BIOL_2320_3A1
Microbiology for Non-Science Majors Lab
Spring 2026

LAMAR INSTITUTE OF TECHNOLOGY

CREDIT
1 Semester Credit Hours (0 hours lecture, 2 hours lab)

MODE OF INSTRUCTION
Face to Face

PREREQUISITE/CO-REQUISITE:
Pre-requisite Biol 2101 and 2301
Passed the Reading/Writing Sections of TSI or any other accepted test
Co-requisite Biol 2320

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 and 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
Upon completion of this course, the student will be able to:
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.

Approved: Initials/date

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

INSTRUCTOR CONTACT INFORMATION

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

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 they 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, with the exception of interactive quizzes given at the beginning of class. 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 date as listed in the College Calendar on the Student Success web page. If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

Tentative Course Schedule *Instructor reserves the right to modify as needed

Week:	To Do:	Due Dates
Week 1 **Jan 20th and 22nd** **Module 1:** Introduction to Microbiology **-Microbiology History** **-Microscopy**	☐ Syllabus Quiz (online) ☐ Famous Microbiologists Activity ☐ Video Quiz: Light & Electron Microscopes (Chapter 2) [2m 54s] ☐ Video Quiz: Types of Light Microscopes (Chapter 2) [8m 49s] ☐ Sign up & start working on Individual Project: Pathogens *due 02.27.26* ☐ Sign up & start working on Group Project: Microbial Diseases *04.20.26* ☐ History of Microbiology Chapter 1 Click Here for Chapter 1 ☐ Spontaneous Generation Chapter 3.1 Click Here for Chapter 3.1 ☐ Cell Theory Chapter 3.2 Click Here for Chapter 3.2 ☐ Microscopy Chapter Click Here for Chapter 2	01.25.26 01.22.26 01.25.26
Week 2 **Jan 27th and 29th** **Modules 1 and 2:** Introduction/Microbe Diversity **-Prokaryotic & Eukaryotic Cell Structure**	☐ Model: Gram + and – Bacterial Cell Walls ☐ Prokaryote/Eukaryote Activity ☐ Kingdoms Matching ☐ Start working on Individual Project: Pathogens *due 02.27.26* ☐ Start working on Group Project: Microbial Diseases *due 04.20.26* ☐ Prokaryotic Cell Structure & Function Chapter 3.3 and Chapter 4 Click Here for Chapter 3.3 Click Here for Chapter 4	01.29.26
Week 3 **Feb 3rd and 5th** **Module 2:** Microbe Diversity **--Prokaryotic & Eukaryotic Cell Structure**	☐ Video Quiz: Protist Parasites (Chapter 5) [7m 23s] ☐ Matching Activity ☐ Work on Individual Project: Pathogens *due 02.27.26* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due 04.20.26* ☐ Eukaryotic Cell Structure & Function Chapter 3.4 and Chapter 5 Click Here for Chapter 3.4 Click Here for Chapter 5	02.08.26 02.05.26
Week 4 **Feb 10th and 12th** **Module 2:** Microbe Diversity **-Eukaryotic Cell Structure**	☐ Interactive Activity: Microbe Diversity ☐ Video Quiz: Cestodes & Trematodes (Chapter 5) [7m 29s] ☐ Video Quiz: Nematodes Part 1 (Chapter 5) [7m 14s] ☐ Video Quiz: Nematodes Part 2 (Chapter 5) [5m 59s] ☐ Work on Individual Project: Pathogens *due 02.27.26* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due 04.20.26* ☐ Eukaryotic Cell Structure & Function Chapter 3.4 and Chapter 5 Click Here for Chapter 3.4 Click Here for Chapter 5	02.12.26 02.15.26
Week 5 **Feb 17th and 19th** **Module 2:** Microbe Diversity **-Virus Structure & Function**	☐ Video Quiz: Viral Replication (Chapter 6) [10m 30s] ☐ Models: Prokaryote, Eukaryote, Acellular Pathogens ☐ Quiz 1: Module 1 & 2 opens 02.20.26 and closes 02.21.26 (Online) ☐ **DUE SOON →** Individual Project: Pathogens *due 02.27.26* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due 04.20.26* ☐ Virus Structure & Function Chapter 6 Click Here for Chapter 6	02.20.26 02.19.26 02.21.26
Week 6 **Feb 24th and 26th** **Module 3:** Biochemistry, Metabolism, Growth & Nutrition	☐ Video Quiz: Microbial Growth Part 1 (Chapter 9) [12m 33s] ☐ Video Quiz: Microbial Growth Part 2 (Chapter 9) [5m 48s] ☐ Goose Chase: Biochemistry ☐ **DUE:** Individual Project: Pathogens *due 02.27.26* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due 04.20.26* ☐ Microbial Nutrition Chapter 7 Click Here for Chapter 7	03.01.26 02.26.26

