

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	Biology
COURSE RUBRIC AND NUMBER	BIOL 1306
COURSE TITLE	General Biology-Science Majors I
COURSE CREDIT HOURS	3 3 0
	Credits Lec Lab

I. Catalog Description

Studies the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Includes the concepts of cytology, reproduction, genetics, and scientific reasoning. **Prerequisite: INRW 0311 or ESOL 0340 (can be taken concurrently) or by placement exam or ENGL 1301 with a “C” or better or ENGL 1302 with a “C” or better. Corequisite: BIOL 1106. (3:0).**

II. Course Objectives

A. Unit I. The Study of Life

1. Describe the characteristics of living organisms and the concept of evolution as the primary unifying concept of biology.
2. Apply the scientific method as an appropriate tool in hypothesis testing. In applying the scientific method, students will demonstrate:
 - a) effective development, interpretation, and expression of ideas and **communication skills** through written, oral, and/or visual communication of their scientific investigation, outcomes, and conclusions.
 - b) **critical thinking skills** by engaging in creative thinking, innovation, inquiry, and demonstrating analysis, evaluation, and synthesis of information.
 - c) **empirical and quantitative skills** by formulating an inquiry and following an investigative process using empirical and/or qualitative/quantitative reasoning to satisfy the inquiry. This includes the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.
 - d) **teamwork skills** by being able to consider different points of view and by effectively working with others to support a shared purpose or goal in their scientific investigation.
3. Apply basic fundamental organic and inorganic chemical concepts in a biological context.
4. Identify the four basic biological molecules, including their building blocks and their importance in the evolution of life.
5. Compare the structure and function of prokaryotic and eukaryotic cells, emphasizing the differences between animal and plant cells.
6. Analyze the structure and functions of plasma membrane, extracellular matrix, and cell to cell communication.

B. Unit II. Cellular Energetics

1. Explain important concepts about energy and matter (thermodynamics) in a biological system.
2. Describe anabolic and catabolic processes of metabolism.
3. Describe the role of enzymes in metabolic pathways
4. Describe and explain and understand cellular respiration and photosynthesis. Relate these processes to the evolution of life.

- C. Unit III. Genetics
 1. Briefly present the evidence that DNA is the hereditary material.
 2. Describe the structure of the DNA and the method genetic information is stored and self-replicated.
 3. Describe the structure of a chromosome and related genetic terminology.
 4. Describe the main events that occur in the cell cycle and gamete formation (mitosis and meiosis).
 5. Explain the main differences in the formation of the egg and the sperm.
 6. Explain 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.
- D. Unit IV. Molecular Genetics
 1. Discuss the central dogma of molecular genetics and explain the main events during DNA transcription and translation.
 2. Explain how current techniques are implemented in genetic engineering, biomedical research, medical applications, bioremediation, and industry.
- E. Unit V. Evolution
 1. Analyze the Theory of Evolution by natural selection.
 2. Discuss the different types of evidence that support the Theory of Evolution.

III. THECB Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and the properties of the major molecules needed for life.
4. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.
5. Describe the structure of cell membranes and the movement of molecules across a membrane.
6. Identify the substrates, products, and important chemical pathways in metabolism.
7. Identify the principles of inheritance and solve classical genetic problems.
8. Identify the chemical structures, synthesis, and regulation of nucleic acids and proteins.
9. 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; The type and number of exams will be determined by the instructor. A minimum of 5 written lecture exams are recommended.
The type of exams can be multiple choice, true-false, etc., and it's very desirable to include a section to evaluate the student's written expression (objective/essay combination).

Take-home exams are not recommended for this course. No exam will be dropped in calculating the final grade. All students are required to take the final exam.

- 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.