

El Paso Community College

Syllabus

Part II

Official Course Description

SUBJECT AREA	<u>Biology</u>
COURSE RUBRIC AND NUMBER	<u>BIOL 1306</u>
COURSE TITLE	<u>Biology for Science Majors I (Lecture)</u> <u>(C) (MNS)</u>
COURSE CREDIT HOURS	<u>3 3 0</u> Credits Lec Lab

I. Catalog Description

Fundamental principles of living organisms will be studied, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Concepts of cytology, reproduction, genetics, and scientific reasoning are included. **Prerequisite: Placement at college-level English Language Arts Reading by TSIA2 or equivalent; OR completion with a “C” or better or concurrent enrollment in the following: INRW 0311 or INRW 0312 or ESOL 0340. 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. The evaluation methods, frequency, and individual weight of each of the 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.

VII. **Title IX and Sex Discrimination**

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.