

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

***PLEASE NOTE:** Summer courses last six weeks and cover the same content as courses held during long semesters. Expect to spend a considerable amount of time each week completing the coursework in a shortened time frame.

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

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 10% 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.
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: June 6, 2024.

Last day to drop without academic penalty: June 13, 2024

Last day to drop with academic penalty: June 28, 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.

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 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

Week:	To Do:	Due Dates
Week 1 June 3 - 9 Module 1: Introduction to Microbiology	<ul style="list-style-type: none"> • Syllabus Quiz • Discussion: Netiquette • Discussion: Introduction <hr/> <ul style="list-style-type: none"> • Video Quiz: History of Microbiology • Video Quiz: What are Light and Electronic Microscopes • Video Quiz: Types of Light Microscopy • Video Quiz: Prokaryotic vs Eukaryotic Cells • Quiz 1: Module 1 (6/7 12:30 am - 6/9 11:59 pm) • Work on Individual Project: Pathogens due 06.23.24 • Sign up for Group Project: Microbial Diseases by 06.30.24 	06.09.24
Week 2 June 10 – 16 Module 2: Microbe Diversity	<ul style="list-style-type: none"> • Discussion: Bioterrorism • Video Quiz: Bacteria • Video Quiz: Parasites: Protozoa (classification, structure, life cycle) • 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 I • Video Quiz: Viruses • Video Quiz: Viral Replication • Quiz 2: Module 2 (6/14 12:30 am - 6/16 11:59 pm) • Work on Individual Project: Pathogens due 06.23.24 • Work on Group Project: Microbial Diseases due 06.30.24 	06.16.24
Week 3 June 17 – 23 Module 3: Biochemistry, Metabolism & Growth	<ul style="list-style-type: none"> • Video Quiz: Biological Molecules • Video Quiz: Metabolism and ATP • Video Quiz: Microbial Growth 1 • Video Quiz: Microbial Growth 2 • Discussion: Antibiotic Resistance • Midterm Exam: Module 1-3 (6/21 12:30 am - 6/23 11:59 pm) • Individual Project: Pathogens due 06.23.24 • Work on Group Project: Microbial Diseases due 06.30.24 	06.23.24
Week 4 June 24 – 30 Module 4: Molecular Biology & Genetics Module 5: Microbial Control & Pathogenicity	<ul style="list-style-type: none"> • Video Quiz: Structure of Nucleic Acids • Video Quiz: DNA replication • Video Quiz: From DNA to Protein • Video Quiz: Molecular Biology • Video Quiz: How CRISPR lets you edit DNA • Video Quiz: Infection and Intoxication • Discussion: Antimicrobial Products • Pathogen Project: Gallery Walk • Quiz 3: Module 4 (6/28 12:30 am - 6/30 11:59 pm) • Group Project: Microbial Diseases due 06.30.24. 	06.30.24
Week 5 July 1 - 7 Module 6: Microbial Diseases, Epidemiology & Host Defenses	<ul style="list-style-type: none"> • Quiz 4: Module 5 (7/1 12:30 am -7/3 11:59 pm) • Video Quiz: Immune System 1 • Video Quiz: Immune System 2 • Video Quiz: Immune System 3 • Discussion: Vaccines • 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 	07.07.24
Week 6 July 8	<ul style="list-style-type: none"> • Final Exam (7/6 12:30 am -7/8 11:59 pm) 	07.08.24