BIOL 2120
Microbiology for Non-Science Majors I Lab
Summer III 2026

Credit: 1 semester credit hour (2-hour lab)

Prerequisite/Co-requisite:
TSI Complete
Biology 1106 Corequisite

***PLEASE NOTE**
Summer courses are six weeks long but cover the *same amount of material* as courses offered during the regular semester. Because the timeline is significantly condensed, you should expect to devote substantial time each week to keeping up with readings, assignments, and assessments. Consistent engagement is essential for success in this accelerated format.

Course Description
This course covers the basics of culture, bacterial identification, and microbial ecology. This course is primarily directed at pre-nursing and other pre-allied health majors and covers the basics of microbiology. Emphasis is on medical microbiology, infectious diseases, and public health.

Course Objectives
Upon completion of the course, the student will be able to:

1. 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 the identification of microorganisms.
4. Perform basic microbiology procedures using aseptic techniques for the 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 the microscopic morphology of some common fungi and parasites.

Core Objectives

1. Critical thinking skills and problem-solving skills to make decisions in the laboratory.
2. Communication skills to effectively develop, interpret, and express the ideas and results of scientific investigations.
3. Quantitative skills to investigate and analyze data and use scientific tools in the laboratory to collect data.
4. Teamwork with students working together in groups on experiments and laboratory activities.

INSTRUCTOR CONTACT INFORMATION

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Instructor:	Melanie Daleo
Email:	mdaleo@lit.edu
Office Phone:	409-247-5323
Office Location:	MPC Building, Office 216
Office Hours:	See Starfish for Available Office Hours Click Here for Starfish

Required Textbook and Materials:

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

McGraw-Hill Connect Virtual Labs: Register at McGraw-Hill Connect to access Virtual Labs. Here is a tutorial on how to register:
https://www.mheducation.com/highered/support/connect/first-day-of-class/ia-blackboard-ultra-ltia.html

ATTENDANCE POLICY

1. You must log into Blackboard and access this course a minimum of 3 times per week.
2. Late assignments will be accepted with a deduction as a late penalty.
   Students will receive a zero for assignments not completed.
3. If you wish to drop this course, you must drop it administratively.
   If you do not drop, you will receive an F for the course.

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.

Course Outline

Module 1: Introduction to Microbiology

Module 2: Microbe Diversity

Module 3: Biochemistry, Metabolism & Growth

Module 4: Molecular Biology & Genetics

Module 5: Microbial Control & Pathogenicity

Module 6: Diseases, Epidemiology & Host Defenses

Weekly Checklist (Tentative)

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

Week:	To Do:	Due Date:
Week 1 **June 1st - 5th** Module 1	✔Syllabus Quiz ✔1st Lab - Virtual Labs Tutorial ✔ Lab Safety – Hand Washing Procedure ✔ Lab Safety – Personal Safety ✔ Aseptic Technique – Broth Culture to Sterile Broth	06.07.26
Week 2 **June 8th - 12th** Module 1 Quiz 1	✔ Aseptic Technique – Broth Culture to Sterile Agar Plate ✔ Aseptic Technique – Slant Culture to Sterile Agar Slant ✔ Microscopy – Operation of Brightfield Microscope ✔ Microscopy – Oil Immersion ✔ Quiz 1: Module 1 ✔Work on Group Project: Gram Staining due 07.30.26	06.14.26
Week 3 **June 15th - 19th** Module 2	✔Staining - Preparing a Smear Sample from a Bacterial Sample ✔Staining – Gram Staining ✔Staining – Acid-Fast Staining ✔Staining – Capsule Staining ✔Staining – Spore Staining ✔Work on Group Project: Gram Staining due 07.30.26	06.21.26
Week 4 **June 22nd - 26th** Module 2 Quiz 2	✔Microscopy – Diversity of Microorganisms ✔Ubiquity of Microorganisms – Sampling Surfaces for Bacteria ✔Microscopy – Euglena Wet Mount ✔Microscopy – Pond Water Wet Mount ✔Organismal Diversity – Fungi ✔Quiz 2: Module 2 ✔Work on Group Project: Gram Staining due 07.30.26	06.28.26
Week 5 **June 29th – July 3rd** Module 3	✔ Isolation Methods: Pour Plating ✔ Isolation Methods: Quantification by Colony Counting ✔ Isolation Methods: Quantitative Dilution of Bacteria ✔ Isolation Methods: Quadrant Streak Plate Method ✔ Isolation Methods: Subculturing of Bacteria ✔ Isolation Methods: Optical Density ✔Work on Group Project: Gram Staining due 07.30.26	07.05.26

