

# **Introduction to Microbiology (BIOL 2320)**

**For Non-Science Majors**



**LAMAR INSTITUTE  
OF TECHNOLOGY**

## **INSTRUCTOR CONTACT INFORMATION**

Instructor: Yunyan (Anna) Cheng

Email: [ycheng@lit.edu](mailto:ycheng@lit.edu)

Office Hours: Monday-Friday 9am-5pm

Please email me or message me on Blackboard.

## **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 this 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.

## **CORE OBJECTIVES**

1. Critical thinking skills and problem-solving skills to make decision 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

## REQUIRED TEXTBOOK AND MATERIALS

Open stax ISBN-10: 1938168143

<https://openstax.org/details/books/microbiology>

## COURSE 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. I will work with you to schedule a makeup exam.
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.

## 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.

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](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 this will appear: "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 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, second computers) and place them outside of your reach.
- Before starting the test, know how much time is available for it, and also 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 (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 tilt of the screen 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 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 obscure.
- Noises that might indicate external help.
- Any other questionable activities indicating cheating.

**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 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
B	80-89
C	70-79
D	60-69
F	0-59

**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](mailto:specialpopulations@lit.edu). You may also visit the online resource at [Special Populations - Lamar Institute of Technology \(lit.edu\)](https://www.lit.edu/specialpopulations).

### **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](http://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 log in 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.

### **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.

# Tentative Course Schedule

Instructor reserves the right to modify as needed

Fall 2025	2320 To Do:	Due Date
<b>Week 1</b> Aug 25th – 29th Intro/Syllabus <b>Module 1: Chapter 1:</b> An Invisible World	<input type="checkbox"/> Syllabus Quiz <input type="checkbox"/> Discussion: Introductions <input type="checkbox"/> Discussion: Netiquette in Online Classes <input type="checkbox"/> Video Quiz: History of Microbiology <input type="checkbox"/> Get started on Individual Project Due 10.04.25 <input type="checkbox"/> Join a group for Group Project by 09.07.25	08.30.25
<b>Week 2</b> Holiday Sep 1st Sep 2nd – 5th <b>Module 1: Chapter 2:</b> How We See the Invisible World	<input type="checkbox"/> Video Quiz: What are Light and Electronic Microscopes <input type="checkbox"/> Video Quiz: Types of Light Microscopy <input type="checkbox"/> Work on Individual Project Due 10.04.25 <input type="checkbox"/> Join a group for Group Project by 09.07.25	09.07.25
<b>Week 3</b> Sep 8th – 12th <b>Module 1: Chapter 3:</b> The Cell <b>Quiz 1</b>	<input type="checkbox"/> Video Quiz: Prokaryotic vs Eukaryotic Cells <input type="checkbox"/> Quiz 1: (Chapter1-3) 09.12.25 - 09.13.25 <input type="checkbox"/> Work on Individual Project Due 10.04.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	09.13.25
<b>Week 4</b> Sep 15th – 19th <b>Module 2: Chapter 4</b> Prokaryotic Diversity	<input type="checkbox"/> Video Quiz: Bacteria <input type="checkbox"/> Discussion: Bioterrorism <input type="checkbox"/> Work on Individual Project Due 10.04.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	09.20.25
<b>Week 5</b> Sep 22nd – 26th <b>Module 2: Chapter 5</b> The Eukaryotes of Microbiology	<input type="checkbox"/> Video Quiz: Parasites: Protozoa <input type="checkbox"/> Video Quiz: Fungi: Death Becomes Them <input type="checkbox"/> Video Quiz: Helminths: Cestodes and Trematodes <input type="checkbox"/> Video Quiz: Helminths: Intestinal Nematodes Part I <input type="checkbox"/> Video Quiz: Helminths: Intestinal Nematodes Part II <input type="checkbox"/> Work on Individual Project Due 10.04.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	09.27.25
<b>Week 6</b> Sep 29th – Oct 3rd <b>Module 2: Chapter 6</b> Acellular Pathogens <b>Quiz 2</b> <b>Individual Project</b>	<input type="checkbox"/> Video Quiz: Viruses <input type="checkbox"/> Video Quiz: Viral Replication <input type="checkbox"/> Quiz 2: (Chapter4-6) 10.03.25—10.04.25 <input type="checkbox"/> Individual Project Due 10.04.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	10.04.25
<b>Week 7</b> Oct 6th – 10th <b>Module 3: Chapter 7 &amp; 8</b> Microbial Biochemistry and Metabolism	<input type="checkbox"/> Video Quiz: Biological Molecules <input type="checkbox"/> Video Quiz: Metabolism and ATP <input type="checkbox"/> Work on Group Project Due 11.15.25	10.11.25
<b>Week 8</b> Oct 13th – 17th <b>Module 3: Chapter 9</b> Microbial Growth <b>Midterm Exam</b>	<input type="checkbox"/> Video Quiz: Microbial Growth 1 <input type="checkbox"/> Video Quiz: Microbial Growth 2 <input type="checkbox"/> Discussion: Antibiotic Resistance <input type="checkbox"/> Midterm Exam: (Chapter 1-9) 10.17.25—10.18.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	10.18.25
<b>Week 9</b> Oct 20th – 24th <b>Module 4: Chapter 10 &amp; 11</b>	<input type="checkbox"/> Video Quiz: Structure of Nucleic Acids <input type="checkbox"/> Video Quiz: DNA replication	10.25.25

