Ecology Laboratory

A. H. Bledsoe

University of Pittsburgh BioSc 0390
Summer 2007 (2077)

COURSE INFORMATION

INSTRUCTOR -- Dr. Anthony H. Bledsoe.

SESSIONS -- Mondays through Fridays, 1:15 - 4:15 PM. Meet at the Housing Site parking lot.

OFFICE HOURS -- Mondays - Thursday, 7:30 PM, at the Housing Site.

COURSE OVERVIEW

This course consists of an introduction to laboratory and field studies in ecology. Its goals are: (1) to provide students with direct experience in using basic techniques in ecology; (2) to illustrate ecological principles through laboratory and field work; and (3) to develop student skills in analytical procedures, critical thinking, and scientific writing. The course is designed to give students the opportunity to work with the materials, procedures, and experiments that form the foundation for the companion lecture course, Ecology (Biosc 0370).

LABORATORY MANUAL AND THREE-RING BINDER

There is no laboratory manual *per se* for this course when offered at Pymatuning. Instead, we will give you the necessary written materials before each session. You may, however, wish to obtain a 1", 3-ring binder (for standard 8-1/2 by 11 inch, 3-hole paper) in which to place the distributed materials.

FORMAT

The course involves daily observations and experiments in field settings, with occasional work in the laboratory. In some instances, we will establish experiments and record data from them throughout the term. For certain exercises and experiments, small groups of students will cooperatively establish a procedure before implementing that procedure in the field. At other times, individuals will work alone, in pairs, or in small groups, using a pre-assigned procedure.

RELATIONSHIP TO THE LECTURE COURSE

The lecture course (Biosc 0370) provides the general and conceptual background for the field and laboratory exercises. In some instances, information from the lectures must be used in the field or laboratory work. Keep the relationship between the two courses in mind and make sure to bring any necessary notes you take in lecture to the start of each lab/field session.

PROCEDURES, WORKSHEETS, AND REPORTS

There will be three types of written assignments in this course. *Procedures* -- These consist of detailed, step-by-step instructions that are developed cooperatively by a group of students to accomplish a task chosen by those students. The group as a whole then performs the procedure. There will be three such procedures during the term, each worth 25 points. *Worksheets* -- These are comparatively short assignments that involve data analysis and interpretation. There will be six such worksheets during the term, each worth 25 points. *Full report* -- This is a full-length report that contains an introduction, a section on materials and methods, and sections with results and discussion. There will be one full report during the term, worth 75 points.

PARTICIPATION

Scientific inquiry is an inherently collaborative process. The success of an experiment or exercise depends on the cooperation and active participation of those involved. Full participation and cooperation on your part is expected.

GRADING

Your letter grade will be determined by the percentage of total points you earn on the procedures, worksheets, and reports during the course. These points will be summed and expressed as a percentage of the total points possible (300). The resulting percentage will be used to determine the final grade you have earned, using the following scale:

A+ 97.5% and up	A 92.5% - 97.4%	A- 90.0% - 92.4%
B+ 87.5% - 89.9%	B 82.5% - 87.4%	B- 80.0% - 82.4%
C+ 77.5% - 79.9%	C 72.5% - 77.4%	C- 70.0% - 72.4%
D+ 67.5% - 69.9%	D 62.5% - 67.4%	D- 60.0% - 62.4%

Percentages below 60.0% earn a grade of "F". If the class average at the end of the semester is below 75%, final percentages will be adjusted as follows. The class average will be subtracted from 75%, and the resulting value will be added to each student's semester percentage. Grades will then be assigned using the scale presented above.

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FIELD AND ASSIGNMENT SCHEDULE

TOPICS, EXERCISES, AND EXPERIMENTS

Distribution and Scale -- Jewelweed Mapping

Factors Limiting Distributions -- Jewelweed Transplant Experiment

Human Demography -- Survivorship for Two Western Pennsylvania Communities

Estimating Density Using Distance Methods -- The Byth-Ripley Procedure

Species Diversity of Forest Trees -- Assessing Community Composition

Island Biogeography -- Species Richness of Forest Trees on Five Islands in Pymatuning Lake

Distribution and Competition -- Salamander Zonation

Community Diversity and Overlap -- Comparison of Salamander Communities

DETAILED SCHEDULE

date		events
May	14	Visit Jewelweed site Review mapping equipment and techniques Establish procedure for Jewelweed mapping
	15	Map Jewelweed distribution at the laboratory site Review equipment and techniques for transplant experiments Establish procedure for first Jewelweed transplant experiment
	16	Set up Jewelweed transplant experiment Map fine-scale distribution of Jewelweed
	17	Compare Jewelweed maps among groups
	18	Obtain human population data from graveyard
	21	Visit forest sites and identify tree species Review population census techniques and equipment Establish procedure for censusing a selected species of forest tree
	22	Census selected tree species
	23	Review identification of forest trees
	24	Assess species diversity of forest trees on five islands in Pymatuning Lake

	25	Visit first salamander site and record locations of observed species
	29	Survey of experiments in community ecology Visit second salamander site and record locations of observed species
	30	Finish jewelweed experiments
	31	No new laboratory or field work
June	1	No new laboratory or field work

DEADLINES FOR SUBMITTING ASSIGNMENTS

May 14	Group procedure for mapping Jewelweed
May 15	Group procedure for Jewelweed experiment
May 17	Worksheet on Jewelweed dispersion
May 21	Worksheet on human demographics
May 21	Group procedure for tree censusing
May 23	Worksheet on tree density
May 25	Worksheet on island biogeography
May 30	Worksheet on salamander zonation
May 30	Worksheet on salamander community diversity and similarity
May 31	Report on Jewelweed experiments due in lecture