Week 6 **July 6th - 10th** Module 3 Midterm Exam	✔ Microbial Growth: Effects of Osmotic Pressure ✔ Microbial Growth: Effects of pH ✔ Microbial Growth: Effects of Temperature ✔ Microbial Growth: Oxygen Requirements and Anaerobic Jar ✔Microbial Growth: Oxygen Requirements and Fluid Thioglycolate Medium Tubes ✔Midterm Exam: (07/10 12:30 am – 07/12 11:59 pm) ✔ Work on Group Project: Gram Staining due 07.30.26	07.09.26
Week 7 **July 13th - 17th** Module 4	✔ Bacterial Genetics – DNA Profiling ✔ Bacterial Genetics – Bacterial Transformation ✔ Bacterial Genetics – Polymerase Chain Reaction (PCR) ✔ Work on Group Project: Gram Staining due 07.30.26	07.19.26
Week 8 **July 20th - 24th** Module 5 Quiz 3 Group Project	✔ Control of Microbial Growth – Antimicrobic Sensitivity Testing (Kirby-Bauer Method) ✔ Control of Microbial Growth – Effect of Antiseptics and Disinfectants ✔ Control of Microbial Growth – Effect of Ultraviolet Light ✔ Quiz 3: Module 4 ✔ Group Project: Gram Staining	07.26.26
Week 9 **July 27th - 31st** Module 6	✔ Unknown Bacterial Identification – Sample #1 ✔ Unknown Bacterial Identification – Sample #2 ✔ Unknown Bacterial Identification – Sample #3 ✔ Unknown Bacterial Identification – Sample #4 ✔ Unknown Bacterial Identification – Sample #5 ✔ Group Project: Gram Staining DUE 07.25.25 at 11:59 pm	08.02.26
Week 10 **Aug 3rd - 7th** Quiz 4 Module 6	✔ Unknown Bacterial Identification – Sample #6 ✔ Unknown Bacterial Identification – Sample #7 ✔ Unknown Bacterial Identification – Sample #8 ✔ Unknown Bacterial Identification – Sample #9 ✔ Unknown Bacterial Identification – Sample #10 ✔ Quiz 4: Module 5	08.09.26
Week 11 **Aug 10th - 14th** Final Exam	✔ Final Exam: (08/11 12:30 am – 08/12 11:59 pm) ✔ You made it! Congratulations!	

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 6 to 9 hours per week outside of class in a 16-week session, or approximately 12 to 18 hours per week in an 8-week session. Online/Hybrid students should expect to spend at least as much time on this course as they would in a traditional, face-to-face class.

Course Evaluation

Final grades will be calculated according to the following criteria:

1.	Quizzes	25%
3.	Midterm & Final Exam	30%
4.	Group Project	20%
5.	Virtual lab activities	25%
		100%

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.

AI STATEMENT

Lamar Institute of Technology (LIT) recognizes that 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 chosen careers, LIT aims to guide students in the ethical use of these technologies and to incorporate AI into classroom instruction and assignments appropriately. Appropriate use of these technologies is at the instructor's discretion. Students are reminded that all submitted work must be their own, original work, unless otherwise specified. Students should contact their instructor with any questions about the acceptable use of AI, including ChatGPT, in their courses.

Technical Requirements (for courses using Blackboard)

The latest technical requirements, including hardware, compatible browsers, operating systems, etc., can be found 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.