Microbial Genetics	<input type="checkbox"/> Video Quiz: From DNA to Protein <input type="checkbox"/> Work on Group Project Due 11.15.25	
<u>Week 10</u> Oct 27th – 31st <b>Module 4:</b> Chapter 12 Microbial Genetics Quiz 3	<input type="checkbox"/> Video Quiz: Molecular Biology <input type="checkbox"/> Video Quiz: How CRISPR lets you edit DNA <input type="checkbox"/> Quiz 3: (Chapter 10-12) 10.31.25—11.01.25 <input type="checkbox"/> Work on Group Project Due 11.15.25	11.01.25
<u>Week 11</u> Nov 3rd – 7th <b>Module 5:</b> Chapter 13 Control of Microbial Growth Chapter 14 Antimicrobial Drugs Quiz 4	<input type="checkbox"/> Video Quiz: Infection and Intoxication <input type="checkbox"/> Discussion: Antimicrobial Products <input type="checkbox"/> Pathogen Project: Gallery Walk <input type="checkbox"/> Quiz 4: (Chapter 13-14) 11.07.25—11.08.25 <input type="checkbox"/>	11.08.25
<u>Week 12</u> Nov 10th – 14th <b>Module 6:</b> Chapter 17 Innate Nonspecific Host Defenses Group Project	<input type="checkbox"/> Video Quiz: Immune System 1 <input type="checkbox"/> Group Project Due 11.15.25	11.15.25
<u>Week 13</u> Nov 17th – 21st <b>Module 6:</b> Chapter 18 Adaptive Specific Host Defense	<input type="checkbox"/> Video Quiz: Immune System 2 <input type="checkbox"/> Video Quiz: Immune System 3 <input type="checkbox"/> Discussion: Vaccines	11.22.25
<u>Week 14</u> Nov 24th – 25th  Nov 26th – 28th Thanksgiving Break	<input type="checkbox"/> Sleep, rest, relax <input type="checkbox"/> Enjoy time with family and friends <input type="checkbox"/> Exercise <input type="checkbox"/> Read a good book <input type="checkbox"/> Do something nice for someone	
<u>Week 15</u> Dec 1st – 5th <b>Module 6:</b> Chapter 19 Diseases of the Immune System	<input type="checkbox"/> Video Quiz: This is What Happens When You Have an Autoimmune Disease <input type="checkbox"/> Video Quiz: Hypersensitivity Types in 4 Minutes <input type="checkbox"/> Video Quiz: Hypersensitivity Type 1 Allergic Reaction	12.06.25
<u>Week 16</u> Dec 8th – 10th Final Exam	<input type="checkbox"/> Final Exam: (Chapter 10-14, 17-19 only) 12.07.25—12.08.25	12.08.25