College of San Mateo Official Course Outline

COURSE ID: BIOL 102 TITLE: Environmental Science and Conservation Units: 3.0 units Hours/Semester: 48.0-54.0 Lecture hours; and 96.0-108.0 Homework hours Method of Grading: Letter Grade Only

Recommended Preparation:

Eligibility for ENGL 838 or ENGL 848 or ESL 400.

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:

Introduction to environmental issues from a scientific perspective, focusing on physical, chemical, and biological processes within the Earth system, the interaction between humans and these processes, and the role of science in finding sustainable solutions. Topics include ecological principles, biodiversity, climate change, sustainability, renewable and non-renewable energy, water resources, air and water pollution, and solid waste management.

4. STUDENT LEARNING OUTCOME(S) (SLO'S):

Upon successful completion of this course, a student will meet the following outcomes:

- 1. Identify and describe major global, regional, and local environmental issues.
- 2. Analyze the scientific basis of major environmental issues and identify and evaluate potential solutions.
- 3. Use scientific methodologies and explain how the scientific method is used to better understand environmental issues.
- 4. Analyze and interpret quantitative data and visual representations of data.
- 5. Show relationships between human actions and environmental issues and examine the impacts of environmental issues on human populations.

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.
- 2. Understand concepts of sustainability planning and policy as it applies to the environment and environmental economics.
- 3. Describe practices to manage and conserve ecosystems and to influence conservation measures and sustainability 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

8. REPRESENTATIVE ASSIGNMENTS

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

Writing Assignments:

Representative assignments include:

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 goals of the student learning outcomes.

B) Writing assignments reveal student's ability to evaluate reading materials based on course-related knowledge.

C) Oral and/or poster presentations on current environmental science reveal students' ability to identify and

evaluate the main concepts of selected topics.

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. Wright R., D. Boorse. *Environmental Science: Toward A Sustainable Future*, 13 ed. Pearson, 2017 B. Cunningham, W., M. Cunningham. *Principles of Environmental Science*, 8 ed. McGraw-Hill, 2017

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