

**BIOSC 0370/0390**  
**ECOLOGY & ECOLOGY LAB**  
**Summer 2016**

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**Office Hours: TBD**

**Course Description:**

Ecology (Lecture and Lab) is a course that explores the science of ecology, defined as the interactions that determine the distribution and abundance of organisms. This course will cover those factors and interactions which influence species populations and their distributions, as well as multi-species concepts including communities, community dynamics, ecosystems and biodiversity. You will learn conceptual, quantitative skills used in ecology, including sampling and experimental design, basic data analysis skills. You will also have an opportunity to learn how to use and even build instruments for sampling environmental parameters relevant to studying species distributions.

**Course Objectives:**

- Familiarity with multiple aspects of ecology, including population, community and ecosystem ecology.
- Application of the scientific method, experimental design, and science writing in ecological studies.
- Learn applications of basic statistics and analysis of ecological data.
- Field application of knowledge and principles covered in lecture, including learning basic taxonomy of plants and insects while investigating ecological-based questions.
- Introduction to use and construction of technology-based sensing tools and instruments useful for detecting and measure environmental data relevant to ecological research projects.

**Required Course Materials:**

Lecture: Krebs, C.J. Ecology: The Experimental Analysis of Distribution and Abundance.

Lab: a notebook to record field data and store handouts from lecture and lab (binder with loose-leaf paper or an inexpensive composition notebook).

**Course Schedule (subject to change)\*:**

<b>Date</b>	<b>Lecture</b>	<b>Lab</b>
June 6	The science of Ecology Evolution and Ecology How to study species distributions	Plot observations – observing nature  Allelopathy – plant competition  Abiotic factors equipment introduction and setup (Arduino microcontrollers + sensors)
June 7	Factors Limiting Distributions – Dispersal and Habitat selection  Abiotic Factors – importance of temperature, moisture and other limiting factors	Abiotic Factors sampling/recording Mapping and dispersion equipment & setup
June 8	Relationship between species distribution and species abundance  Population Parameters	Mapping of <i>Plantago</i> sp.

<b>Date</b>	<b>Lecture</b>	<b>Lab</b>
June 9	Understanding demographic techniques Population Growth	Discussion of mapping results Forest site visits Analysis of Abiotic Factors
<b>June 10</b>	<b>Test 1</b>	Demographic study of sow bugs
June 13	Species Interactions Competition	Forest ecology – Tree ID, Review of data collection Collect data on Allelopathy study
June 14	Predation	Forest study – Study of dominant tree species at Pymatuning
June 15	Herbivory and Mutualism Disease and Parasitism	Island Biogeography Field Study – insect colonists on islands
June 16	Population Regulation Understanding Human influence on species population regulation	Island Biogeography Study – insect colonists on islands
<b>June 17</b>	<b>Test 2</b>	Island Biogeography Study – insect colonists on islands
June 20	Community Ecology Island Biogeography Community Dynamics	Ecosystem Ecology – Field study of the energy pyramid at Pymatuning
June 21	Biodiversity Ecosystems	Ecosystem Ecology – Field study of the energy pyramid at Pymatuning

Date	Lecture	Lab
June 22	Nutrient Cycles Productivity	Ecosystem Ecology – Field study of the energy pyramid at Pymatuning
June 23	Productivity Human impact on Ecosystems Conservation Biology	<b>No lab or field exercises</b>
<b>June 24</b>	<b>Test 3 - and - Final Exam</b>	<b>No lab or field exercises</b>

\*Course schedule and content is subject to change at any time.

### Assessment:

Your course grade will be based on your performance on three tests (3@100 points) and one final exam (150 points), and homework and lab assignments (330 points), and professionalism/engagement/teamwork points for a total of 800 points. Taking the final exam is required to pass this course. Homework assignments from lecture and lab exercises will also serve as your study guide.

### Grading Scale:

97	-	100	A+
93.3	-	96.9	A
90	-	93.2	A-
86.7	-	89.9	B+
83.3	-	86.6	B
80	-	83.2	B-
76.7	-	79.9	C+
73.3	-	76.6	C
70	-	73.2	C-
66.7	-	69.9	D+
60	-	66.6	D
<		59.9	F

### Missed Assignments/Exams:

Contact me if you will miss an assignment or exam ahead of time. I reserve the right to ask for you to produce “proof” of illness (doctor's note, etc.). Make-up exams will be different from the exam administered on exam date. **NO MAKEUP LABS, NO EXCEPTIONS. Unexcused absence from lab means that you cannot write a report or assignment for that lab.** Students who miss labs for legitimate reasons (“proof” of legitimate reason and/or prior arrangement required) can expect a different assignment from the original laboratory. **Unexcused absences from more than 2 laboratory classes will result in a failing score in the laboratory portion of your grade.**