

BIOL 2420 — Microbiology for Non-Science Majors

Frank Phillips College

General Course Information

Credit Hours: 4

Prerequisite

Passage of or exemption from the reading section of a TSI approved test or completion of INRW 0322 with a grade of C or better.

Course Description

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. This course covers basics of culture and identification of bacteria and microbial ecology. Emphasis is on medical microbiology, infectious diseases, and public health.

THECB Approval Number 26.0503.51 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.

Learning Outcomes

Upon successful completion of this course, students will:

1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.
2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.
4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.
5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.
8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
9. Use and comply with laboratory safety rules, procedures, and universal precautions.

10. Demonstrate proficient use of a compound light microscope.
11. Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
12. Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
13. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
14. Perform basic bacterial identification procedures using biochemical tests.
15. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
16. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

Methods of Evaluation

Daily Grades	40%
Test Average	35%
Lab Average	25%

1. 40% of grade is averaged daily grades. Test average and lab average are worth 35% and 25% of final grade, respectively.
2. Tests given after each unit (~5). Makeup test format is instructor determined. Grade earned on makeup work is posted as is; no adjustment to class average.
3. Daily grades primarily from assignments, attendance & participation and a project. Project includes a presentation, & meets grading requirements which could include: references (works-cited pg.), copies of sources, summary writing, and meeting presentation criteria. In addition students actively listen & participate during presentations by others (pose questions & participate in assessment).
4. Laboratory grades are assigned based on participation, notebook, skill mastery, demonstrations, quizzes, peer to peer teaching and testing. The notebook will be turned in (not to be returned) at the end of term. Notebook entries and drawings will be evaluated for correctness and completeness reflected by observations, data collected and evaluated, and when appropriate identification of organism(s) studied after applying tools/tests to examine specimens and related phenomena either in isolation or in either the natural environment or one simulated by living cultures. Final lab average includes the lab practical, checklist of satisfactory demonstrations of use of the tools of microbiology lab & written evidence in the notebook of the ability to interpret specimens, i.e. quantify observed phenomena, evaluate and communicate results of tests, and state the significance of the results. Completion of lab shown by correct, completed report. Exercises assigned chosen to support classroom material.
5. A “test only” based grade available upon request after consultation with instructor during first week. Lab will be required & valued at 25% while tests count an additional 75% of the grade. Recommended only for course repeats.
6. Final grade reported as: 90 -100= A, 80 - 89= B, 70 - 79= C, 60 - 69= D, <60= F.

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
- Notation of the student's transcript of "Academic Dishonesty."
- ***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 zeroes 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 Catalog. 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:

Selects Technology
Applies Technology
Maintains & Troubleshoots Technology

Basic Skills:

Reading
Writing Arithmetic Mathematics
Listening & Speaking

Systems:

Understands Systems
Monitors & Corrects Performance
Improves & Designs Systems

Personal Qualities:

Responsibility
Self-Esteem
Sociability
Self-Management Integrity/Honesty