

College of San Mateo
Official Course Outline

1. **COURSE ID:** BIOL 102 **TITLE:** Environmental Science and Conservation
Semester Units/Hours: 3.0 units; a minimum of 48.0 lecture hours/semester
Method of Grading: Letter Grade Only
Recommended Preparation:
 Eligibility for ENGL 838 or 848.
 And completion of or concurrent enrollment in any READ 400 level course.

2. **COURSE DESIGNATION:**
Degree Credit
Transfer credit: CSU; UC
AA/AS Degree Requirements:
 CSM - GENERAL EDUCATION REQUIREMENTS: E5a. Natural Science
CSU GE:
 CSU GE Area B: SCIENTIFIC INQUIRY AND QUANTITATIVE REASONING: B2 - Life Science
IGETC:
 IGETC Area 5: PHYSICAL AND BIOLOGICAL SCIENCES: B: Biological Science

3. **COURSE DESCRIPTIONS:**
Catalog Description:
 Study of the relationship of humans to the immediate and global environments, including the conservation of renewable and non-renewable resources, dynamics of ecosystems, and the interaction of plant and animal populations; alternative energy sources; and current problems caused by human interactions with the environment. One or more field trips may be required.

4. **STUDENT LEARNING OUTCOME(S) (SLO'S):**
 Upon successful completion of this course, a student will meet the following outcomes:
 1. Explain the fundamental importance of land and other natural resource conservation.
 2. Discuss scientific principles as they pertain to conservation of land and other natural resources.
 3. Explore how to acquire an ethic for responsible use of land and other natural resources.
 4. Possess knowledge or skills related to the sustainable development of land and other natural resources.

5. **SPECIFIC INSTRUCTIONAL OBJECTIVES:**
 Upon successful completion of this course, a student will be able to:
 1. understand a wide range of ecological principles and environmental issues and solutions to current issues of today.
 2. understand concepts of sustainability; planning and policy as it applies to the environment; and environmental economics
 3. understand how this knowledge may be used to manage and conserve ecosystems, and used to influence conservation measures and 'green' initiatives
 4. examine issues in environmental conservation on a regional and global scale
 5. understand the necessity of using multidisciplinary approaches involving science, ethics, economics, sociology, and public policy in the analysis of environmental problems

6. **COURSE CONTENT:**
Lecture Content:
 1. What is science?
 2. The natural environment and the interactions within the environment
 - A. The Earth and its ecosystems
 - B. Natural resources (organisms, soils, water systems, atmosphere)
 3. Biology of life forms
 - A. Basic needs and population biology
 - B. Interactions among different life forms
 - C. Evolution and natural selection
 - D. Human populations and their interactions with other life forms
 4. Interactions between humans and their environment
 - A. Human use of natural resources

- B. Depletion, pollution and environmental changes
- C. Global and local concerns
- 5. History of environmental conservation
 - A. Attitudes and politics on the environments
 - B. Environmental regulations
- 6. Sustainable development
 - A. Renewable vs. nonrenewable resources
 - B. A look to the future - dilemmas and solutions?

TBA Hours Content:

There are no TBA hours for this course.

7. REPRESENTATIVE METHODS OF INSTRUCTION:

Typical methods of instruction may include:

- A. Lecture
- B. Activity
- C. Discussion
- D. Field Trips
- E. Service Learning
- F. Other (Specify):
 - 1) Lectures: Introduce general features, organize and explain concepts, define terms, and provide examples and illustrations of all topics.
 - 2) Discussion in lecture: supervise group discussions that apply concepts to problem solving, propose expected results from investigations of ecological systems, model systems, and organisms; propose explanations of observations; analyze results and draw conclusions from demonstrations and computer simulations.
 - 3) One or two field trips to a local park, Coyote Point Museum, California Academy of Sciences, or other setting suitable for the studies of environmental science. Field Trip written reports.
 - 4) One or more writing assignments that illustrates plant and animal interrelations and inter-dependencies, or examines the human role in the world of living things in relation to contemporary environmental issues.
 - 5) One service learning project involving environmental restoration or any environmental activity related to class discussion topics.
 - 6) Group and individual work to investigate model systems, and organisms; observe, record, analyze results of demonstrations; observe, record and analyze effects of variables on ecological systems; produce models and diagrams illustrating biological processes affecting populations, communities and ecosystems.

8. REPRESENTATIVE ASSIGNMENTS

Representative assignments in this course may include, but are not limited to the following:

Writing Assignments:

Representative assignments are:

1. Short essays on biological, conservation, or environmental topics such as: consensus and conflict over environmental problems, personal responsibility to promote environmental change, understanding climate change.
2. Reflection assignments on biological, conservation, or environmental topics for example:
 - a. "A species I would mourn"-an essay on a specific species a student would "mourn" if it went extinct and why.
 - b. "How to be a locavore"-a student examines the transportation costs of their diets and how to eat locally by converting a recipe to all local sources.
3. Interpretation of graphic information, such as reading graphic and tabular information and answering questions about how the data is displayed.

Reading Assignments:

Students read chapters in the textbook, current issues and articles relating to environmental topics.

Other Outside Assignments:

Students participate in forums or discussion groups, where they debate environmental issues or develop solutions based on "scenarios."

9. REPRESENTATIVE METHODS OF EVALUATION

Representative methods of evaluation may include:

- A. Class Participation
- B. Class Work
- C. Exams/Tests
- D. Field Trips

- E. Final Class Performance
- F. Group Projects
- G. Homework
- H. Oral Presentation
- I. Quizzes
- J. Research Projects
- K. Written examination
- L. A) Weekly Assignments and Midterm and Final exams assess student's ability to communicate the following in writing: recognize and name topics in objective 1, describe topics in objective 2, recognize and distinguish topics in objective 3, define and compare topics in objective 4, identify steps and describe major functions in objective 5, explain topics in objective 6, distinguish and compare processes in objective 7, demonstrate and explain topics in objective 8.
- B) Writing assignments reveal student's ability to evaluate reading materials based on course-related knowledge, as in objective 1.
- C) Oral and/or poster presentations on current environmental science reveal students' ability to identify and evaluate main concepts of selected topics, as in objective 1.
- D) One individual field trip report or journal of conservation biology activities conducted during the semester.
- E) Individual reflection paper on the service learning experience.

10. REPRESENTATIVE TEXT(S):

Possible textbooks include:

- A. Cunningham, W. P. and M. A. Cunningham . *Environmental Science: A Global Concern*, 12th ed. W. P. (McGraw-Hill Higher Education) with online Connect, 2012
- B. Wright, R.T. and D.F. Boorse. *Environmental Science: Toward a Sustainable Future*, 11th ed. Pearson with Mastering Environmental Science, 2011
- C. Withgott, J. H. and M. Laposata. *Essential Environment*, 4th ed. Pearson with Mastering Environmental Science, 2012
- D. Smith, T.M. and R.L.. *Elements of Ecology*, 8th ed. Pearson with online ecologyplace.com, 2012

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Course Originator: Linton Bowie