

BIOLOGY 1408
Biology for Non-Majors I

Western Texas College

- I. Basic Course Information
 - A. Lecture Course Description: Provides a survey of biological principles with an emphasis on humans, including chemistry of life, cells, structure, function, and reproduction.
 - B. Lab Course Description: The required laboratory activities will reinforce the lecture material.
 - C. Required Pre-requisite: None
 - D. Required grade for enrolling in the next course in this sequence: None
- II. Student Learning Outcomes
 - A. Distinguish between prokaryotic, eukaryotic, plant and animal cells, and identify major cell structures.
 - B. Identify stages of the cell cycle, mitosis (plant and animal), and meiosis.
 - C. Interpret results from cell physiology experiments involving movement across membranes, enzymes, photosynthesis, and cellular respiration.
 - D. Apply genetic principles to predict the outcome of genetic crosses and statistically analyze results.
 - E. Describe karyotyping, pedigrees, and biotechnology and provide an example of the uses of each.
 - F. Identify parts of a DNA molecule, and describe replication, transcription, and translation.
 - G. Analyze evidence for evolution and natural selection.
 - H. Apply scientific reasoning to investigate questions, and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
 - I. Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
 - J. Communicate effectively the results of scientific investigations.
 - K. Identify the importance of karyotypes, pedigrees, and biotechnology.
- III. Testing Requirements
 - A. On-campus: All exams are given during scheduled lecture time
 - B. Online: Standard exams and the final exam must be proctored by an approved testing organization. (Ask your instructor for more details.)
 - C. No outside materials are allowed during standard exams or the final
 - D. All standard exams and the final are timed
- IV. Course Requirements
 - A. 10 multiple-choice quizzes
 - B. 4 long-form responses to prompts based on current science articles
 - C. 10 total lab assignments
 - D. 3 non-cumulative multiple-choice lecture standard exams
 - E. 1 cumulative multiple-choice final exam
- V. Information on Books and Other Course Materials

- A. Recommended Book: Essential Biology, 7th ed. by Campbell ISBN – 9780133917789
- B. Lab materials are provided

VI. Grading Breakdown

Types of Assignments	Proctored	Not Proctored
In-Class Assignments	10%	
Chapter Quizzes		10%
Article Questions		10%
Lab	25%	
Semester Exams	20%	
Lecture Final Exam	20%	
Participation	5%	
Total	80%	20%

VII. Other Policies, Procedures and important Dates - Please refer to the WTC [Catalog](#) for the following

- A. Campus Calendar
- B. Final exam schedule
- C. How to drop a class
- D. Withdrawal information
- E. Student Conduct/Academic Integrity
- F. Students with disabilities

VIII. Course Content

Weekly Overview	Topics Covered
1 – Introduction to Biology	Common themes of life, introduction to evolutionary theory, the scientific method
2 – The Chemistry of Life	Energy, atoms, chemical bonds, hydrogen bonds, acids and bases, water chemistry
3 – Macromolecules	Carbohydrates, proteins, lipids, nucleic acids, ATP
4 – The Cell	Cell theory, cellular structure, prokaryotic traits, eukaryotic traits, organelles, cytoplasm components, the cytoskeleton
5 – Introduction to Metabolism	Enzymes, metabolic pathways, cell membranes, plasma membrane function, diffusion, active transport
6 – Cellular Respiration	Cell energy flow, glycolysis, Krebs cycle, electron transport chain, fermentation

7 – Photosynthesis	Properties of light, light-dependent reactions, light independent reactions, carbon fixation strategies
8 – Cell Replication	Mitosis, interphase, senescence, cancer, meiosis, sexual reproduction
9 – DNA and RNA	DNA structure, DNA function, DNA replication, mutations, genes, transcription, translation, RNA structure, RNA function
10 – Genetics	Gene expression, genetic control, Mendelian genetics, epigenetics

Last Modified: August 21, 2019