BIOL 2120 5B1
Microbiology for Non-Science Majors Lab
Fall 2025

LAMAR INSTITUTE OF TECHNOLOGY

INSTRUCTOR CONTACT INFORMATION

Instructor: Melanie Daleo
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Office Hours: See Starfish for Available Office Hours-
Click Here for Starfish

CREDIT

1 Semester Credit Hours (Lec 2 hours lab)

MODE OF INSTRUCTION

In-Person

PREREQUISITE/CO-REQUISITE:

Pre-requisite Biol 2101 and 2301

Passed the Reading/Writing Sections of TSI or any other accepted test

Co-requisite Biol 2302

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.

COURSE OBJECTIVES

1. Upon successful completion of this course, students will be able to:
   Use and comply with laboratory safety rules, procedures, and universal precautions.
2. Demonstrate proficient use of a compound light microscope.
3. Describe and prepare widely used stains and wet mounts and discuss their significance in identification of microorganisms.
4. Perform basic microbiology procedures using aseptic techniques for transfer, isolation, and observation of commonly encountered, clinically significant bacteria.
5. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
6. Perform basic bacterial identification procedures using biochemical tests.
7. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
8. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

Core Objectives

1. **Critical Thinking Skills:** To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information
2. **Communication Skills:** To include effective development, interpretation, and expression of ideas through written, oral, and visual communication
3. **Empirical & Quantitative Skills:** To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions
4. **Teamwork:** To include the ability to connect choices, actions, and consequences to ethical decision-making

REQUIRED TEXTBOOK AND MATERIALS

OpenStax Microbiology https://openstax.org/details/books/microbiology/

Hardcover:

ISBN-13: 978-1-938168-14-7

Paperback:

ISBN-13: 978-1-50669-811-3

Digital:

ISBN-13: 978-1-947172-23-4

ATTENDANCE POLICY

1. Lectures, classroom discussion, activities and labs promote understanding of key concepts. Please try to avoid unnecessary absences. If you are absent, you must make up the work in the allotted time frame. Students must make up exams the day you return and must make up labs within one week of absence at a day and time scheduled with the instructor.
2. Late assignments will be accepted with a deduction as a late penalty. Students will receive a zero for assignments not completed.

DROP POLICY

If you wish to drop a course, you are responsible for initiating and completing the drop process by the specified drop date as listed on the Academic Calendar. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

STUDENT EXPECTED TIME REQUIREMENT

For every hour in class (or unit of credit), students should expect to spend at least two to three hours per week studying and completing assignments. For a 3-credit-hour class, students should prepare to allocate approximately six to nine hours per week outside of class in a 16- week session OR approximately twelve to eighteen hours in an 8-week session. Online/Hybrid students should expect to spend at least as much time in this course as in the traditional, face-to-face class.

COURSE EVALUATION

Final grades will be calculated according to the following criteria:

1. Assignments (Lab Activities)*	= 25%
2. Quizzes	= 25%
3. Mandatory Group Lab Project	= 20%
4. Midterm and Final Exam	= 30%
Total	**= 100%**

*****10% of each lab activity will be based on lab etiquette including punctuality, preparedness, participation, and cleanliness after each lab meeting

GRADING SCALE

90-100 = A
80-89 = B
70-79 = C
60-69 = D
0 – 59 = F

ACADEMIC DISHONESTY

Students found to be committing academic dishonesty (cheating, plagiarism, or collusion) may receive disciplinary action. Students need to familiarize themselves with the institution's Academic Dishonesty Policy available in the Student Catalog & Handbook at http://catalog.lit.edu/content.php?catoid=3&navoid=80#academic-dishonesty.

TECHNICAL REQUIREMENTS

The latest technical requirements, including hardware, compatible browsers, operating systems, etc. can be online at https://lit.edu/online-learning/online-learning-minimum-computer-requirements. A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of online technology and resources.

DISABILITIES STATEMENT

The Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. LIT provides reasonable accommodations as defined in the Rehabilitation Act of 1973, Section 504 and the Americans with Disabilities Act of 1990, to students with a diagnosed disability. The Special Populations Office is located in the Eagles' Nest Room 129 and helps foster a supportive and inclusive educational environment by maintaining partnerships with faculty and staff, as well as promoting awareness among all members of the Lamar Institute of Technology community. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409)-951-5708 or email specialpopulations@lit.edu. You may also visit the online resource at Special Populations - Lamar Institute of Technology (lit.edu).

STUDENT CODE OF CONDUCT STATEMENT

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at www.lit.edu. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

STARFISH

LIT utilizes an early alert system called Starfish. Throughout the semester, you may receive emails from Starfish regarding your course grades, attendance, or academic performance. Faculty members record student attendance, raise flags and kudos to express concern or give praise, and you can make an appointment with faculty and staff all through the Starfish home page. You can also login to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the responsibility of the student to pay attention to these emails and information in Starfish and consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.