	☐ Microbial Growth Chapter 9 Click Here for Chapter 9	
Week 7 **March 3rd and 5th** **Module 3:** Biochemistry, Metabolism, Growth & Nutrition	☐ Video Quiz: Metabolism & ATP (Chapter 8) [4m 22s] ☐ Activity: Cell Respiration & Photosynthesis ☐ Quiz 2: Module 3 opens 03.06.26 and closes 03.07.26 (Online) ☐ Discussion: Pathogen Project Gallery Walk ☐ Work on Group Project: Microbial Disease due 05.01.25 *due 04.20.26* ☐ Metabolism & Catabolism Chapter 8 Click Here for Chapter 8	03.05.26 03.05.26
SPRING BREAK **March 9th – 13th**	☐ Sleep, rest, relax ☐ Enjoy time with family and friends ☐ Netflix, etc. ☐ Exercise ☐ Read a good book ☐ Do something nice for someone	
Week 8 **March 17th and 19th** ~MIDTERM EXAM	☐ Review for Midterm Exam ☐ **MIDTERM EXAM** covers Modules 1 - 3 (Online) *opens 03.20.26 and closes 03.21.26* ☐ Work on Group Project: Microbial Disease *due 04.20.26*	03.21.26
Week 9 **March 24th and 26th** **Module 4:** Molecular Biology & Genetics	☐ Model: DNA Replication ☐ Work on Group Project: Microbial Disease *due 04.20.26* ☐ Nucleic Acid Structure Chapter 10.2 and 10.3 Click Here for Chapter 10.2 Click Here for Chapter 10.3 ☐ DNA Replication Chapter 11.2 Click Here for Chapter 11.2	03.26.26
Week 10 **March 31st and April 2nd** **Module 4:** Molecular Biology & Genetics	☐ Video Quiz: Modern Applications (Chapter 12) [14m 33s] ☐ Video Quiz: CRISPR (Chapter 12) [5m 29s] ☐ Model: Protein Synthesis ☐ Codon BINGO ☐ Work on Group Project: Microbial Disease *due 04.20.26* ☐ Gene Structure and Expression Chapter 11.3 and 11.4 Click Here for Chapter 11.3 Click Here for Chapter 11.4	04.05.26 04.02.26
Week 11 **April 7th and 9th** **Module 5 & 6:** Pathogenicity, Host Response & Diseases	☐ Video Quiz: Microbial Mechanisms of Pathogenicity (Chapter 15) ☐ Immune System Activity ☐ QUIZ 3: Module 4 opens 04.05.26 and closes 04.07.26 (Online) ☐ **DUE SOON →** Group Project: Microbial Disease *due 04.20.26* ☐ Microbial Mechanisms of Pathogenicity Chapter 15 Click Here for Chapter 15 ☐ Innate Host Response Chapter 17 Click Here for Chapter 17	04.12.26 04.09.26 04.07.26
Week 12 **April 14th and 16th** **Module 5 & 6:** Pathogenicity, Host Response & Diseases	☐ Video Quiz: Autoimmune Diseases (Chapter 19) [3m 4s] ☐ Video Quiz: Hypersensitivity Types (Chapter 19) [3m 26 s] ☐ Model: Innate and Adaptive Immune ☐ **DUE →** Group Project: Microbial Disease *due 04.20.26* ☐ Adaptive Response Chapter 18 Click Here for Chapter 18 ☐ Diseases of Immune System Chapter 19 Click Here for Chapter 19	04.19.26 04.16.26
Week 13 **April 21st and 23rd**	☐ Video Quiz: Microbial Control (Chapter 13) ☐ Video Quiz: Antimicrobial Drugs (Chapter 14) ☐ Matching Activity ☐ DNA DAY Extra Credit	04.26.26 04.23.26 04.25.26

