

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Biology</u>
COURSE RUBRIC AND NUMBER	<u>BIOL 2406</u>
COURSE TITLE	<u>Environmental Biology</u>
COURSE CREDIT HOURS	<u>4 3 : 3</u> Credits Lec Lab

I. Catalog Description

Principles of environmental systems and ecology, including biogeochemical cycles, energy transformations, abiotic interactions, symbiotic relationships, natural resources and their management, lifestyle analysis, evolutionary trends, hazards and risks, and approaches to ecological research. (This course is intended for science majors.) **(3:3). Lab Fee.**

II. Course Objectives

A. Unit I: Basic Ecological Principles

1. Explain the basic concepts of ecology and relate them to environmental problems.
2. Discuss the significance of ethics and other relevant fields on ecology.
3. Describe the different levels (organismal to ecosystem) of ecology.

B. Unit II: The Physical Environment

1. Describe how non-living components in the environment influence living systems.
2. Discuss the process of chemical cycles (water, carbon, nitrogen ...).
3. Analyze different types of soils and the roles that they play in the environment.

C. Unit III. Organisms In Their Environment

1. Discuss adaptations organisms use that allow them that allow them to survive in various environmental conditions.
2. Analyze homeostatic regulation of body temperatures and describe tolerance limits.

D. Unit IV. Population Ecology

1. Discuss the different types of growth-logistic vs. exponential; r vs. k selection.
2. Discuss mechanisms of population growth regulation; include relevant cycles involved.
3. Describe the variations of population density and distribution.

E. Unit V. Community Ecology

1. Describe the concept of a Niche and it's role in competitive exclusion
2. Analyze the flow of energy through food webs within a community.
3. Describe how landscape effects can alter community structure.

F. Unit VI. Ecosystem Ecology

1. Describe the physical characteristics of major terrestrial biomes.
2. Analyze the biogeographical processes that produce these biomes.

G. Unit VII. Human Effects on the Environment

1. Describe sustainable uses of natural resources.
2. Examine examples of natural resource overexploitation.
3. Discuss the effect exotic species have on natural systems.
4. Discuss pollution (air, water, solid ...) and its effect on the environment.
5. Describe specific examples of human intervention in natural systems; discuss the outcomes.
6. Examine political and economic philosophy on environmental decisions.

H. Unit VIII. Conservation Biology

1. Discuss the importance of biodiversity.
2. Examine past and current rates of species extinctions.
3. Describe the efforts of conservation organizations (national parks, zoos, aquaria, botanical gardens...).
4. Examine and predict trends for the future using ecological models.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Explain the structure and impact of biogeochemical cycles.
2. Describe energy transformations across trophic levels.
3. Illustrate abiotic/biotic interactions and symbiotic relationships.
4. Identify various types of natural resources, human impact on these resources, and common resource management practices.
5. Quantify and analyze the impact of lifestyle on the environment.
6. Depict evolutionary trends and adaptations to environmental changes.
7. Describe environmental hazards and risks and the social and economic ramifications.
8. Describe ecological and statistical techniques and approaches used in the study of environmental biology.

Learning Outcomes (Lab)

1. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
2. Use critical thinking and scientific problem-solving to make informed decisions in the laboratory.
3. Communicate effectively the results of scientific investigations.
4. Explain the structure and impact of biogeochemical cycles.
5. Describe energy transformations across trophic levels.
6. Illustrate abiotic/biotic interactions and symbiotic relationships.
7. Identify various types of natural resources, human impact on these resources, and common resource management practices.
8. Quantify and analyze the impact of lifestyle on the environment.
9. Depict evolutionary trends and adaptations to environmental changes.
10. Describe environmental hazards and risks and the social and economic ramifications.
11. Describe ecological and statistical techniques and approaches used in the study of environmental biology.

IV. Evaluation

A. Pre-assessment: Not Required

B. Post-assessment

1. Lecture (75% of total grade); exams, projects, and presentations will be used to evaluate the student's progress. The student's written expression (objective/essay combination) will be emphasized.

2. Lab (25% of total grade); relevant laboratory and experiences will be used to evaluate students progress.

C. Grading Scale

90-100	=	A
80-89	=	B
70-79	=	C
60-69	=	D
Below 60	=	F

V. **Disability Statement (American with/Disabilities Act [ADA])**

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located:

VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024)

VI. **6 Drop Rule**

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.