Administrative Unit: Science
Course Prefix and Number: BIOL 320
Course Title: Ecology
Number of: Credit Hours: 3 Lecture Hours: 3 Laboratory Hours: 0
Catalog Description: Basic principles of ecology with an emphasis on the factors affecting the distribution and abundance of organisms. Crosslisted as ENVS 320. Prerequisite: BIOL 112. BIOL 222 recommended.
Prerequisite(s)/Corequisite(s): BIOL 112. BIOL 222 recommended.
Text(s): Textbook(s) listed is/are not necessarily the textbook(s) used in the course. Current editions of:


Course Objectives:
- To explain the relationship between ecology and evolution.
- To demonstrate understanding of the factors that limit the distribution of organisms.
- To use demographic techniques for analyzing populations.
- To demonstrate how species interact through competition and predation.
- To describe how communities are structure and how they change over time.
- To explain the basics of ecosystem structure and function including nutrient cycling.

Measurable Learning Outcomes
- Provide descriptions and examples of each of the major terrestrial biomes and aquatic environments.
- List the factors that determine microclimate.
- Explain how temperature affects organisms and how organisms regulate temperature.
- Characterize water regulation issues of different environments.
- Explain optimal foraging theory.
- Give examples of adaptation through natural selection.
- Discuss factors that determine the distribution of individuals.
- List the characteristics of populations that lead to change over time.
- Contrast the different ways of describing life histories.
- Define niche and apply the concept to competition.
- Describe environmental determinants of species of abundance and diversity.
- Explain the concept of keystone species.
- Outline how energy and nutrients move through ecosystems.
- Illustrate how ecosystems change during succession.
- Define biogeography and give examples of gradients.

**Topical Outline (major areas of coverage):**

- Defining Ecology
- Evolution and ecology
- The Physical Environment
  - Climate, light, soils
  - Plant adaptations to the environment
  - Animal adaptations to the environment
- Intraspecific Population Ecology
  - Population biology
  - Competition
  - Life history patterns
- Interspecific Population Ecology
  - Competition
  - Predation
  - Coevolution
- Community Ecology
- Ecosystem Ecology
  - Productivity
  - Biogeochemistry
- Biogeography

Recommended maximum class size for this course: 25

Library Resources: Online databases are available at [http://www.ccis.edu/offices/library/resources.asp](http://www.ccis.edu/offices/library/resources.asp). You may access them from off-campus using your eServices login and password when prompted.

Prepared by: Julie Estabrooks

Date: September 21, 2005

**NOTE:** The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.