TEXAS COLLEGE

Division of Natural and Computational Sciences
Department of Biology

Course Syllabus BIOL 2473 Microbiology

College Mission

Texas College is a Historically Black College founded in 1894, by the Colored Methodist Episcopal Church, now the Christian Methodist Episcopal Church (CME). Our mission continues to embody the principles of the Christian Methodist Episcopal Church. The College shall prepare students with competencies in critical and creative thinking related to the knowledge, skills, and abilities as defined in areas of study. Additionally, the College shall provide an environment to inspire intellectual, spiritual, ethical, moral, and social development, which empowers graduates to engage in life-long learning, leadership, and service.

Textbooks and or Electronic Site Required:

Foundations in Microbiology: Basic Principles by Talaro 12th Edition, ISBN 13: 9781265739362; McGraw hills Publishers. (Required)

Required Readings/Resources:

- COVID-19 Infection, Vaccines, and Immunity—The Antibody Response Requires Detailed Analysis by Nigel J. Dimmock Microbiol. Res. 2021, 12(3), 626-629; https://doi.org/10.3390/microbiolres12030044 - 28 Jul 2021
- Insights on Cadmium Removal by Bioremediation: The Case of Haloarchaea by Mónica Vera-Bernal and Rosa María Martínez-Espinosa Microbiol. Res. 2021, 12(2), 354-375; https://doi.org/10.3390/microbiolres12020024 - 11 Apr 2021
- Antibiotic resistance has spread to the deep, dark forest, bear teeth reveal By Andrew CurryAug. 25, 2021, 11:00 AM
- How covid-19 is accelerating the threat of antimicrobial resistance, BMJ 2020; 369 doi: https://doi.org/10.1136/bmj.m1983 (Published 18 May 2020) Cite this as: BMJ 2020;369:m1983
- The value of cultures to modern microbiology, Austin B. Antonie Van Leeuwenhoek. 2017 Oct;110(10):1247-1256. doi: 10.1007/s10482-017-0840-8. Epub 2017 Feb 6.

Course Description:

BIOL 2373.01 Microbiology is an online course includes historical perspectives, cell structure and function, microbial genetics, infectious disease, immunology, distribution, physiology identification, classification, and disease control of microorganisms.

Prerequisite Courses: BIOL 1471 General Biology

TEXAS COLLEGE OUTCOMES

1. Critical Thinking Skills

2. Communication Skills
3. Empirical and Quantitative Skills
4. Teamwork
5. Social Responsibility
6. Personal Responsibility

Furthermore, BIOL 2423 Microbiology ensures the following institutional objectives:

1. Enhance communicative skills (oral and written)
2. Enhance critical thinking and technology skills
3. Enhance leadership abilities and spiritual awareness
4. Create opportunities for professional and post-graduate pathways

All learning objectives reflect the Texas College Core Values:

Academic Excellence: Developing a culture of curiosity and creativity that will challenge the frontiers of teaching/learning; stimulate research; raise the level of analytical reasoning and inquiry; and enable students to acquire leadership, human relations, communication, and technology skills.

Integrity: Instilling the pursuit of character, honesty, and sincerity of purpose as the moral rubrics upon which the behaviors of our graduates and College family are anchored.

Perseverance: Implanting diligence, enterprise, and pride in the application of skills, knowledge and abilities developed during the course of study at Texas College.

Social Responsibility: Promoting in the College community a conscious awareness that we are all stewards of the resources entrusted to our care.

Tolerance: Emphasizing openness to divergent points of view, applying an eclectic approach to rational and analytical thinking.

Community Service: Encouraging self-extension in service to others as the heart and soul of our educational enterprise.

STUDENT LEARNING OBJECTIVES & OUTCOMES

When you have completed your study in this course you should be proficient in meeting the following objectives.

Week	Chapter/Module		Activities/Labs	Institutional Objectives and Student Learning outcome
1			• Syllabus quiz • Pretest • Lab safety test	
2	Syllabus and Lab Safety The Main Themes of Microbiology	SLO1	• Assignment 1 • Read chapter 1 from textbook (Power point notes are posted on the main page of JICS) Lab 2 Scientific Method • Chapter 1 test Chapter 1 case study	SLO1; TC1, 2 and 4

