

ECOLOGY LABORATORY

(Bio 371L) - Fall 2004

Time/Location:

Thursday from 2:30 pm – 5:30 pm, Loyola 021

Instructor:

Dr. Robert Smith
Assistant Professor of Biology
Loyola 208
Phone: 941-6581
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Office Hours:

Tuesday and Thursday 10:00 – 11:00 am. Additional appointment times are available upon request.

Course description:

Ecologists use the scientific method to study the interactions between organisms and their environment. We seek an explanation of the distribution and abundance of organisms by understanding how they interact with the abiotic and biotic components of their environment. This course consists of various exercises and ecological techniques designed to reinforce ecological principles, to demonstrate use of the scientific method in the study of ecology, and to provide students with an introduction to field procedures commonly used by ecologists.

Materials:

Lab manual: Brower, Zar and von Ende 1998. Field and Laboratory Methods for General Ecology, 4th Edition. WCB/McGraw-Hill, ISBN 0-697-24358-3.

Highly recommended: Pechenik, J.A. 2004. A Short Guide to Writing About Biology, 5th Edition. Pearson Longman, ISBN 0-321-15981-0. A previous edition of this work is sufficient.

Attendance:

Mandatory!! If you are sick or have an emergency let me know as far in advance as possible. I will need a written statement justifying your absence.

Student Learning Objectives:

Upon completion of this course, students will/will be able to:

1. Observe natural phenomena and ask appropriate ecological questions based on those observations.
2. Use field guides and dichotomous keys to identify plants and animals.
3. Identify many of the commonly occurring plants and animals in northeastern Pennsylvania.
4. Collect, record and analyze ecological data using various techniques and instrumentation.
5. Present ecological data in the form of a scientific paper.
6. Understand how to apply the scientific method in seeking answers to ecological questions.

Evaluation Methods:

Student outcome will be assessed via two thirty minute quizzes designed to test your knowledge of readings, field trips, data collection methods and analysis techniques. **Quiz 1** (14 Oct) covers everything up to that date, including readings for October 14th. **Quiz #2** (9 December) covers everything from 14 October on.

One **Homework** assignment due by 5 pm on 10 September (Hypothesis Testing/Statistics).

Two **Data Analysis** (DA) reports due by 5 pm on 8 October (Lake Ecology I) and 3 December (Stream Ecology).

Three **Data Analysis and Interpretation (DAI)** assignments due by 5 pm on 24 September (Insect Population Ecology), 22 October (Forest Community Ecology), and 12 November (Amphibian Ecology). Format and expectations will be discussed in class.

One **Formal Lab Report (Lake Ecology)**, written in the form of a scientific paper, will be due by 5 pm on 13 December.

Formal Lab Report:

This is to be a formal report written as a scientific paper. Part of your grade will depend upon your formatting the document properly. This includes proper use of literature citations, graphs and tables, etc. I **strongly** recommend you refer to Pechenik (2004) as you put your report together.

Further expectations for the paper are provided on Blackboard.

Grading:

Course grades will be determined by performance on the following assignments:

Quizzes (2)	25 pts. each
Homework (1)	20 pts.
DA Reports (2)	20 pts. each
DAI Reports (3)	40 pts. each
Formal Lab Report (1)	60 pts.
Lab participation and conduct	<u>30 pts.</u>
TOTAL	320 pts.

Grades will be determined by dividing the total points earned by the total points possible and multiplying by 100. Grade assignments are below:

<u>Percentage</u>	<u>Grade earned</u>	<u>Percentage</u>	<u>Grade earned</u>
94 – 100	A	73 – 76	C
90 – 93	A-	70 – 72	C-
87 – 89	B+	66 – 69	D+
83 – 86	B	60 – 65	D
80 – 82	B-	< 60	F
77 – 79	C+		

I have no tolerance for cheating. Students are expected to know and follow the University of Scranton policies concerning academic honesty.

Important Dates:

10 September	- Homework due
24 September	- Insect DAI due
8 October	- Lake Ecology I DA due
14 October	- Quiz #1
22 October	- Forest Ecology DAI due
12 November	- Amphibian DAI due
3 December	- Stream Ecology DA due
9 December	- Quiz #2
13 December	- Formal Lake Ecology Lab Report Due

Tentative Schedule¹

Date	Topic	Readings (pp. in lab manual) ²
2 Sept**	Insect Population Ecology I Habitat data collection - climate	pp. 124-125; Handout pp. 27-28, 40-44
9 Sept**	Insect Population Ecology II Habitat data collection – climate	Handout
16 Sept	Analysis of population and habitat studies Methods, data analysis, reporting Preparation for aquatic ecology	pp. 87-88, 124-126 pp. 1-11, 22-25, 29-30 pp. 54-60, 63-76, 115-122
23 Sept**	Aquatic ecology – Lake Lacawac I	Handout
30 Sept	Lake Lacawac I analysis Prepare for forest community ecology	pp. 121-122 pp. 36, 90-94, 103-108
7 Oct**	Forest community ecology	Handout
14 Oct	Quiz #1 ; Forest analysis Prepare for amphibian and stream ecology	pp. 172-174 pp. 56-60, 115-122, 132-135
21 Oct**	Amphibian ecology	Handout
28 Oct**	Stream ecology	pp. 56-60, Handout
4 Nov	Analysis – amphibian and stream ecology	Handout pp. 56-60, 121-122, 132-135
11 Nov**	Aquatic ecology – Lake Lacawac II	Handout
18 Nov	Lake Lacawac II analysis	Handout pp. 121-122
2 Dec	Community ecology	pp. 37-38, 177-192
9 Dec	Quiz 2 and Wrap-up	

¹Any scheduling changes will be announced at least one week in advance.

²Additional readings may be assigned

** Field trips. We may go even if it is raining. Always be prepared for weather – this includes appropriate outdoor wear (sturdy walking shoes, long pants, hat, rain gear and/or cold weather gear). Be aware that some of our trips are to the Pocono Plateau where weather may be cooler or wetter than here in Scranton. Because field trip dates may change due to weather or other factors, you should be prepared to go in the field on any Thursday.