



## BIOL 2220

**Division:** Natural Science and Mathematics

**Department:** Biology

**Course:** BIOL 2220

**Title:** General Ecology for Life Science Majors

**Catalog Description:**

General Ecology for Life Science Majors will teach students about the interrelationships among microorganisms, plants, and animals, and their environments at the level of individual organisms, populations and ecosystems with emphasis on the structure and function of the latter two.

**General Education Requirements:** N/A

**Semesters Offered:** Spring

**Credit/Time Requirement:** Credit: 3; Lecture: 3; Lab: 0

**Clock/Hour Requirements:** 0

**Offered for Non-Credit:** No

**Prerequisites:** BIOL 1610, BIOL 1615, or permission of instructor

**Corequisites:** BIOL 2225

**Justification:**

General Ecology for Life Science Majors is a basic ecology course for life science majors. This course is now a state requirement of all sophomore biology and natural resource majors. This course articulates with the 2000 level Ecology courses at Utah State University, University of Utah, Weber State university, Southern Utah University, Brigham Young University, Utah Valley State College, Dixie State College, and College of Eastern Utah.

**Student Learning Outcomes:**

As a result of taking this course, students will:

- understand the meaning of ecology and how ecologists study the ecosystem
- understand abiotic, growth, and density of individual organisms
- understand growth, density, organization, and evolution of populations
- understand major concepts in population community interactions
- understand community structure and function
- understand human impacts on the ecosystem
- recognize and implement ecological principles in their environment.

- Tests 60%, Final 20%, Research Paper 20%

## **Content:**

BIOL 2220 covers the following topics:

- Ecology as a science

- Ecology of individual organisms

Relationships to the abiotic environment, energy balance, animal behavior, evolutionary considerations, habitat selection, spread of organisms

- Ecology of individual organisms: Abiotic Factors

Temperature, moisture, light, soil, fire

- Population Ecology: Growth and Density

Birth and death, population growth, population density and regulation

- Population Ecology: Organization and Evolution

- Population Community Ecology: Herbivory and Predation

Types of species interactions, trophic interactions, optimal foraging, herbivory, frugivory, seed predation, predation, mimicry and other kinds of advantageous resemblance, cannibalism, siblicide, intraguild predation, biological control

- Population Community Ecology: Competition and Related Coactions

Interspecific competition, intraspecific competition, amensalism, allelopathy, neutralism

- Population Community ecology: Mutualism

Symbiotic mutualism, nonsymbiotic mutualism, evolution of mutualism

## **General Education Outcomes:**

2) Write clearly, informatively, and persuasively.

Students are required to write a fifteen-page technical research paper on an ecological topic. The research paper is corrected and returned to students. Students then can correct their paper and turn it back in to be graded again as many times as they want. This makes it possible for students to learn from their mistakes so that they can become good technical writers.

7) Apply scientific reasoning to a variety of contexts.

Class discussions are centered on expanding and developing the reading material, with an emphasis on how scientists know things. Students also apply scientific reasoning in writing their term paper.

A term research paper will be required of each student: 20%

Four exams will be given which include matching, short answer, and short essay questions: 60%

A comprehensive take home final will be given which includes long essay questions: 20%

The above percentages are approximate and will vary by instructor.

**Representative Text and/or Supplies:**

*The Science of Ecology* by Brewer current edition. Saunders College Publishing

**Optimum Class Size:** 24

**Maximum Class Size:** 24

**Signatures:**

I hereby submit this course syllabus:

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Allan Stevens, , Professor

I hereby find this course consistent with the goals and resources of the Biology Department:

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Allan Stevens, , Professor, Chair

I hereby find this course consistent with the goals and resources of the Natural Science and Mathematics Division:

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Dan Black, EdD, Associate Professor, Dean

I have discussed the need for library resources related to this class with the person submitting the syllabus:

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Lynn Anderson, MLIS, Technical Services Librarian (Main Campus)

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Michelle Olsen, MLS, Campus Librarian (Richfield Campus)