3 and 4	2. The Chemistry of Biology	SLO2	• Chapter 2 Test • Chapter 2 reading • Lab 3 Testing and adjusting food pH • Chapter 2 Reading Assignment • Chapter 2 worksheet	SLO2; TC1, 2 and 4
5 and 6	3. Tools of the Laboratory: The Methods for Studying Microorganisms	SLO3	• Chapter 3 Test • Chapter 3 reading • Lab 4 Gram Staining • Chapter 3 case Study	SLO3; TC1, 2 and 4
7 and 8	4. An Introduction to Cells and Prokaryotic Cell Structure and Function	SLO4	• **Chapter 4 Test Midterm** • Chapter 4 Reading Assignment • Lab 5 • Chapter 4 case study	SLO4; TC1, 2 and 4
9 and 10	5. Eukaryotic Cells and Microorganisms	SLO5	• Chapter 5 Test • Chapter 5 Case Study • Lab 6	SLO5; TC1, 2 and 4
11 and 12	6. An Introduction to the Viruses	SLO6	• Chapter 6 Test • Chapter 6 Case Study • Lab 7	SLO6; TC1, 2 and 4
13	7. Elements of Microbial Nutrition, Ecology, and Growth	SLO7	• Chapter 7 Test • Chapter 7 Case Study • Lab 8	SLO7; TC1, 2 and 4
14.	8. Genetic Engineering		• Chapter 8 Test • Chapter 8 Case Study • Lab 9	TC1, 2 and 4
15	**Final Exam**		**Final Exam**	SLO1-SLO7

	Total hours 60	Total participation hours—120 (4 credit hour course)	Total Contact hours 180	

Measurable Student Learning Outcomes:

The goal of this course is to provide a basic understanding of microbiology and its importance in daily lives. After completion of the course, students will be able to

SLO1: describe the roles of microorganisms as pathogens, history of microbiology, medical advances, aseptic techniques, the apply germ theory of disease, the scientific method, and taxonomy. (TC 1, 2 and 4)
SLO2: examine the major elements of life and their primary Characteristics, bonds and molecules and macromolecules. (TC 1, 2 and 4)
SLO3: analyze tools of the laboratory: the methods for studying microorganisms. (TC 1, 2 and 4)
SLO4: describe cells and Prokaryotic Cell Structure and Function and test bacteria (TC 1, 2 and 4)
SLO5: compare eukaryotic cells and microorganisms. (TC 1, 2 and 4)
SLO6: compare structure and replication of viruses. (TC 1, 2 and 4)
SLO7: analyze elements of microbial nutrition, ecology, and growth. (TC 1, 2 and 4)

By the end of the semester, the student will be able to satisfactorily complete all the listed students learning objectives with the aid of lecture notes at a minimum of 70% competency level based on the posttest scores.

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Method of Instruction:

- Face to face and Web-based environment
- Class discussion to examine the topics on the course outline.
- Required readings and online activities.
- Use of online tools and resources to facilitate a deeper understanding of the readings and the class discussions.

SOFTWARE AND SUPPLIES

Software and Programs:

1. Access to websites as referenced in class. *Students attempting to gain access through cell phones, Mac books, or outdated equipment may experience difficulties with certain websites or videos. It is the student's responsibility to locate a computer lab with viable equipment.*
2. Access to JICS. *It is the student's responsibility to become familiar with* JICS.
3. Documents in this course will be in Word format.
4. *Students should be prepared to back up files on their own Flash Drive. Work should be saved more than once, as it is not the instructor's responsibility if technology issues suddenly occur and information is lost*.

COURSE REQUIREMENTS

Submission of Assignments:
All assignments must be submitted on time **in JICS. Please do not submit work through emails.** Late assignments will get only 70% credit of the earned grade. If **extenuating circumstances** prevent you from turning in an assignment, please contact me **before** the due date. Late work will be accepted without penalties **only if** emergencies are documented or Texas College has technology outages. Students are required to have access to internet that is JICS compatible.
Students should check emails and classroom announcements daily to remain well-informed.
Students are expected to submit assignments on the due date. If you submit an assignment late, you will receive 70% of the earned grade for the assignment. Assignments which are more than a week late will not be accepted at all. No excuses will be accepted, including difficulties with technology. All assignments/tests must be uploaded in the coursework.
A **complete schedule** of assignments corresponding tests, project, activities, and labs is be available under the link coursework.
For the successful completion of the course, students need to have the access of textbook and a considerable amount of reading. They can also make use of resources from the World Wide Web.

