Introduction to Microbiology for Non-Science Majors (BIOL 2320)

CREDIT
3 semester credit hours (3 hours of lecture)

MODE OF INSTRUCTION
Online

PREREQUISITE/CO-REQUISITE:
Must be enrolled in BIOL 2120 at the same time.

COURSE DESCRIPTION
Study of microbial cell types and structure, microbial growth, control, metabolism, and genetics. This course provides information about microbes and human interactions, microbial pathogens, and human diseases/ health.

COURSE OBJECTIVES
Upon completion of the course, the student will be able to:

1. Identify and describe groups of microbes including prokaryote microbes, eukaryote microbes, and viruses.
2. Explain the differences between prokaryotic and eukaryotic cells.
3. Understand the importance of microorganisms in agriculture, environment, and human health.
4. Demonstrate microbial metabolism and genetics.
5. Describe the interaction between microbes and humans, and understand the mechanisms of pathogenesis, disease transmission, spread, and control.
6. Describe host defense and immunity.
7. Understand microbial growth, manipulation of microorganisms, and control.

INSTRUCTOR CONTACT INFORMATION
Instructor: Yunyan (Anna) Cheng
Email: ycheng@lit.edu
Office Hours: Monday-Friday 9am-5pm
                  Please email me or message me on Blackboard.

REQUIRED TEXTBOOK AND MATERIALS:
Open stax ISBN-10: 1938168143
https://openstax.org/details/books/microbiology

ATTENDANCE POLICIES
1. Cheating of any type will not be tolerated. This includes copying and pasting information.
2. Late submissions of assignments/quizzes/exams will be accepted with a deduction of 10% for the

first two weeks after the due date, followed by a 20% deduction thereafter. To avoid late penalties, official documents such as doctor's notes are needed.

3. Students will receive a zero for assignments not completed.

4. Four quizzes, a midterm exam, and a final exam are required with 2 attempts given per quiz/exam using Respondus Lockdown Browser. The final score of the quiz/exam will be calculated by averaging all attempts.

5. Make-up Exams: If you are unable to take an exam when scheduled due to unforeseen illnesses, deaths in the family, or other traumatic events, contact me within 24 hours of the event to schedule a make-up exam. Please provide documentation (letters from family are NOT acceptable) of the events that may conflict with exam dates.

6. Students will complete an individual project and a group project. Everyone needs to contribute to the group project. Please be attentive to your LIT email box and Blackboard messages for essential updates from your group member regarding your project. To ensure a collaborative and productive effort, we want to emphasize that every group member has the right to address any concerns about a lack of contribution from any team member. If necessary, **we can consider removing students who consistently do not contribute to the project**. We hope it won't come to that, and we encourage open communication to resolve any issues promptly. **Individual submission to the group project will have a penalty of 20% off and is by permit only.**

7. Assignments include video quizzes on Blackboard.

8. If you wish to drop this course, you must drop it administratively. If you stop logging in to the course and do not complete the course drop process, then you will receive an "F" grade for the course.

9. Internet usage- students are to use proper netiquette when participating in course email, assignment submissions, and online discussions.

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 If you stop coming to class and fail to drop the course, you will earn an "F" in the course.

COURSE CALENDAR

Spring 2026	2320 To Do:	Due Date
Week 1 Jan 20 – 23 Intro/Syllabus **Module 1:** Chapter 1: An Invisible World	• Syllabus Quiz • Discussion: Introductions • Discussion: Netiquette in Online Classes • Video Quiz: History of Microbiology • Get started on Individual Project • Join a group for Group Project by 01.31.26	01.24.26 01.31.26
Week 2 Jan 26– 30 **Module 1:** Chapter 2: How We See the Invisible World	• Video Quiz: What are Light and Electronic Microscopes • Video Quiz: Types of Light Microscopy • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	01.31.26
Week 3 Feb 2 – 6 **Module 1:** Chapter 3: The Cell Quiz 1	• Video Quiz: Prokaryotic vs Eukaryotic Cells • Quiz 1: (Chapter1-3) 02.06.26 - 02.07.26 • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	02.07.26
Week 4 Feb 9 – 13	• Video Quiz: Bacteria	02.14.26

