BIOL 2320
Microbiology for Non-Science Majors Lecture
Fall 2025

LAMAR INSTITUTE OF TECHNOLOGY

INSTRUCTOR CONTACT INFORMATION

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Office Hours: See Starfish for Available Office Hours
Click Here for Starfish

CREDIT

3 Semester Credit Hours

MODE OF INSTRUCTION

In-Person

PREREQUISITE/CO-REQUISITE:

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

Co-requisite Biol 2120

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

1. Upon successful completion of this course, students will be able to:
   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.

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/

Your textbook for this class is available for free online and a print copy, can be purchased online, or obtained through Eagle Learning Essentials. Click Here for Eagle Learning Essentials

ATTENDANCE POLICY

1. Lectures, classroom discussion, activities 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. Quizzes	= 20%
2. Discussion & Participation	= 10%
3. Individual & Group Project	= 20%
4. Midterm & Final Exam	= 30%
5. Assignments (Video Quizzes, etc.)	= 20%
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.

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 assignment 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 acceptable use of AI / ChatGPT in their courses

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.

Course Requirements

1. Three quizzes, 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 video quizzes and activities for each chapter.
3. Students will complete an individual project and a group 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 learning, participating, and completing classroom activities. *Students who continually use their cellphones for other purposes will lose etiquette points or asked to leave for the day.*
6. The following Respondus 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 that might indicate external help.
    - Any other questionable activities indicating cheating.

Tentative Course Schedule

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

Week:	To Do:	Due Dates
Week 1 **Aug 26th and 28th** **Module 1:** Introduction to Microbiology	☐ Syllabus Quiz (online) ☐ Prokaryote/Eukaryote Activity ☐ Kingdoms Matching ☐ 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 10.02.25* ☐ Sign up & start working on Group Project: Microbial Diseases *11.21.25* ☐ 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	08.31.25 08.28.25 08.31.25
Week 2 **Sep 2nd and 4th** **Module 1:** Introduction Microbe Diversity	☐ Model: Gram + and – Bacterial Cell Walls ☐ Start working on Individual Project: Pathogens *due 10.02.25* ☐ Start working on Group Project: Microbial Diseases *due11.21.25* ☐ Prokaryotic Cell Structure & Function Chapter 3.3 and Chapter 4 Click Here for Chapter 3.3 Click Here for Chapter 4	09.04.25
Week 3 **Sep 9th and 11th** **Module 2:** Microbe Diversity	☐ Video Quiz: Protist Parasites (Chapter 5) [7m 23s] ☐ Matching Activity ☐ Work on Individual Project: Pathogens *due 10.02.25* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due11.21.25* ☐ Eukaryotic Cell Structure & Function Chapter 3.4 and Chapter 5 Click Here for Chapter 3.4 Click Here for Chapter 5	09.14.25 09.11.25
Week 4 **Sep 16th and 18th** **Module 2:** Microbe Diversity	☐ 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 10.02.25* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due11.21.25* ☐ Eukaryotic Cell Structure & Function Chapter 3.4 and Chapter 5 Click Here for Chapter 3.4 Click Here for Chapter 5	09.18.25 09.21.25
Week 5 **Sep 23rd and 25th** **Module 3:** Microbe Diversity	☐ Video Quiz: Viral Replication (Chapter 6) [10m 30s] ☐ Models: Prokaryote, Eukaryote, Acellular Pathogens ☐ Quiz 1: Module 1 & 2 opens 09.26.25 and closes 09.27.25 (Online) ☐ **DUE SOON →** Individual Project: Pathogens *due 10.02.25* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due11.21.25* ☐ Virus Structure & Function Chapter 6 Click Here for Chapter 6	09.25.25 09.25.25 09.27.25
Week 6 **Sep 30th and Oct 2nd** **Module 3:** Biochemistry, Metabolism & Growth	☐ 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 10.02.25* ☐ Work on Group Project: Microbial Disease due 05.01.25 *due11.21.25* ☐ Microbial Nutrition Chapter 7 Click Here for Chapter 7 ☐ Microbial Growth Chapter 9 Click Here for Chapter 9	10.05.25 10.02.25