Due to the complexity of preparation, these assignments will not be returned to individual students. Grades will be posted in the online gradebook.
Lecture: All tests/exams will cover material presented in chapters from your textbook. Each test will have 25 questions and worth of 100 points. Exams can include multiple choice, short answer, fill-in-the blank, true/false and matching questions. All the tests will be online and open notes. Tests will be posted in the coursework section of the course located in My TC portal.
Final exam will be comprehensive and is of 200 points each. It will include all the chapters covered during the semester and the exam will have 40 questions.
All the tests are open book. **You will not be allowed to repeat or redo the test assignments.** All the test assignments will be in an online format. Students will need to open the test from their coursework and answer **all the questions. Hit the submit button only when the test is finished. They will get the grades for the test/assignment only after the due date is passed.**

Homework/Activities/Discussion:
Students will be assigned case studies, and discussion. All assignments will be of 100 points each.

Laboratory Assignments:
Each lab assignment is worth of 100 points. All points will be averaged to 25% of total course grade. Labs are required for successful completion of the course. All online lab assignments must be uploaded on the course website.

Roles and Responsibilities: Students and Faculty

This class comes with expectations for college-level students. Failure to meet these expectations can result in a lower grade, and even expulsion from the class.

1. Class will begin promptly at the beginning of each class period. If you are late, you forfeit your right to enter class.

2. Cell phones and Laptops must be turned off during class, unless advised otherwise by the instructor. Any student who violates this policy and leaves class to answer a phone call will not be readmitted to the class.
3. Sleeping in class will not be tolerated. If you violate this rule you will be asked to leave class. You will

be asked to meet with the instructor before returning to class.

4. Classroom Attire: Students are expected to follow the College dress code. Students dressed inappropriately will be dismissed with an unexcused absence for the day.

- Female students are required to wear covering over the upper portions of their bodies.
- Low-cut blouses are prohibited.
- Back-out tops, blouses and t-shirts are prohibited.
- Micro-mini shorts that expose the buttocks are prohibited.
- Any dress, shirt, short, etc., that distracts from the teaching/learning process in the classroom is prohibited.
- Caps, head gear, du rags are prohibited within the buildings.
- Male students are not permitted to wear shaggy pants.
- Male students are not permitted to wear sleeveless/muscle shirts in the classrooms or on campus.
- Male students are required to wear a belt with pants.
- Shoes are required in the classroom and cafeteria.
- No house shoes are permitted on campus.

5. **If you leave class during an exam, you will not be allowed to complete the exam**. You do have the option of taking the makeup exam which is always an essay exam.

6. Missed assignments may only be made up with an Excused Absence. Students with excused absences have one week to make up their work, otherwise the grade will be entered as a zero. Excused Absences are:

a. Personal illness or illness of an immediate family member **with a doctor's statement.**

b. Death of an immediate family member **with the funeral program.**

c. Patriotic Duty (jury, or military duty, or court appearance) **with a copy of the summons.**

d. Co-curricular or extra-curricular obligations to the College (athletics, conferences, seminars, performances) **with a written notice from the Office of Academic Affairs.**

All makeup exams and assignments are given during office hours. Students are responsible for it.

7. Late assignments/tests will be given 70% of the earned grade.

8. Inclement Weather: The President of Texas College makes the decision and announces when classes are canceled due to inclement weather. If in doubt, check your Texas College email, or the Texas College website.

9. Attendance: It is unlikely that students will earn an acceptable grade if they do not attend class regularly. Attendance is recorded for each class. Attendance alone does not guarantee a passing grade. It is important that students take complete and comprehensive notes during lectures. It is also essential that students study regularly.

10. Academic Ethics:

Texas College may initiate disciplinary proceedings against a student accused of scholastic dishonesty. At the minimum the student, or all students involved, will fail the assignment or exam.

Scholastic dishonesty includes, but is not limited to, statements, acts, or omissions related to applications for enrollment or award of a degree, and/or the submission as one's own work material that is not one's own. Scholastic dishonesty may involve, but is not limited to, one or more of the following acts: cheating, plagiarism, collusion, use of annotated texts or teacher's editions, and/or falsifying academic records.

Plagiarism is the use of an author's words or ideas as if they were those of the student without giving credit to the source, including, but not limited to, failure to acknowledge a direct quotation.

Cheating is the willful giving or receiving of information in an unauthorized manner during an examination, illicitly obtaining examination questions in advance, copying computer or internet files, using someone else's work for the assignments as if it were one's own, or any other dishonest means of attempting to fulfill the requirements of a course. Cheating **during the test/exam will result in a grade of zero for the exam**.

Collusion is intentionally aiding or attempting to aid another in an act of scholastic dishonesty, including but not limited to, providing a paper or project to another student; providing an inappropriate level of assistance; communicating answers to a classmate during an examination; removing tests or answer sheets from a test site, and allowing a classmate to copy answers and signing the role for an absent student.