AI Statement

Lamar Institute of Technology (LIT) recognizes the recent advances in Artificial Intelligence (AI), such as ChatGPT, have changed the landscape of many career disciplines and will impact many students in and out of the classroom. To prepare students for their selected careers, LIT desires to guide students in the ethical use of these technologies and incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the discretion of the instructor. Students are reminded that all submitted work must be their own original work unless otherwise specified. Students should contact their instructor with any questions as to the acceptable use of AI / ChatGPT in their courses.

Course Requirements

1. A Midterm and Final are required using Respondus Lockdown Browser with two attempts given per assessment. The final score will be an ***average of both attempts***.
2. Students will complete labs for each chapter.
3. Students will complete a group lab project.
4. Late assignments will be accepted with a deduction as a late penalty. Students will receive a zero for assignments not completed.
5. Cell phones should only be visible and in use if being used in an activity designated by instructor. Otherwise, they should be put away and focus should be given to safely completing lab activities. *Students who continually use their cellphones for other purposes will lose etiquette points or asked to leave for the day.*
6. The following violations during testing might result in a grade of zero or reduction in points:
    - Using technology or electronic devices including, but not limited to, iPads, phones, smart glasses, earbuds, smartwatches.
    - Leaving the testing environment or face missing from frame or obscured.
    - Noises t
    - Any oth

Tentative Course Schedule

***Instructor reserves the right to modify as needed**

Week:	To Do:	Due Date
Week 1	☐ Syllabus Quiz	☐ 08.29.25

August 26th **Lab Safety**	☐ Goose Chase: Lab Safety ☐ Look over Group Project: Gram Staining ***due 11.14.25***	☐ 09.26.25
Week 2 **September 2nd** **Microscopy**	☐ Exercise 1 Use of Microscope ☐ Stations: Microscope ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 09.02.25
Week 3 **September 9th** **Aseptic Techniques**	☐ Exercise 2 Aseptic Techniques ****Please Note:** This lab is a prerequisite for other lab activities and serves as foundational training on how to prevent contamination, which is critical for the safety of most subsequent experiments. It must be completed to participate in other activities. ☐ Exercise 3 Isolation Streak Plate ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 09.16.25
Week 4 **September 16th** **Microscopy: Algae & Cyanobacteria**	☐ Exercise 4 Microbial Phototrophs ☐ Quiz 1 covering Labs 1-3 on 09.19.25 (Online) ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 09.16.25 ☐ 09.19.25
Week 5 **September 23rd** **Microscopy: Eukaryotes**	☐ Exercise 5 Protozoa ☐ Exercise 6 Fungi ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 09.30.25
Week 6 **September 30th** **Stain/Smear**	☐ Quiz 2 covering Labs 4-6 open 09.29.25 (Online) ☐ Exercise 8 Simple Staining and Smear Preparation ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 09.29.25 ☐ 09.30.25
Week 7 **October 7th** **Midterm Exam**	☐ Midterm Exam covering labs 1 – 6 and 8 on 10.07.25 (In-Class) ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 10.07.25
Week 8 **October 14th** **Gram Stain**	☐ Exercise 11 Gram Stain ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 10.14.25
Week 9 **October 21st** **Differential & Selective Media**	☐ Exercise 14 Blood Agar ☐ Exercise 15 Mannitol Salt Agar ☐ Work on Group Project: Gram Staining *due 11.14.25*	☐ 10.28.25
Week 10 **October 28th** **Differential & Selective Media**	☐ Exercise 16 Eosin Methylene Blue ☐ Exercise 17 MacConkey Agar ☐ **DUE SOON →** Work on Group Project: Gram Staining *due 11.14.25*	☐ 11.04.25
Week 11 **November 4th** **Kirby-Bauer Day 1**	☐ Exercise 25 Antimicrobial Susceptibility Testing (Kirby-Bauer method) ☐ Quiz 3 covering Labs 11, 14 - 17 open 11.07.25 (Online) ☐ **DUE SOON →** Work on Group Project: Gram Staining *due 11.14.25*	☐ 11.07.25
Week 12 **November 11th**	☐ Exercise 25 Antimicrobial Susceptibility Testing (Kirby-Bauer method) ☐ **DUE →** Group Project: Gram Staining *due 11.14.25*	☐ 11.11.25

Kirby-Bauer Day 2		
Week 13 **November 18th** **Infectious Diseases** **Bacteria ID Day 1**	☐ Exercise 33 Vaccination & Herd Immunity ☐ Exercise 52 Identification of Unknown Bacteria ☐ **Discussion Board:** Gram Stain Gallery Walk	☐ 11.18.25 ☐ 12.02.25 ☐ 11.21.25
Week 14 **November 25th** Thanksgiving Break	☐ Optional tutorials during scheduled lab time ☐ Sleep, rest, relax ☐ Enjoy time with family and friends ☐ Netflix, etc. ☐ Exercise ☐ Read a good book ☐ Do something nice for someone	
Week 15 **December 2nd** **Bacteria ID Day 2**	☐ Exercise 52 Identification of Unknown Bacteria	☐ 12.02.25
Week 16 **December 6th – 8th** **Final Exam**	☐ Final Exam covers Labs 11, 14, 15, 16, 17, 25, 33, and 52 *opens 12.06.25 and closes 12.08.25* (Online)	☐ 12.08.25