GROSSMONT COLLEGE

COURSE OUTLINE OF RECORD

Curriculum Committee Approval: 05/18/2021 GCCCD Governing Board Approval: 06/15/2021

BIOLOGY 112 – CONTEMPORARY ISSUES IN ENVIRONMENTAL RESOURCES

1. Course Number Course Title Semester Units

BIO 112 Contemporary Issues in Environmental Resources 3

Semester Hours

3 hours lecture 48-54 total hours 96-108 outside-of-class hours 144-162 total hours

2. Course Prerequisites

None

Corequisite

None

Recommended Preparation

None

3. Catalog Description

Through the study of basic ecological concepts, students apply their knowledge to contemporary problems dealing with renewable and nonrenewable resources. Environmental resource problems, such as climate change, water shortage and pollution, energy shortages, air pollution, increasing human populations, and wildlife conservation are integrated with political, economic, and social implications. The student will consider alternate life styles as possible solutions to existing environmental problems, as well as other means of solving or dealing with these situations.

4. Course Objectives

The student will:

1. Define Sustainability
2. Understand the practice and the processes of Science vs. other ways of ‘knowing’ things.
3. Identify principles of ecology and the environment and evaluate human systems in  
   terms of these concepts.
4. Identify and evaluate economic activities and institutions that claim to promote human

development in an equitable and sustainable manner.

1. Evaluate the effects of modern industrial capitalism on societies and natural  
   ecosystems.
2. Assess the range and ethical desirability of theoretical and applied technological and  
   design innovations to promote sustainability.
3. Compare the effects of various demographic models on selected patterns of  
   production, consumption, distribution, and disposal.
4. Compare and contrast the mechanics of alternative energy, transportation, building  
   materials, food production, community planning, and innovations of other industries and organizations that provide equitable opportunities in new forms of employment and new forms of living.
5. Develop ideas and evaluate solutions to promote the principles of sustainability within  
   diverse groups of people and articulate the value of building just, participatory,  
   sustainable, and peaceful societies.
6. Understand how humans are altering the biosphere including the anthropogenic causes of Climate Change

5. Instructional Facilities

Standard Classroom

6. Special Materials Required of Student

None

7. Course Content

a. Human role and intervention in the ecosystem--an historical review.

b. Ecosystem structure: trophic levels, physical and chemical factors affecting the organization of an ecosystem, succession, ecosystem stability and the capacity of an ecosystem to resist disturbance.

c. Relationship of the laws of energy and energy flow to the structure of an ecosystem and its capacity to resist disturbance.

d. Biogeochemical cycles: carbon, nitrogen, phosphorus.

e. Major world biomes and the vegetations of each as they relate to soils and climatic factors.

f. The impact of agriculture and its attendant technologies on sensitive biomes

g. Animal populations, their demography and population dynamics, including extinctions will be related to human population increases and demography and concepts of adaptation.

h. Major U.S. and World resources for energy, water, minerals, land and air and their use and depletion related to human population increase and technological change with discussion of alternatives and options for the future.

i. The impact of land use, toxic waste, air and water pollution on animal/human populations and ecosystem stability.

j. The impact of climate change on both natural and human modified environments.

k. Alternative energy systems.

l. Understanding principles of Climate Change and the Anthropogenic roles and solutions to Climate Change

j. Understanding the relationship between domesticated animals and the threat of zoonotic diseases.

8. Method of Instruction

a. Integrated classroom lecture, discussion, and demonstration

b. Small and large group discussion, interactive problem solving

c. In-class activities and independent homework and/or research problems

d. Field trip(s) designed to link course materials to real-world phenomena

e. Instructional power point, video, DVD, and WEB-based presentations

f. Podcasts

9. Methods of Evaluating Student Performance

a. Weekly short answer or essay quizzes based on lecture outline questions and textbook reading assignments.

b. Two midterm exams composed of 50% essay and 50% short answer/essay questions.

c. Comprehensive final exam composed of 50% essay and 50% short answer/essay questions.

d. Library Project: students are required to turn in a report on an environmental issue which includes a letter written to a government official about that issue.

10. Outside Class Assignments

* 1. Reading assignments
  2. Research for environmental issue paper
  3. Take home projects, such as: participation in and reporting on a volunteer event or activism event (individual); reporting on an environmental justice issue (individual); reading, discussing and reporting on a primary literature article for understanding (group); opinion writing on environmental issues with group discussion.

11. Representative Text(s)

a. Representative Text(s):

1) Miller, Tyler G. *Environmental Science*. 16th Edition. Cengage Learning, Publisher. 2019

2) Borror, Donals J., *Dictionary of Word Roots and Combining Forms*. 1st Edition, Mayfield

Publishing Co. 1960

b. Supplementary texts and workbooks:

None

Addendum: Student Learning Outcomes

Upon completion of this course, our students will be able to do the following:

1. Given several specific resources, explain the relationship between the use of those resources and their associated impact(s) on the environment.
2. Describe the components of an ecosystem.
3. Diagram the pathway for energy as it enters the biosphere, is fixed by autotrophs, moves within and between trophic levels, and finally exits to the atmosphere.