PROGRAM FOR WHICH THE COURSE IS REQUIRED

Microbiology is a requirement for Biology Majors which leads to a Bachelor of Science (BS) Degree in Biology.

METHOD OF STUDENT EVALUATION

For the assessment of each objective, multiple choice, short answer, fill-in-the blank, true/false and matching questions test will be given**.** Application activities will also be given for each objective.

1. **Tests and exams ----------75%**
   Chapter exams: 100 points each;
   Final exam: 200 points
   Worksheets/class quizzes 100 points each
   QEP Assignment– Writing Assignment 200 points
2. **Laboratory assignments----------25%**
   Lab assignment: 100 points each

QEP Assignment: consists of a five-paragraph essay. The essay will be "***COVID-19 Infection, Vaccines, and Immunity***" (Communication Skill)".

Grading Rubric:

90-100	A	Transformative (and submitted on time)
80-89	B	Proficient
70-79	C	Developing
60-69	D	Beginning
Below 60	F	Not Submitted

*Grade of C or above is required to pass the course. The course must be repeated for Biology majors if grade is a D or below.

RUBRICS FOR GRADING WRITTEN ASSIGNMENTS FOR BIOL 2423

	Excellent (5)	Satisfactory (4-3)	Not Satisfactory (2-1)
Content	Clear topic and many interesting details	Somewhat clear topic and some mildly interesting details	Topic not clear and few details

Organization	Details and sequences are clearly evident	Details and sequence are evident but not clear	Details and sequence are not evidence (jumbled/confused)
Fluency	Written in natural language	Some natural and patterned language	Unnatural language patterns
Mechanics	Very few errors (90%) spelling grammar and usage capitalization punctuation	Majority conventions correct (80%) spelling grammar and usage capitalization punctuation	Frequent errors (70% correct) spelling grammar and usage capitalization

DIVERSITY STATEMENT

Texas College is committed to creating a community that affirms and welcomes persons from diverse backgrounds and experiences and supports the realization of their human potential. We recognize that there are differences among groups of people and individuals based on ethnicity, race, socioeconomic status, gender, exceptionalities, language, religion, sexual orientation, and geographical area. All persons are encouraged to respect the individual differences of others.

DISABLITIES AND SPECIAL NEEDS

Texas College provides equal opportunity to qualified disabled persons in accordance with the requirements of the American with Disabilities Act (ADA). This Act ensures that individuals with current disabling conditions are provided reasonable accommodations to enable them to enjoy the programs, activities, services, and employment opportunities offered by the College. Texas College adheres to this provision once a student/employee self identifies. Students may
contact the Office of Academic Affairs for information/assistance at: adasupport@texascollege.edu .

NOTICE OF NON-DISCRIMINATION

Texas College does not discriminate in any employment practice, education program, or educational activity on the basis of race, color, religion, national origin, sex, age, disability, sexual orientation, or veteran status. The Vice President for Academic Affairs has been designated to handle student inquiries regarding non-discrimination policies. Contact information is: Texas College, Attn: Vice President for Academic Affairs, Office of Academic Affairs/Martin Hall 1st floor, 2404 North Grand Avenue, Tyler, Texas 75702.

NETIQUETTE

All students in the class must strictly observe the standards of polite online communication know as netiquette. Online learning requires that everyone in the course (both students and professors) work together and share their ideas. It is expected that you foster a respectful environment when you are sharing your ideas.

WITHDRAWAL POLICY

Withdrawal from a course is the student's responsibility. Refer to the Texas College Academic Policies and Responsibilities for additional information on the College's withdrawal policy.

BIOLOGY PROFESSIONAL ORGANIZATIONS/ASSOCIATIONS

Professional Associations are a great source of information about internships, career pathways, conferences, scholarships, opportunities to meet people in your field, and a whole host of career-related topics. Usually associations will provide a discounted membership rate for students enrolled in college. A few of these organizations include:

- American Academy of Forensic Sciences
- American Association for the Advancement of Science
- American Institute of Biological Sciences
- The American Physiological Society
- American Society for Biochemistry and Molecular Biology
- American Society of Crime Laboratory Directors
- American Society for Human Genetics
- American Society for Microbiology
- Association for Women in Science
- The International Association for Science, Technology and Society
- National Academy of Science
- Human Genetic Modification | Center for Genetics and Society

CAVEAT

In the event of extenuating circumstances, the schedule and requirements for this course may be modified.