El Paso Community College
Syllabus
Part II
Official Course Description

SUBJECT AREA	**Biology**
COURSE RUBRIC AND NUMBER	**BIOL 1106**
COURSE TITLE	**General Biology-Science Majors Laboratory I**
COURSE CREDIT HOURS	**1 0 3**
	Credits Lec Lab

I. Catalog Description

Accompanies BIOL 1306, Biology for Science Majors I laboratory-based course. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Studies and examines the concepts of cytology, reproduction, genetics, and scientific reasoning. **Corequisite: BIOL 1306. (0:3). Lab fee.**

II. Course Objectives

A. Unit I Science as a Process

1. Be able to apply the scientific method as an appropriate tool in hypothesis testing using a variety of modern laboratory techniques.
2. Students should gain experience in the use of the following science process skills:
a. Observation
b. Recording descriptive and quantitative data
c. Microscope use
d. Graphing
e. Measuring
f. Hypothesis formation
g. Quantitative analysis, including descriptive statistics
h. Experimental design
i. Scientific report writing/communication (*e.g.* posters)

B. Unit II Chemistry of Life

1. Apply basic fundamental organic and inorganic chemical concepts in a biological context.
2. Understand the four basic biological molecules, including their building blocks and their importance in the evolution of life.

C. Unit III The Cell

1. Analyze the structure and functions of plasma membrane, extracellular matrix, and cell to cell communication.
2. Compare the structure and function of prokaryotic and eukaryotic cells, emphasizing the differences between animal and plant cells using microscopy.

D. Unit IV Cellular Energetics

1. Explain important concepts about energy and matter (thermodynamics) in biological systems.

2. Describe anabolic and catabolic processes of metabolism.
3. Describe the role of enzymes in metabolic pathways.
4. Explain and understand cellular respiration and photosynthesis. Relate these processes to the evolution of life.

E. Unit V Genetics

1. Understand the principles of Mendelian Genetics. Apply these principles to human situations, and analyze other forms of gene interactions such as sex-linkage, polygenic inheritance, codominance, epistasis and pleiotropy.
2. Demonstrate the stages of the cell cycle and cell division (mitosis and meiosis).

F. Unit VI Molecular Genetics

1. Understand the central dogma of molecular genetics. Demonstrate the main events during transcription and translation.
2. Explain how current techniques are implemented in genetic engineering, biomedical research, medical applications, bioremediation, and industry.

G. Unit VII Evolution

1. Understand the theory of evolution by natural selection.
2. Discuss the evidence that supports the theory of evolution.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

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. Describe the characteristics of life.
5. Explain the methods of inquiry used by scientist.
6. Identify the basic properties of substances needed for life.
7. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
8. Describe the structure of cell membranes and the movement of molecules across a membrane.
9. Identify the substrates, products, and important chemical pathways in metabolism.
10. Identify the principles of inheritance and solve classical genetic problems.
11. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
12. Describe the unity and diversity of life and the evidence for evolution through natural selection.

IV. Evaluation

A. Pre-assessment NOT required

B. Post-Assessment

1. Grade; 3-4 grades based on practicums, group activities, presentations. The evaluation methods, frequency and individual weight of each assessment method is to be determined by the instructor.

C. Grading Scale:

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

V. Disability Statement (Americans 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.