

COCONINO COMMUNITY COLLEGE  
COURSE OUTLINE

Prepared by: Rhonda L. Shaeffer  
Revision by: Bryan Bates  
Revision by: Bryan Bates  
General Education criteria reviewed by: Bryan Bates  
Revised by: Bruce Belman  
Revised by: Bryan Bates  
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December 4, 1991  
January 23, 1997  
April 15, 1998  
November 16, 1998  
Spring 2001  
December 15, 2014

A. Identification:

1. Subject Area: Biology (BIO)
2. Course Number: 105
3. Course Title: Environmental Biology
4. Credit Hours: 4
5. Course Description: Basic concepts of ecology and the importance of human interaction with the natural ecosystem. Field trips. Pre/Co-requisites: ENG 102 and MAT 091 or placement beyond prerequisite courses or Consent of Instructor. General Education: Physical and Biological Sciences. Special Requirements: Contemporary Global/International Awareness or Historical Awareness and Intensive Writing/Critical Inquiry. Three lecture. Three lab.

B. Course Goals:

To give students a greater understanding of:

1. physical forces which act within natural systems;
2. fundamental ecological principles and methodologies for their measurement;
3. and the effects of human behavior and population upon natural systems.

C. Course Outcomes: Students will:

1. use the metric system, standard scientific equipment common to environmental parameters measurements, and interpret scale when taking measurements;
2. define and distinguish between different types of resources, energy usage and pollution within a biotic system;
3. investigate the different properties of water and explain how water provides nutrients and transports pollutants within an ecosystem;
4. conduct comparative research on two sites within the same habitat type that assess the environmental quality of those sites. Use the data from their research to compose a scientific paper;
5. explain how humankind has historically managed to avoid environmental crises and why such an approach may no longer be a viable solution;
6. examine fundamental physical forces which affect the environment;
7. analyze energy flow and matter cycling in bio-physical systems;
8. describe the effect of meteorological and geological phenomena on the location and structure of biomes;
9. examine aspects of succession and population biology as related to ecosystem structure;
10. apply principles of population biology to recent trends in human population growth;
11. develop insights into current environmental issues through critical reading, problem solving, and proposing potential solutions to such problems;
12. collect, interpret and evaluate data related to local environmental issue, formulating all such material into a minimum 1500 word paper which is instructor-reviewed and then edited for necessary revisions;
13. design and carry out laboratory experiments using the scientific method, readings and knowledge of field methods;
14. and prepare 2 additional critical essays concerning environmental issues as assigned or agreed upon by/with instructor.

D. Course Outcomes Assessment will include:

1. comprehensive final exam;
2. and instructor evaluated report/project.

E. Course Content will include:

1. the effect of populations on use of resources and resultant pollution;
2. physical forces affecting the structure of matter and consequent environmental systems;
3. energy quality, quantity and efficiency;
4. laws of thermodynamics;
5. ecosystem components;
6. energy flow in ecosystems;
7. biogeochemical cycles;
8. meteorological processes;
9. world and regional biomes;
10. population structures and dynamics;
11. succession;
12. human population growth;
13. impacts of humans on ecosystems including global warming and loss of biodiversity;
14. and analysis of a regional environmental issue.