

BIOL 1406 — Biology for Science Majors I

Frank Phillips College

General Course Information

Credit Hours: 4

General Education Core Curriculum Course

Prerequisite

MATH 1314, College Algebra. Successful completion of College Algebra or concurrent enrollment in higher-level mathematics, with a C or higher, is recommended.

Course 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. Must be taken concurrently with a laboratory section.

THECB Approval Number26.0101.51.03

Statement of Purpose

Through the Texas Core Curriculum, students will gain a foundation of knowledge of human cultures and the physical and natural world, develop principles of personal and social responsibility for living in a diverse world, and advance intellectual and practical skills that are essential for all learning.

Core Objectives Required for Life and Physical Sciences Courses

Courses in this category focus on describing, explaining, and predicting natural phenomena using the scientific method.

Courses involve the understanding of interactions among natural phenomena and the implications of scientific principles on the physical world and on human experiences.

- **Critical Thinking Skills** – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
- **Communication Skills** – to include effective development, interpretation and expression of ideas through written, oral and visual communication
- **Empirical and Quantitative Skills** – to include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
- **Teamwork** – to include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal

Required Core Objective	Activity Related to Core Objective
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Short essay – Students will write an essay either as a standalone assignment or as an exam or quiz question to effectively communicate a considerate analytical response to a critical thought prompt.
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	In-class discussion
Communication – to include effective development, interpretation, and expression of ideas through written, oral, and visual communication	Lab Manual/Journal – Lab activities include communicating the collection and analysis of quantitative data.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Short essay – Students will write an essay either as a standalone assignment or as an exam or quiz question to effectively communicate a considerate analytical response to a critical thought prompt.
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	In-class discussion
Critical Thinking Skills – to include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information	Lab Manual/Journal – Students will complete assigned lab activities designed around data collection and analysis.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Lab Manual/Journal – Lab activities include communicating the collection and analysis of quantitative data.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Scientific Method Activity – Laboratory activity covering basic concepts in the process of science. Activity will include data collection and analyses as part of journal entry.
Empirical and Quantitative Skills – To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions	Exam Questions – A number of questions covering curriculum over the process of science including quantitative methodology.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Lab Manual/Journal Students will work in groups to complete laboratory exercises to be reported in a lab journal.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	Lab Manual/Journal Students will work in groups to complete laboratory exercises to be reported in a lab journal.
Teamwork – To include the ability to consider different points of view and to work effectively with others to support a shared purpose or goal	In-class discussion

Learning Outcomes:

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.
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.

Methods of Evaluation

Lecture Grade (Exams, quizzes, assignments)	60%
Laboratory Grade (Practical exams, lab write-ups, quizzes, & lab assignments)	40%

Lecture: Lecture grade will be based upon lecture exams, quizzes and assignments; total weight of overall lecture grade will be 60%. Examinations given may include items in the following format:

Essay questions, Multiple choice*, True/False, Fill in the blank*
Short answer* (*may include labeling)

Quizzes and assignments will be given at the instructor's discretion, but typically no more than 1 per week

Laboratory: Laboratory grade (40% of total grade) will be based upon practical exams, lab write-ups, quizzes, & assignments. Practicals include items such as found on lecture tests but primarily assess hands on learning.

Attendance is required to turn in a lab write-up for credit. Additionally, lack of participation in group laboratory activities will receive a 10% deduction.

Grading scale: A=90-100; B=80-89; C=70-79; D=60-69; F=0-59

Academic Honesty and Integrity

Students attending Frank Phillips College are expected to maintain high standards of

personal and scholarly conduct. Academic dishonesty including, but not limited to, cheating, collusion (working with anyone else to produce work for which you take credit without the professor's permission), utilizing resources such as books and notes for a test without the professor's permission, and plagiarism is considered a serious offense and may result in disciplinary actions including:

- A grade of 0 for the test or assignment
- A semester grade of F for the course
- Administrative withdrawal from the course
- Academic suspension
- ***Faculty members have the right to assign a failing grade to a student who is guilty of academic dishonesty at any point during a semester. Faculty members may prohibit a student from dropping a course when academic dishonesty is discovered. However, if a student has dropped the course in accordance with the rules and dates applied to dropping a course and prior to the discovery of academic dishonesty, the grade of W will stand. Students currently enrolled in a course and students who have completed a course (A, B, C, D, CT, and I) may have a grade changed to an F if academic dishonesty is discovered. The faculty member must notify the student of the change to the final grade within one week of facilitating the change. The student will have the opportunity to appeal the final grade change according to the college policy stated in the catalog.