Week 7 **Oct 7th and 9th** **Module 3:** Biochemistry, Metabolism & Growth	☐ Video Quiz: Metabolism & ATP (Chapter 8) [4m 22s] ☐ Activity: Cell Respiration & Photosynthesis ☐ Quiz 2: Module 3 opens 10.10.25 and closes 10.11.25 (Online) ☐ Discussion: Pathogen Project Gallery Walk ☐ Work on Group Project: Microbial Disease due 05.01.25 *due11.21.25* ☐ Metabolism & Catabolism Chapter 8 Click Here for Chapter 8	10.09.25 10.09.25 10.11.25 10.09.25
Week 8 **Oct 14th and 16th** ~MIDTERM EXAM	☐ Review for Midterm Exam ☐ **MIDTERM EXAM** covers Modules 1 - 3 (Online) *opens 10.17.25 and closes 10.18.25* ☐ Work on Group Project: Microbial Disease due 05.01.25	10.18.25
Week 9 **Oct 21st and 23rd** **Module 4:** Molecular Biology & Genetics	☐ Model: DNA Replication ☐ Work on Group Project: Microbial Disease *due11.21.25* 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	10.23.25
Week 10 **Oct 28th and 30th** **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 *due11.21.25* ☐ Gene Structure and Expression Chapter 11.3 and 11.4 Click Here for Chapter 11.3 Click Here for Chapter 11.4	11.02.25 10.30.25
Week 11 **Nov 4th and 6th** **Module 5:** Diseases, Epidemiology, & Host Defenses	☐ Video Quiz: Microbial Mechanisms of Pathogenicity (Chapter 15) ☐ Immune System Activity ☐ Work on Group Project: Microbial Disease *due11.21.25* ☐ Microbial Mechanisms of Pathogenicity Chapter 15 Click Here for Chapter 15 ☐ Innate Host Response Chapter 17 Click Here for Chapter 17	11.09.25 11.06.25
Week 12 **Nov 11th and 13th** **Module 5:** Diseases, Epidemiology, & Host Defenses	☐ Video Quiz: Autoimmune Diseases (Chapter 19) [3m 4s] ☐ Video Quiz: Hypersensitivity Types (Chapter 19) [3m 26 s] ☐ Model: Innate and Adaptive Immune ☐ **DUE SOON →** Group Project: Microbial Disease *due11.21.25* ☐ Adaptive Response Chapter 18 Click Here for Chapter 18 ☐ Diseases of Immune System Chapter 19 Click Here for Chapter 19	11.16.25 11.13.25
Week 13 **Nov 18th and 20th** **Module 6:** Diseases, Epidemiology, & Host Defenses	☐ Video Quiz: Microbial Control (Chapter 13) ☐ Video Quiz: Antimicrobial Drugs (Chapter 14) ☐ Matching Activity ☐ QUIZ 3: Module 4 & 5 opens 11.21.25 and closes 11.22.25 (Online) ☐ **DUE →** Group Project: Microbial Disease *due 11.21.25* ☐ Microbial Control Chapter 13 Click Here for Chapter 13 ☐ Antimicrobial Drugs Chapter 14 Click Here for Chapter 14	11.20.25 11.20.25 11.22.25

Week 14 **Nov 25th** **Thanksgiving Holiday** **Nov 27th**	☐ Group Project Presentations on Tuesday, November 25th ☐ Sleep, rest, relax ☐ Enjoy time with family and friends ☐ Netflix, etc. ☐ Exercise ☐ Read a good book ☐ Do something nice for someone	11.25.25
Week 15 **Dec 2nd and 4th** Applied Microbiology	☐ Video Quiz: Foodborne Illness ☐ Foodborne Illness Fill-In ☐ Microbiology as a Field of Study WebQuest and Activity ☐ 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	12.04.25 12.04.25
Week 16 ~Final Exam	☐ Review for Final Exams ☐ **FINAL EXAM** covers Modules 4 - 6 *opens 12.06.25 and closes 12.08.25 (Online)* You made it!! Congratulations ☺	12.08.25