

Biology for Science Majors 1

Class

BIOL 1406

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. Laboratory activities will reinforce the fundamental principles of living organisms, including physical and chemical properties of life, organization, function, evolutionary adaptation, and classification. Study and examination of the concepts of cytology, reproduction, genetics, and scientific reasoning are included.

Course Learning Objectives

Upon successful completion of this course, students should be able to:

1. Describe the characteristics of life.
2. Explain the methods of inquiry used by scientists.
3. Identify the basic requirements of life and properties of 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.
10. Apply scientific reasoning to investigate questions and utilize scientific tools such as microscopes and laboratory equipment to collect and analyze data.
11. Use critical thinking and scientific problem solving to make informed decisions in the laboratory.
12. Communicate effectively the results of scientific investigations.
13. Describe the characteristics of life.
14. Explain the methods of inquiry used by scientist.
15. Identify the basic properties of substances needed for life.
16. Compare and contrast the structures, reproduction, and characteristics of viruses, prokaryotic cells, and eukaryotic cells.

Required Institutional Core Learning Outcomes

Communication (COM), Critical Thinking (CT), Empirical and Quantitative Reasoning (EQR), and Teamwork (TW)

Required Textbooks

Textbook: Raven, Johnson, Mason, Losos, and Singer; *Biology*, Twelfth Edition, McGraw-Hill, 2020.

Online tutorial: McGraw-Hill Connect / LearnSmart (access code required – includes e-book version of the required textbook)

Lab manual: Vodopich/Moore and Dolphin/Vleck, *BIOL 1406/1407 Biology Laboratory Manual*, Special Edition for Weatherford College, McGraw-Hill Companies Inc., 2017.

Evaluation Standards

The final course grade will be based on the following activities:

1. Performance on incremental exams (40%)
2. Performance on comprehensive final exam (10%)
3. Performance on online tutorial assignments (15%)
4. Completion of a research project, group project, or other special assignment (10%)
5. Performance on all required laboratory activities (25%)

A = 90 – 100%

B = 80 – 89%

C = 70 – 79%

D = 60 – 69%

F = 0 – 59%

Disabilities

ADA Statement:

Any student with a documented disability (e.g. learning, psychiatric, vision, hearing, etc.) may contact the Office on the Weatherford College Weatherford Campus to request reasonable accommodations. *Phone:* 817-598-6350
Office Location: Office Number 118 in the Student Services Building, upper floor. *Physical Address:* Weatherford College 225 College Park Drive Weatherford, TX.

Academic Integrity

Academic Integrity is fundamental to the educational mission of Weatherford College, and the College expects its students to maintain high standards of personal and scholarly conduct. Academic dishonesty of any kind will not be tolerated. Academic dishonesty includes, but is not limited to, cheating on an examination or other academic work, plagiarism, collusion, and the abuse of resource materials including unauthorized use of Generative AI. Departments may adopt discipline specific guidelines on Generative AI usage approved by the instructional dean. Any student who is demonstrated to have engaged in any of these activities will be subject to immediate disciplinary action in accordance with institutional procedures.