Class Attendance

Regular attendance is necessary for satisfactory achievement. Therefore, it is the responsibility of the student to attend class in accordance with requirements of the course as established by the instructor.

Students will be excused from class without penalty when either representing the college in an approved activity or having an approved reason for not attending. Reasons for absences must be approved by the instructor of the course. These exceptions do not relieve the student of the responsibility of making up the missed work as designated by the instructor concerned.

Students who enroll in one or more college-preparatory course(s) because of TSI deficiency will be administratively withdrawn from all classes if the course in which they are excessively absent is their only preparatory course. For a student enrolled in more than one preparatory course, the student may be dropped from only the course affected by absences.

Any student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day, provided that proper notification of the absence is given to the instructor of the course missed. The student should notify the instructor within the first fifteen (15) days of the semester that he or she intends to be absent on the specified holy day.

Cell Phones and Other Electronic Devices Procedure:

Cell phones and electronic devices in the classroom create a distraction for both students and faculty. Cell phones are also considered suspicious during test taking. Therefore, Frank Phillips College outlines the procedure for handling cell phone usage in a classroom as follows:

1. First Offense: the student will be warned verbally by the instructor to turn off the cell phone or electronic device or by appropriate administrative personnel at distance sites. The instructor will make a notation of the infraction.
2. Second Offense: the student will be asked to leave the class period for the day and will receive zeros for any work done in class on that day; a student receiving instruction through remote connection at an off-campus site will be required to attend the class face to face in Borger from this class date forward.
3. Third Offense: the student will be administratively withdrawn from the class in which the infraction occurred and will receive no refund for the class.

Students should leave the college's main number with an appropriate contact in case of an emergency.

Borger: (806) 457-4200, ext. 0 or 886-5047 after hours

Dalhart: (806) 244-7669

Perryton: (806) 648-1450

Grievance Policy

If you have a dispute concerning your grade or policies in this class, it is your responsibility to FIRST contact the instructor, either by e-mail or in person, to discuss the matter. Should things remain unresolved after this initial contact, please follow the procedures described in the Academic Policies section of the Frank Phillips College Catalogue. In the vast majority of cases, the matter can be resolved at the instructor/student level, and learning to communicate your concerns in a civilized manner is part of the college experience.

Important Information

Frank Phillips College is a Microsoft Office Campus. You must submit your electronic assignments in Microsoft Office programs only. If you do not have Microsoft Office, you may use one of the computer lab sites on campus for your class work.

Scans/Or Core Competencies That Will Be Addressed in the Class

Resources:

Allocates Time

Allocates Money

Allocates Material & Facility Resources

Information:

Acquires & Evaluates Information

Organizes & Maintains Information

Uses Computers to Process Information

Interpersonal:

Participates as a Member of a Team

Teaches Others

Serves Clients/Customers

Exercises Leadership

Negotiates to Arrive at a Decision

Works with Cultural Diversity

Thinking Skills:

Creative Thinking

Decision Making

Problem Solving

Seeing Things in the Mind's Eye

Knowing How to Learn

Reasoning

Technology:

Systems:

Selects Technology
Applies Technology
Maintains & Troubleshoots Technology

Understands Systems
Monitors & Corrects Performance
Improves & Designs Systems

Basic Skills:

Reading
Writing
Arithmetic
Mathematics
Listening & Speaking

Personal Qualities:

Responsibility
Self-Esteem
Sociability
Self-Management
Integrity/Honesty