

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.



**LAMAR INSTITUTE
OF TECHNOLOGY**

INSTRUCTOR CONTACT INFORMATION

Instructor	Yunyan Anna Cheng
STARFISH	Found on Blackboard
Email	ycheng@lit.edu
Office Hours	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

Last day to drop with refund: September 11, 2024.

Last day to drop without academic penalty: September 27, 2024

Last day to drop with academic penalty: November 1, 2024

No exceptions to these dates.

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. 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. 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

	2320 To Do:	Due Date
<p style="text-align: center;"><u>Week 1</u> Aug 26th – 30th Intro/Syllabus</p> <p>Module 1: Chapter 1: An Invisible World</p>	<ul style="list-style-type: none"> <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 <input type="checkbox"/> Join a group for Group Project by 08.30.24 	08.30.24
<p style="text-align: center;"><u>Week 2</u> Sep 3rd–Sep 6th</p> <p>Module 1: Chapter 2: How We See the Invisible World</p>	<ul style="list-style-type: none"> <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 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	09.06.24
<p style="text-align: center;"><u>Week 3</u> Sep 9th – 13th</p> <p>Module 1: Chapter 3: The Cell</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Prokaryotic vs Eukaryotic Cells <input type="checkbox"/> Quiz 1: (Chapter 1-3) 9.13.24 from 12:01am-11:59pm <input type="checkbox"/> Work on Individual Project Due 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	09.13.24
<p style="text-align: center;"><u>Week 4</u> Sep 16th – 20th</p> <p>Module 2: Chapter 4 Prokaryotic Diversity</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Bacteria <input type="checkbox"/> Discussion: Bioterrorism <input type="checkbox"/> Work on Individual Project Due 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	09.20.24
<p style="text-align: center;"><u>Week 5</u> Sep 23rd – 27th</p> <p>Module 2: Chapter 5 The Eukaryotes of Microbiology</p>	<ul style="list-style-type: none"> <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 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	09.27.24
<p style="text-align: center;"><u>Week 6</u> Sep 30th – Oct 4th</p> <p>Module 2: Chapter 6 Acellular Pathogens</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Viruses <input type="checkbox"/> Video Quiz: Viral Replication 	10.04.24

BIOLOGY 2320

Weekly Checklist – FALL 2024

	<ul style="list-style-type: none"> <input type="checkbox"/> Quiz 2: (Chapter4-6) 10.4.24 from 12:01am-11:59pm <input type="checkbox"/> Work on Individual Project Due 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	
<p style="text-align: center;"><u>Week 7</u> Oct 7th – 11th Module 3: Chapter 7 & 8 Microbial Biochemistry and Metabolism</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Biological Molecules <input type="checkbox"/> Video Quiz: Metabolism and ATP <input type="checkbox"/> Work on Individual Project Due 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	10.11.24
<p style="text-align: center;"><u>Week 8</u> Oct 14th – 18th Module 3: Chapter 9 Microbial Growth</p>	<ul style="list-style-type: none"> <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) 10.18.24 from 12:01am-11:59pm <input type="checkbox"/> Individual Project Due 10.18.24 <input type="checkbox"/> Work on Group Project Due 11.15.24 	10.18.24
<p style="text-align: center;"><u>Week 9</u> Oct 21st – 25th Module 4: Chapter 10&11 Microbial Genetics</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Structure of Nucleic Acids <input type="checkbox"/> Video Quiz: DNA replication <input type="checkbox"/> Video Quiz: From DNA to Protein <input type="checkbox"/> Work on Group Project Due 11.15.24 	10.25.24
<p style="text-align: center;"><u>Week 10</u> Oct 28th – Nov 1st Module 4: Chapter 12 Microbial Genetics</p>	<ul style="list-style-type: none"> <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) 11.01.24 from 12:01am-11:59pm <input type="checkbox"/> Work on Group Project Due 11.15.24 	11.01.24
<p style="text-align: center;"><u>Week 11</u> Nov 4th – Nov 8th Module 5: Chapter 13 Control of Microbial Growth Chapter 14 Antimicrobial Drugs</p>	<ul style="list-style-type: none"> <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) 11.08.24 from 12:01am-11:59pm <input type="checkbox"/> Work on Group Project Due 11.15.24 	11.08.24
<p style="text-align: center;"><u>Week 12</u> Nov 11th – 15th</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Immune System 1 	11.15.24

BIOLOGY 2320

Weekly Checklist – FALL 2024

<p>Module 6: Chapter 17 Innate Nonspecific Host Defenses</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Group Project Due 11.15.24 	
<p><u>Week 13</u> Nov 18th – 22nd Module 6: Chapter 18 Adaptive Specific Host Defense</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Video Quiz: Immune System 2 <input type="checkbox"/> Video Quiz: Immune System 3 <input type="checkbox"/> Discussion: Vaccines 	11.22.24
<p><u>Week 14</u> Nov 25th – 29th Thanksgiving Holiday</p>	<ul style="list-style-type: none"> <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 	
<p><u>Week 15</u> Dec 2nd – 6th Module 6: Chapter 19 Diseases of the Immune System</p>	<ul style="list-style-type: none"> <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 Type1 Allergic Reaction 	12.06.24
<p><u>Week 16</u> Dec 9th – 13rd Final Exam</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Final Exam: (Chapter 17-19 only) 12.09.24 from 12:01am-11:59pm 	12.09.24