TAFTCOLLEGE

Revised by: S. Lytle
Reviewed by: M. Mayfield
Date Reviewed: Spring 2022
Textbook update: Spring 2022
C & GE Approved: April 21, 2022
Board approved: May 11, 2022
Semester effective:

Biology (BIOL) 1513 Introduction to Environmental Studies with Lab (4 Units) CSU: UC

Advisory: Eligibility for English 1500 or 1501 and elementary algebra, strongly recommended.

Hours and Units Calculations:
48 hours lecture (96 hours outside of class hours); 48 hours lab (192 hours total)

Catalog Description: This is an interdisciplinary introduction to ecology through the study of contemporary environmental problems of renewable and nonrenewable resources. The socioeconomic and political concerns of resource shortages, pollution, conservation, and management will be discussed. Field trips are required to certain local points of geological interest. The student may opt to receive credit in only one of the following courses: Biology 1503 or Biology 1513.

Type of Class/Course: Degree Credit

Texts:
Hassenzahl, David. M., et al. *Environment.* 10th ed., John Wiley *& Sons, 2018.

Additional Required Materials: None

Course Objectives:

By the end of the course, a successful student will be able to

1. demonstrate an understanding of the relationship between ecosystems, population and pollutants, Work both independently and collaboratively within study groups to conduct laboratory exercises and solve problems.
3. Propose hypotheses based on observations, test the hypotheses, critically analyze experimental data, and formulate conclusions based on that data.
4. Demonstrate knowledge of how to use basic laboratory and field equipment.

Course Scope and Content (Lecture):

Unit I Introducing Environmental Science and Sustainability
- A. Human Impacts on the Environment
- B. Population, Resources, and the Environment
- C. Sustainability
- D. Environmental Science
- E. Addressing Environmental Problems

Unit II Environmental Laws Economics and Ethics
- A. Environmental History of the United States

B. U.S. Environmental Legislation and Justice
C. Economics and the Environment
D. Environmental Ethics, Values, and Worldviews

Unit III Ecosystems
A. Ecosystems and Energy Change other letters below for this section
B. Ecosystems and the Physical Environment
C. Ecosystems and Living Organisms
D. Major Ecosystems of the World

Unit IV Human Health and Environmental Toxicology
A. The Human Population
B. The Urban World

Unit V Energy Consumption
A. Fossil Fuels
B. Renewable Energy and Nuclear Power

Unit VI Resources
A. Water Resources
B. Soil Resources
C. Mineral Resources
D. Biological Resources
E. Land Resources
F. Food Resources

Unit VII Human Impacts on the Environment
A. Air Pollution
B. Global Climate Change
C. Water Pollution
D. Pest Management
E. Solid and Hazardous Waste
F. Tomorrow's World

Course Scope and Content (Laboratory)

Unit I Basic Science and Laboratory Skills
A. Scientific Methodology
B. Use of Laboratory Equipment

Unit II Ecosystems
A. Ecosystem and Energy
    a. Photosynthesis and Respiration Measures
    b. Desert Adaptations in Plants and Animals
    c. Field trip, north- versus south-facing slopes
B. Ecosystems and Biological Resources

a. Field trip to Wind Wolves Preserve
b. Coral Bleaching current videos, Q&A

Unit III Human Health and Environmental Toxicology
A. Agricultural pollution lab and/or field trip
B. McCormick Biological, environmental impact statements
C. COVID discussion
D. Toxicity LD50 calculation lab

Unit IV Energy Consumption
A. Renewable Energy, Solar Panel Field Trip
B. Renewable Current Research Weblinks and Discussion
C. Taft Petroleum, Lakeview Gusher (Oil leak) field trip

Unit V Resources
A. Water, Southwest Water Management District Field Trip, Lake Isabella Dam Field Trip
B. Biological Resources, Tule Elk Reserve Field Trip Change other letters below for this section.
C. Land Resources, Plant identification/organs lab, Sequoia National Forest Field Trip
D. Food Resources, Your Place in the Food Chain Activity
E. Soil Microbiology Lab

Unit VI Human Impacts on the Environment
A. Personal Impact Analysis
B. Water Pollution and Biodiversity, Water Quality Lab
C. Solid and Hazardous Waste, Ex-Mining Site on Lake Isabella Field Trip

Unit VII Current Research in Environmental Science
A. Oral Presentations
B. Current Research Weblinks and Discussion

Learning Activities Required Outside of Class:

The students in this class will spend a minimum of 8 hours per week outside of the regular class time doing the following:

1. Studying
2. Answering questions
3. Completing required reading
4. Written work
5. Problem solving
6. PowerPoint Project over Current Research

Methods of Instruction:

1. Lectures and demonstrations given by instructors
2. Assigned readings from texts and selected references
3. Guest lecturers on specific topics
4. Discussion by students
5. Videos

6. Laboratories
7. Field Trips
8. Investigation into the Scientific Literature

Methods of Evaluation:

1. writing assignments, including:
   a. Laboratory worksheets
   c. Lecture Homework Assignments
   d. PowerPoint Project over Current Research

2. Computational or non-computational problem-solving demonstrations, including:
   a. exams
   b. quizzes
   c. Laboratory worksheets
   c. Lecture Homework Assignments

3. Other examinations, including:
   a. multiple choice
   b. matching items
   c. true/false items
   d. completion

4. Oral Presentations
   a. Current Research in Environmental Science

Laboratory Category: Extensive Laboratory

Pre delivery criteria: All of the following criteria are met by this lab.

1. Curriculum development for each lab.
2. Published schedule of individual laboratory activities.
3. Published laboratory activity objectives.
4. Published methods of evaluation.
5. Supervision of equipment maintenance, laboratory setup, and acquisition of lab materials and supplies.

During laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is physically present in lab when students are performing lab activities.
2. Instructor is responsible for active facilitation of laboratory learning.
3. Instructor is responsible for active delivery of curriculum.
4. Instructor is required for safety and mentoring of lab activities.
5. Instructor is responsible for presentation of significant evaluation.

Post laboratory activity of the laboratory: All of the following criteria are met by this lab.

1. Instructor is responsible for personal evaluation of significant student outcomes (lab exercises, exams, practicals, notebooks, portfolios, etc.) that become a component of the student grade that cover the majority of lab exercises performed during the course.
2. Instructor is responsible for supervision of laboratory cleanup of equipment and materials.

TAFTCOLLEGE

Supplemental Data:

TOP Code:	030200: Environmental Studies
SAM Priority Code:	E: Non-Occupational
Distance Education:	Not Applicable
Funding Agency:	Y: Not Applicable(funds not used)
Program Status:	1: Program Applicable
Noncredit Category:	Y: Not Applicable, Credit Course
Special Class Status:	N: Course is not a special class
Basic Skills Status:	N: Course is not a basic skills course
Prior to College Level:	Y: Not applicable
Cooperative Work Experience:	N: Is not part of a cooperative work experience education program
Eligible for Credit by Exam:	NO
Eligible for Pass/No Pass:	C: Pass/No Pass
Taft College General Education:	CSB1: CSU Area B1 IG5A: IGETC Area 5A LNS: Local GE Natural Science
Discipline	Biological Sciences