Module 2: Chapter 4 Prokaryotic Diversity	• Discussion: Bioterrorism • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	
Week 5 Feb 16 – 20 **Module 2:** Chapter 5 The Eukaryotes of Microbiology	• Video Quiz: Parasites: Protozoa • Video Quiz: Fungi: Death Becomes Them • Video Quiz: Helminths: Cestodes and Trematodes • Video Quiz: Helminths: Intestinal Nematodes Part I • Video Quiz: Helminths: Intestinal Nematodes Part II • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	02.21.26
Week 6 Feb 23 – 27 **Module 2:** Chapter 6 Acellular Pathogens Quiz 2	• Video Quiz: Viruses • Video Quiz: Viral Replication • Quiz 2: (Chapter4-6) 02.27.26—02.28.26 • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	02.28.26
Week 7 Mar 2 – 6 **Module 3:** Chapter 7 & 8 Microbial Biochemistry and Metabolism	• Video Quiz: Biological Molecules • Video Quiz: Metabolism and ATP • Work on Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	03.07.26
Week 8 Mar 9 – 13 Spring Break	• Sleep, rest, relax • Enjoy time with family and friends • Exercise • Read a good book • Do something nice for someone	
Week 9 Mar 16 – 20 **Module 3:** Chapter 9 Microbial Growth Midterm Exam Individual Project	• Video Quiz: Microbial Growth 1 • Video Quiz: Microbial Growth 2 • Discussion: Antibiotic Resistance • Midterm Exam: (Chapter 1-9) 03.20.26—03.21.26 • Individual Project Due 03.21.26 • Work on Group Project Due 04.18.26	03.21.26
Week 10 Mar 23 – Mar 27 **Module 4:** Chapter 10 &11 Microbial Genetics	• Video Quiz: Structure of Nucleic Acids • Video Quiz: DNA replication • Video Quiz: From DNA to Protein • Work on Group Project Due 04.18.26	03.29.26
Week 11 Mar 30 – Apr 3 **Module 4:** Chapter12 Microbial Genetics Quiz 3	• Video Quiz: Molecular Biology • Video Quiz: How CRISPR lets you edit DNA • Quiz 3: (Chapter 10-12) 04.02.26—04.04.26 • Work on Group Project Due 04.18.26	04.04.26
Week 12 Apr 6 – 10 **Module 5:** Chapter 13 Control of Microbial Growth Chapter 14 Antimicrobial Drugs Quiz 4	• Video Quiz: Infection and Intoxication • Discussion: Antimicrobial Products • Pathogen Project: Gallery Walk • Quiz 4: (Chapter 13-14) 04.10.26—04.11.26 • Work on Group Project Due 04.18.26	04.11.26
Week 13 Apr 13 – 17 **Module 6:** Chapter 17 Innate Nonspecific Host Defenses Group Project	• Video Quiz: Immune System 1 • Group Project Due 04.18.26	04.18.26
Week 14 Apr 20 – 24 **Module 6:** Chapter 18	• Video Quiz: Immune System 2 • Video Quiz: Immune System 3 • Discussion: Vaccines	04.25.26

Adaptive Specific Host Defense		
Week 15 Apr 27 – May 1 Module 6: Chapter 19 Diseases of the Immune System	• Video Quiz: This is What Happens When You Have an Autoimmune Disease • Video Quiz: Hypersensitivity Types in 4 Minutes • Video Quiz: Hypersensitivity Type1 Allergic Reaction	05.02.26
Week 16 May 4 – 8 Final Exam	• Final Exam: (Module 4,5,&6) 05.08.26—05.09.26	05.09.26

COURSE EVALUATION

Final Grades will be calculated according to the following criteria:

1. 4 Units Quizzes   30%
2. Midterm Exam and Final Exam   20%
3. Video Quizzes   20%
4. Projects (Individual and Group)   20%
5. Discussions   10%

GRADE SCALE

A   90 – 100 points
B   80 – 89 points
C   70 – 79 points
D   60 – 69 points
F   59 or below

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

RESPONDUS ACADEMIC INTEGRITY POLICY

Lamar Institute of Technology
Healthcare and Sciences Courses
Lamar Institute of Technology expects every student to uphold honesty and integrity in all academic work. Academic dishonesty is a violation of the LIT Student Rights and Responsibilities policy and may result in disciplinary action. All online examinations that use Respondus LockDown Browser or similar proctoring tools are subject to these rules.

