

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

**For Non-Science Majors**

### **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.



## INSTRUCTOR CONTACT INFORMATION

<b>Instructor</b>	Yunyan Anna Cheng
<b>STARFISH</b>	Found on Blackboard
<b>Email</b>	ycheng@lit.edu
<b>Office Hours</b>	Monday-Friday: 9am-4pm Please feel free to contact me outside office hours by email, message on Blackboard, or raising the "I Need Help" flag in Starfish.

## 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 **20%** for a penalty. Students will receive a zero for assignments not completed.
3. Four quizzes, a midterm exam, and a final exam are required with 2 attempts given per quiz/exam. The final score of the quiz/exam will be calculated by averaging all attempts.
4. 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.
5. 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 of the group project will have a penalty of 30% off and is by permit only.**
6. Assignments include video quizzes on Blackboard.
7. 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.
8. 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 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

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

### **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.

## Weekly Checklist

Spring 2025	2320 To Do:	Due Date
<u>Week 1</u> Jan 21 – 24 Intro/Syllabus <b>Module 1:</b> Chapter 1: An Invisible World	<input checked="" type="checkbox"/> Discussion: Introductions <input checked="" type="checkbox"/> Discussion: Netiquette in Online Classes <input checked="" type="checkbox"/> Video Quiz: History of Microbiology <input checked="" type="checkbox"/> Get started on Individual Project <input checked="" type="checkbox"/> Join a group for Group Project by 01.31.25	01.25.25 01.31.25
<u>Week 2</u> Jan 27– 31 <b>Module 1:</b> Chapter 2: How We See the Invisible World	<input checked="" type="checkbox"/> Video Quiz: What are Light and Electronic Microscopes <input checked="" type="checkbox"/> Video Quiz: Types of Light Microscopy <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	02.01.25
<u>Week 3</u> Feb 3 – 7 <b>Module 1:</b> Chapter 3: The Cell Quiz 1	<input checked="" type="checkbox"/> Video Quiz: Prokaryotic vs Eukaryotic Cells <input checked="" type="checkbox"/> Quiz 1: (Chapter1-3) 02.07.25 - 02.08.25 <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	02.08.25
<u>Week 4</u> Feb 10– 14 <b>Module 2:</b> Chapter 4 Prokaryotic Diversity	<input checked="" type="checkbox"/> Video Quiz: Bacteria <input checked="" type="checkbox"/> Discussion: Bioterrorism <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	02.15.25
<u>Week 5</u> Feb 17 – 21 <b>Module 2:</b> Chapter 5 The Eukaryotes of Microbiology	<input checked="" type="checkbox"/> Video Quiz: Parasites: Protozoa <input checked="" type="checkbox"/> Video Quiz: Fungi: Death Becomes Them <input checked="" type="checkbox"/> Video Quiz: Helminths: Cestodes and Trematodes <input checked="" type="checkbox"/> Video Quiz: Helminths: Intestinal Nematodes Part I <input checked="" type="checkbox"/> Video Quiz: Helminths: Intestinal Nematodes Part II <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	02.22.25
<u>Week 6</u> Feb 24 – 28 <b>Module 2:</b> Chapter 6 Acellular Pathogens Quiz 2	<input checked="" type="checkbox"/> Video Quiz: Viruses <input checked="" type="checkbox"/> Video Quiz: Viral Replication <input checked="" type="checkbox"/> Quiz 2: (Chapter4-6) 02.28.25—03.01.25 <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	03.01.25
<u>Week 7</u> Mar 3 – 7 <b>Module 3:</b> Chapter 7 & 8 Microbial Biochemistry and Metabolism	<input checked="" type="checkbox"/> Video Quiz: Biological Molecules <input checked="" type="checkbox"/> Video Quiz: Metabolism and ATP <input checked="" type="checkbox"/> Work on Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	03.08.25
<u>Week 8</u> Mar 10 – 14 Spring Break	<input checked="" type="checkbox"/> Sleep, rest, relax <input checked="" type="checkbox"/> Enjoy time with family and friends <input checked="" type="checkbox"/> Exercise <input checked="" type="checkbox"/> Read a good book <input checked="" type="checkbox"/> Do something nice for someone	
<u>Week 9</u> Mar 17 – 21 <b>Module 3:</b> Chapter 9 Microbial Growth Midterm Exam Individual Project	<input checked="" type="checkbox"/> Video Quiz: Microbial Growth 1 <input checked="" type="checkbox"/> Video Quiz: Microbial Growth 2 <input checked="" type="checkbox"/> Discussion: Antibiotic Resistance <input checked="" type="checkbox"/> Midterm Exam: (Chapter 1-9) 03.21.25—03.22.25 <input checked="" type="checkbox"/> Individual Project Due 03.21.25 <input checked="" type="checkbox"/> Work on Group Project Due 04.17.25	03.21.25 03.22.25