Quizzes and Exams in this course are administered through Blackboard. Exams will be administered with Respondus
LockDown Browser + Respondus Monitor (webcam)
Requirements to take exams include:

- A reliable computer, desktop, or laptop (phones, Chromebooks, tablets, and iPads are not allowed).
- Windows: 10, 8, 7
- Mac: OS X 10.10 or higher

- Adobe Flash Player (bundled with the LockDown Browser installation)
- Web camera (internal or external) & microphone
- A reliable internet service provider. A broadband internet connection.
- A room to take the exam where you are alone (other individuals in the room are not allowed)

Watch these overview videos to understand the tools you will be using to take the exam.
Respondus LockDown Browser: https://www.youtube.com/watch?v=XuX8WoeAycs#action=share
Respondus Monitor: https://www.youtube.com/watch?v=hv2L8Q2NpO4 - action=share

Respondus **LockDown Browser + Respondus Monitor (webcam)**
Download Instructions:

- Select the quiz in the course
- Under Quiz Requirements, you will see "To take this quiz, you must use the Respondus LockDown Browser."
- Below, you will see: "You can use the button below if you have not already downloaded LockDown Browser." Click the button to go to the download page and then follow the instructions
- Use the link to download Respondus LockDown Browser to your computer; follow the installation instructions
- Return to the Quiz page in Brightspace (it may still be open in another tab) and select the quiz
- Select "Launch LockDown Browser"
- The quiz will now start

Note: LockDown Browser only needs to be installed once on a computer or device. It will start automatically from that point forward when a quiz requires it.

Guidelines while taking an online quiz: Follow these guidelines:

- Ensure you're in a location where you won't be interrupted.
- Turn off all other devices (e.g., tablets, phones, and second computers) and place them outside of your reach.
- Before starting the test, know how much time you have and that you've allotted sufficient time to complete it.
- Clear your desk or workspace of all external materials not permitted - books, papers, other devices.
- Remain at your computer for the duration of the test.
- If the computer, Wi-Fi, or location is different than what was used previously with the "Webcam Check" and "System & Network Check" in LockDown Browser, run the checks again prior to the exam.
- To produce a good webcam video, do the following:
    - Avoid wearing baseball caps or hats with brims.
    - Ensure your computer or device is on a firm surface (such as a desk or table). Do NOT have the computer on your lap, a bed, or other surface where the device (or you) is likely to move.
    - If using a built-in webcam, avoid readjusting the screen's tilt after the webcam setup is complete.
    - Take the exam in a well-lit room, but avoid backlighting (such as sitting with your back to a window)
- Remember that LockDown Browser will prevent you from accessing other websites or applications; you will be unable to exit the test until all questions are completed and submitted.

The following violations during testing will result in a grade of zero or a reduction in points:

- Using technology or electronic devices, including, but not limited to, iPads, phones, smart glasses, earbuds, and smartwatches.
- Leaving the testing environment or face missing from frame or obscured.
- Noises that might indicate external help.
- Any other questionable activities that indicate cheating.

Disabilities Statement

LIT uses 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 log in to Blackboard or MyLIT and click on the Starfish link to view academic alerts and detailed information. It is the student's responsibility to pay attention to these emails and information in Starfish and to consider taking the recommended actions. Starfish is used to help you be a successful student at LIT.
https://lit.edu/student-success/starfish

Student Code of Conduct

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 these documents.

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Course Requirements

1. The midterm exam covers Modules 1 to 3. Final Exam covers Modules 4 to 6.
2. Each exam may include a variety of question types, e.g., multiple-choice, true/false, fill-in-the-blank, case-based, etc.
3. Quiz 1 will cover Module 1. Quiz 2 will cover Module 2. Quiz 3 will cover Module 4. Quiz 4 will cover Module 5. Lab quizzes may contain questions regarding theory, procedures, and results.
4. If you miss assignments/classes due to unforeseen illnesses, deaths in the family, or other traumatic events, please provide documentation (letters from family are NOT acceptable) of the events that may conflict with coursework.
5. Late submissions of lab assignments and projects will be accepted, but a 10% penalty will be applied without documentation.
6. Missed quizzes and exams can be made up by contacting the instructor, with a 10% penalty without documentation.
7. Students will receive a zero for assignments not completed.