



Course Syllabus

BIOL 2420

Microbiology for Non-Science Majors (2605035103)

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. Emphasis is on medical microbiology, infectious diseases, and public health. The lab also covers basics of culture and identification of bacteria and microbial ecology.

Semester Hours Credit: 4

Lecture/Lab Hours: 3-3

Prerequisite: BIOL 1408, with a grade of C or better

This prerequisite may be waived if the student has taken a comparable college-level science course.

To enroll in any science course, students must demonstrate readiness to perform college level academic coursework in reading and writing according to Coastal Bend College academic skills assessment guidelines. Basic computer skills are also required.

Textbook(s): LECTURE - *Microbiology Fundamentals: A Clinical Approach (2nd edition)*

ISBN: 9780078021046

LABORATORY - *Laboratory Manual for Introduction to Microbiology: Biology 2420 (1st edition)*

ISBN: 9780536305367

Student 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.

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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 bacterial identification procedures using biochemical tests.
13. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
14. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

Evaluation Methods:

The cumulative grade in this course will be a compilation of the lecture grade and the laboratory grade. The lecture grade will be 75% of the overall grade. The lecture grade will be a compilation of exams, assignments, participation,



and attendance. Exams and assignments make up 70% of the grade, and participation plus attendance will make up the other 5% of the grade.

The laboratory grade will be 25% of the overall grade. Every lab has a worksheet that needs to be filled out. Five (5) to twenty (20) questions from each lab worksheet will be assigned during the laboratory period prior to the due date of the worksheet. The lab grade will be a compilation of the lab worksheet average (8.33% of the total grade), a cumulative lab practical (8.33% of the total grade), and the "unknown assignment" (8.33% of the total grade). Laboratory practicals are interactive examinations that involve hands-on tasks and questions about those tasks (relating to labs you have completed). These tests are more "applied" than most, and require higher-level thinking skills than pen-and-paper tests.

ADA Statement: No qualified individual with a disability shall, by reason of such disability, be excluded from participation in or be denied the benefits of the services, programs, or activities of the College District, or be subjected to discrimination by the College District. Nor shall the College District exclude or otherwise deny equal services, programs, or activities to an individual because of the known disability of an individual with whom the individual is known to have a relationship or association. 42 U.S.C. 12132; 28 CFR 35.130(g).

See at: [GL \(Legal\)](#)

Special Needs Services: Students with special needs, including physical and learning disabilities, who wish to request accommodations in this course should contact the Student Development Office as soon as possible to make arrangements; this should occur no later than the second week of class or as soon as the student has the documentation on the disability and requested accommodation per a certified medical or psychological professional. In accordance with federal law, a student requesting accommodations must provide documentation of disability to the Student Development Advisor.

For more information, contact: in Alice at sdalice@coastalbend.edu; Beeville at sdbeeville@coastalbend.edu; Kingsville at sdkingsville@coastalbend.edu; and Pleasanton at sdpleasanton@coastalbend.edu.

Academic Dishonesty: Each student is charged with notice and knowledge of the contents and provisions of Coastal Bend College's rules and regulations concerning student conduct. All students shall obey the law, show respect for properly constituted authority, and observe correct standards of conduct. Scholastic dishonesty shall constitute a violation of these rules and regulations and is punishable as prescribed by Coastal Bend College Policies FLB (Local) and FM (Local). Scholastic dishonesty shall include, but not be limited to, cheating on a test, plagiarism, and collusion.

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See at: [FLB \(Local\)](#) and [FM \(Local\)](#).

See the [Student Handbook](#) for further explanation of Scholastic Dishonesty.

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NOTE: The College website (www.coastalbend.edu) serves as the main source with the most current version of the Coastal Bend College Board Policies and the Coastal Bend College Catalog.

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