# BIOL 142: Foundations of Biology: Ecology and Evolution

***This detailed course description provides information about course topics & content. It is not a course syllabus. Summer 2013 course syllabi are updated in the spring, and may not be available until summer classes begin.***

## Instructor Information

| Instructor | Email | Course Format | Number of Credits |
|---|---|---|---|
| Rachel Sturge | rsturge1@umbc.edu | Lecture, Discussion | 4 |

## General Information

### Course Format Other

The students will spend 6 hours in lecture and 3 in discussion each week.

### Delivery Format

In-Person

### Prerequisite /Co-requisite:

Must complete MATH 150 or MATH 155 or MATH 151 with a C grade or better or be concurrently enrolled in MATH 150 or MATH 155 or score 5 on the Math Placement Test or have AP credit for MATH 150 or MATH 151

## Course Materials

### Currently Used Materials

• Biological Science 4th edition (volume 2), Scott Freeman, Prentice Hall Publishers

## Course Objectives/Learning Outcomes:

The goal of this course is to present an important series of topics in organismal biology, including a detailed look at evolution by natural selection, a central unifying principle of biology. We will also study the diversity of life that evolution has produced by studying speciation and phylogeny. Finally, we will learn how these organisms interact with each other and their environment, the science of ecology.

An important secondary goal is to promote understanding of science as a process and as an ever-changing body of knowledge that helps us understand the world. Quantitative skills are important in all aspects of evolution and ecology, so the course will also promote overall mathematical and statistical reasoning. Finally, we will use ecology and evolution to understand threats to biodiversity and ecosystems worldwide.

## Potential Topics Covered:

1 - Origins of Life

2 - Mechanisms of Evolution (genetic drift and natural selection)

3 - Mech. of Evo. (Mendelian genetics, Hardy-Weinberg Equilibrium)

4 - Sexual Selection and Kin Selection

5 - Species Concepts

6 - Mechanisms of Speciation

7 - Phylogenies and Trees

8 - Building and Using Trees

9 - Human/Primate/Mammal Evolution

10 - Vertebrate Evolution

11 - Invertebrate Evolution

12 - Introduction to Ecology

13 - Biomes

14 - Population Ecology I (introduction)

15 - Population Ecology II (Life history traits, growth models)

16 - Community Ecology

17 - Ecosystems

18 - TBA (Conservation Biology, if time)