

# **ECOLOGY**

## **(Bio 371) - Fall 2004**

### Time/Location:

Section 1 - Monday, Wednesday, Friday from 9:00 am – 9:50 am, Loyola 200

Section 2 - Monday, Wednesday, Friday from 10:00 am – 10:50 am, St. Thomas 363

### Instructor:

Dr. Robert Smith  
Assistant Professor of Biology  
Loyola 208  
Phone: 941-6581  
Email: smithr9@scranton.edu

### Office Hours:

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

### Course description:

Ecology is the scientific study of the interactions among organisms and their environment. This course introduces students to the science of ecology, examining these interactions within the context of evolutionary theory. Through the course of the semester, we will study the abiotic and biotic factors that influence organisms and how these factors influence physiological, morphological and life history adaptations, as well as the distribution and abundance of organisms.

### Materials:

**Textbook:** Smith and Smith 2003. Elements of Ecology, 5<sup>th</sup> Edition. Benjamin Cummings, ISBN 0-8053-4473-X.

### Blackboard:

I incorporate Blackboard as part of my teaching methodology and will make MS Powerpoint presentations, transparency overheads, etc. available to you using this medium. I will also post grades on Blackboard.

### Student Learning Objectives:

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

1. Understand science as a way of knowing and how the scientific method is used to study ecology.
2. Discuss basic evolutionary concepts and principles, including variability, heritability, fitness, natural and sexual selection, evolutionary change, adaptation, microevolution, speciation, macroevolution and adaptive radiation.
3. Interpret charts and graphs used to display ecological data.
4. Have a basic understanding of the physical environment in which organisms exist, including the factors that determine attributes of a particular environment.
5. Be familiar with the variety of ways that organisms interact with both the abiotic and biotic components of their environment.
6. Understand how these biotic and abiotic interactions affect individuals, populations and communities of organisms.
7. Describe and discuss ecological concepts at the population, community and ecosystem level.
8. Discuss life history strategies, including how these strategies contribute to a species' survival and reproductive success.
9. Understand and discuss how humans are influencing ecosystems.
10. Demonstrate a basic understanding of issues surrounding the conservation and management of organisms, communities and ecosystems.

### Evaluation Methods:

Student outcome will be assessed via three examinations and a comprehensive final exam. The final exam is mandatory! You will have the option of writing a synthetic paper on an approved ecological topic.

All exams will be of approximately similar format. Generally the first ¼ will be multiple choice, the next ¼ will consist of fill in the blank and short answer questions which require no more than 2 sentences. The last ½ of the exam will be a combination of moderate to longer essay questions, ranging in length from 1 paragraph to 1 plus pages to answer. Essay questions will be designed to challenge students to think synthetically, to propose study designs to answer particular questions and/or to interpret graphical results in the context of a particular topic or concept. Exams will cover material presented in class along with textbook readings.

Optional Term paper:

The optional paper will be worth 100 points and can be used to replace a grade on any one of Exams 1-3. You may not skip an exam because you are doing the optional paper.

The paper must include at least 12 primary source articles and have a text (not including Literature Cited) of 12 – 15 double-spaced pages.

If you chose to do a paper:

1. You must meet with me and have your topic approved by Friday, October 29<sup>th</sup>
2. By 5 pm on Friday, October 29<sup>th</sup> you must provide me with a prospective title, a brief (preliminary) outline demonstrating preliminary exploration of your topic, and a list of at least 3 relevant primary articles you plan to use.

Further expectations for the paper are provided on Blackboard.

Grading:

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

Exams I – III	100 pts. each
Comprehensive Final Exam	100 pts.
<b>TOTAL</b>	<b>400 pts.</b>

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+		

Student Responsibilities:

Students are responsible for all information presented in lecture, along with assigned readings and handouts. There is no strict attendance policy – coming to class is up to you. However, I strongly recommend that you attend all classes.

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

Important Dates:

Monday, 6 September	- Labor Day
Friday, 24 September	- Exam #1
Monday, 18 October	- Fall Break
Monday, 25 October	- Exam #2
Friday, 29 October	- Optional Paper title, outline and literature due
Wednesday, 17 November	- Exam #3
Wednesday, 24 November	- Thanksgiving Break
Friday, 26 November	- Thanksgiving Break
Exam Week	- Comprehensive Final Exam

Tentative Lecture Schedule

<b>Week of</b>	<b>Topic</b>	<b>Chapter(s)</b>
30 Aug	Adaptation, evolution and natural selection	1,2
6 Sept	Physical Environment	3,4
13 Sept	Physical Environment/Soil/Decomposers	4,5,7
20 Sept	Organism Adaptations	6,8
27 Sept	Organism Adaptations	6,8
4 Oct	Population Ecology	9,10,11
11 Oct	Population Ecology/Life History	9,10,11
18 Oct	Life History	12
25 Oct	Interspecific Competition	14
1 Nov	Interspecific Competition/Predation	14,15
8 Nov	Parasitism and Mutualism/ Community Structure	16
15 Nov	Community Structure/Landscape Ecology	13,19
22 Nov	Landscape Ecology	19
29 Nov	Ecosystems	25,26
6 Dec	Biogeography and Biodiversity/Human Influences	24,18
13 Dec	Human Influences	18,23,30