Academic Integrity:** If you decide to cheat on an exam or to engage in other forms of academic dishonesty you will be subject to the Student Academic Disciplinary Procedures as outlined in the Student Disciplinary Code-[www.uwosh.edu/stuaff/images/student-discipline-code](http://www.uwosh.edu/stuaff/images/student-discipline-code). Plagiarism has serious consequences. Examples of plagiarism are 1) “lifting” whole sentences/paragraphs from a source and including this material in your paper or lab report in an unaltered or slightly altered form, 2) copying the work of another student and including it in your lab report [it is fine to discuss lab results with other students in class, but the lab reports must be written independently] and 3) paraphrasing from a source without citing that source

**Cell Phones:** Cell phones or similar devices must be turned off at all times during all class activities including field trips. If you need to have a cell phone on for some reason (e.g. to receive an emergency message during a field trip) I ask that you let me know ahead of time and engage the vibrate setting.

**For Graduate Students (enrolled in Bio 586):** In addition to all the other assignments and activities described in the syllabus, you are required to write a research paper based on summarizing papers from the literature on a topic in the field of ecosystem ecology or based on compiling data from the literature to address a research question. The paper will account for 10% of your grade. The first and second exam will each account for 20% your grade (the percentages for the other categories are unchanged). Please discuss your proposed topic with me early in the semester.