# BIOLOGY 2320

## Weekly Checklist – FALL 2024

<p><u>Week 10</u> Mar 24 – Mar 28 <b>Module 4: Chapter 10 &amp; 11</b> Microbial Genetics</p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: Structure of Nucleic Acids</li> <li>☒ Video Quiz: DNA replication</li> <li>☒ Video Quiz: From DNA to Protein</li> <li>☒ <b>Work on Group Project Due 04.17.25</b></li> </ul>	03.29.25
<p><u>Week 11</u> Mar 31 – Apr 4 <b>Module 4: Chapter 12</b> Microbial Genetics <b>Quiz 3</b></p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: Molecular Biology</li> <li>☒ Video Quiz: How CRISPR lets you edit DNA</li> <li>☒ <b>Quiz 3: (Chapter 10-12) 04.04.25—04.05.25</b></li> <li>☒ <b>Work on Group Project Due 04.17.25</b></li> </ul>	04.05.25
<p><u>Week 12</u> Apr 7 – 11 <b>Module 5: Chapter 13</b> Control of Microbial Growth Chapter 14 Antimicrobial Drugs <b>Quiz 4</b></p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: Infection and Intoxication</li> <li>☒ Discussion: Antimicrobial Products</li> <li>☒ Pathogen Project: Gallery Walk</li> <li>☒ <b>Quiz 4: (Chapter 13-14) 04.11.25—04.12.25</b></li> <li>☒ <b>Work on Group Project Due 04.17.25</b></li> <li>☒ <b>Professional Development Day –Campus Closed 04.10.25</b></li> </ul>	04.12.25
<p><u>Week 13</u> Apr 14 – 17 <b>Module 6: Chapter 17</b> Innate Nonspecific Host Defenses <b>Group Project</b></p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: Immune System 1</li> <li>☒ <b>Group Project Due 04.17.25</b></li> </ul>	04.17.25 04.19.25
<p><u>Week 14</u> Apr 21 – 25 <b>Module 6: Chapter 18</b> Adaptive Specific Host Defense</p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: Immune System 2</li> <li>☒ Video Quiz: Immune System 3</li> <li>☒ Discussion: Vaccines</li> </ul>	04.26.25
<p><u>Week 15</u> Apr 28 – May 2 <b>Module 6: Chapter 19</b> Diseases of the Immune System</p>	<ul style="list-style-type: none"> <li>☒ Video Quiz: This is What Happens When You Have an Autoimmune Disease</li> <li>☒ Video Quiz: Hypersensitivity Types in 4 Minutes</li> <li>☒ Video Quiz: Hypersensitivity Type 1 Allergic Reaction</li> </ul>	05.03.25
<p><u>Week 16</u> May 5 – 7 <b>Final Exam</b></p>	<ul style="list-style-type: none"> <li>☒ <b>Final Exam: (Chapter 10-14, 17-19 only) 05.09.25—05.10.25</b></li> </ul>	05.10.25