While the faculty do not presume or accuse students of academic misconduct, certain behaviors and system flagged events have historically been associated with violations of academic integrity. Based on institutional experience and best practices, it is necessary to provide students with a clear list of responsible actions that are expected during all proctored online assessments.

Expectations During Respondus Exams
Respondus LockDown Browser records a continuous video from the required environment check through exam submission. This recording includes your webcam video, screen activity, and mouse movement. The system flags

may include (not an exhaustive list): missing from or obstructed camera view, background noise, or technical concerns. Instructors are able to review each flagged incident as well as the full exam recording. Students are expected to comply with the following requirements during all online examinations that use Respondus LockDown Browser or similar proctoring tools.

- Students must remain fully visible within the webcam frame for the entire exam period. The full face and upper torso must be visible at all times.
- Students must not obstruct, cover, mute, disable, or otherwise interfere with webcam or audio monitoring.
- Students must be seated at a desk or table in a well-lit room and may not lie down during the exam. If a laptop is placed on the student's lap, the student is responsible for proper camera positioning.
- Students must complete the exam alone. No other individuals may be present in the room.
- There must be no television, radio, or other background noise. While occasional uncontrollable sounds may occur, the exam may not be paused, and the student may not leave the camera view.
- A required environment check must include a complete 360-degree view of the surrounding area and a clear view of the entire desktop or table surface being used. If a fixed camera cannot be moved, a mirror may be used.
- Students may not use cell phones, smart watches, headphones, earbuds, meta glasses, second monitors, recording devices, or any other unauthorized materials.
- Hats, sunglasses, and face coverings are not permitted. Hooded garments may not be pulled over the forehead or obscure the face.
- Students may not look off screen, out of view, or downward for extended periods unless an approved calculator, textbook, or notes are permitted and clearly displayed during the environment check.
- If a textbook or notes are permitted, evidence must be provided during the environment check that no additional materials are accessible.
- If scrap paper is permitted, all written work related to exam questions must be shown to the camera as directed. Required uploads of written work must be submitted to Blackboard within 24 hours of exam completion, unless otherwise instructed.
- Students may not talk, whisper, mouth words, or read questions aloud during the exam.
- Students may not attempt to open new browser windows, external websites, or outside applications.
- Repeated or extended absence of the student's face from the camera view, particularly after an on screen warning, is not permitted.
- Movements or behaviors consistent with the use of a phone, second device, or outside assistance are not permitted.
- Audio or visual indicators suggesting outside assistance are not permitted.
- Copying, recording, photographing, or sharing exam questions or answers before, during, or after the exam is prohibited.

Any action that violates the rules listed above or that shows an attempt to obtain an unfair advantage will be treated as academic misconduct. The instructor will review all Respondus recordings and reports. If concerning behavior is found, the instructor will determine the appropriate level of action based on the strength of the evidence. The instructor may request a meeting, either in-person or via Teams, to review the exam content with you to ascertain your level of knowledge. You must schedule a meeting with the instructor within 5 business days if you wish to refute their findings. If you do not respond within 5 business days, the grade will not be changed.

Level One: Minor Irregularity
Examples:
Lingering off screen glances (in directions other than a calculator or scratch worksheet), minor webcam glitch, light noise (examples include baby crying, dog barking, doorbell ringing) or audio interference
Result:
Warning and no point deduction

Level Two: Moderate Concern
Examples:
Extended off-screen glances, unclear hand movements, failure to complete an environment check, other people or voices heard within the room, scrap work that is not consistent with the exam questions and/or behavior that raises reasonable suspicion
Result:
20% percent deduction on the exam for each violation

Level Three: Confirmed Academic Misconduct
Examples:
Blatant use of an unauthorized device, receiving outside assistance, attempting to open new applications, use of unauthorized notes or materials
Result:
A grade of Zero (0) on the exam

Level Four: Severe or Repeated Violations
Examples:
Multiple incidents within the course, deliberate attempts to avoid monitoring
Result:
Zero (0) on the exam and referral to Student Services for disciplinary review

All cases of academic dishonesty may result in additional actions as permitted by the LIT Student Rights and Responsibilities policy, which may include course failure, notification sent to all selective programs, or other institutional sanctions depending on severity and recurrence.