Module 5 & 6: Pathogenicity, Host Response & Diseases	☐ QUIZ 4: Module 5 & 6 opens 04.24.26 and closes 04.25.26 (Online) ☐ Microbial Control Chapter 13 Click Here for Chapter 13 ☐ Antimicrobial Drugs Chapter 14 Click Here for Chapter 14	
Week 14 **April 28th and 30th** Applied Microbiology **-Food, Industrial & Environmental**	☐ Group Project Presentations on Tuesday, April 28th ☐ Foodborne Illness Fill-In ☐ Microbiology as a Field of Study WebQuest and Activity ☐ Food Microbiology and Food-Borne Illness Chapters 4.2, 4.4, 6.1, 7.5, 9.4, 9.5, 12.2, 13.1, 16.1, 24.1, 24.3 Click Here for Chapter 12.2 Click Here for Chapter 16.1 Click Here for Chapter 24.1 Click Here for Chapter 24.3	04.28.26 04.30.26
Week 15 **May 5th** Applied Microbiology **-Food, Industrial & Environmental**	☐ Video Quiz: Foodborne Illness ☐ Foodborne Illness Tracking Activity ☐ Food Microbiology and Food-Borne Illness Chapters 4.2, 4.4, 6.1, 7.5, 9.4, 9.5, 12.2, 13.1, 16.1, 24.1, 24.3 Click Here for Chapter 12.2 Click Here for Chapter 16.1 Click Here for Chapter 24.1 Click Here for Chapter 24.3	05.05.26
Week 16 **May 11th – 13th** ~Final Exam	☐ Review for Final Exams ☐ **FINAL EXAM** covers Modules 4 - 6 *opens 05.09.26 and closes 05.11.26 (Online)* You made it!! Congratulations ☺	05.11.26

COURSE EVALUATION

- Final grades will be calculated according to the following criteria:
- Discussion Participation 10%
- Assignments (Video Quizzes) 20%
- Chapter Quizzes 20%
- Midterm & Final Exam 30%
- Individual & Group Project 20%

Total = 100%

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

GRADE SCALE

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

TECHNICAL REQUIREMENTS

For the latest technical requirements, including hardware, compatible browsers, operating systems, etc., review the Minimum Computer and Equipment Requirements on the LIT Online Experience page. 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.

ARTIFICIAL INTELLIGENCE 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.

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.

ADDITIONAL COURSE POLICIES/INFORMATION

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 in-person lab experiments.
3. Students will complete a group lab project.
4. Late assignments will be accepted, but a late penalty will be applied. Interactive quizzes given at the beginning of class cannot be made up. Students will receive a zero for assignments not completed.
5. Cell phones should be visible and in use only during an activity designated by the instructor. Otherwise, they should be put away, and focus should be given to safely completing lab activities. *Students who continually use their cellphones for purposes other than class will lose etiquette points or be asked to leave for the day.*
6. Students are expected to follow the guidelines for testing in the 'Respondus Academic Integrity Policy'. The following violations during testing might 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 may result in a face being missing from or obscured in the frame.
    - Noises that might indicate external help.
    - Any other questionable activities that indicate cheating.

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.

STUDENT EXPECTED TIME REQUIREMENTS

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.