BIOL 2420 Microbiology (BIOL 2420.001)
Course Syllabus: Fall 2021

"Northeast Texas Community College exists to provide personal, dynamic learning experiences empowering students to succeed."

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Office Hours	Monday	Tuesday	Wednesday	Thursday	Friday and Weekends
	8:30 a.m.– 12:30 p.m. and by appointment Zoom Meetings Available Upon Request	8:30 – 9:30 a.m. and by appointment Zoom Meetings Available Upon Request	8:30 a.m.– 12:30 p.m. and by appointment Zoom Meetings Available Upon Request	8:30 – 9:30 a.m. and by appointment Zoom Meetings Available Upon Request	Email lpresley@ntcc.edu

This syllabus serves as the documentation for all course policies and requirements, assignments, and instructor/student responsibilities.

Information relative to the delivery of the content contained in this syllabus is subject to change. Should that happen, the student will be notified

Course Description: 4 Semester Credit Hours. This course covers basic microbiology, immunology, and the basics of culture and identification of bacteria and microbial ecology. This course is primarily directed at pre-nursing, pre-allied health, and non-science majors. This course introduces historical concepts of the nature of microorganisms, microbial diversity, the importance of microorganisms and acellular agents in the biosphere, and their roles in human and animal diseases. Major topics include bacterial structure as well as growth, physiology, genetics, and biochemistry of microorganisms. Emphasis is on medical microbiology, infectious diseases, and public health.

Prerequisite(s): None

Student Learning Outcomes:

1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.
2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.
3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.
4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.
5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.
6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).
7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.

8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.
9. Use and comply with laboratory safety rules, procedures, and universal precautions.
10. Demonstrate proficient use of a compound light microscope.
11. Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.
12. Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.
13. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.
14. Perform basic bacterial identification procedures using biochemical tests.
15. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.
16. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.

Evaluation/Grading Policy:

Lecture Average 70% of final course grade

The "lecture" component of this course will consist of online homework/quizzes through McGraw-Hill Connect and examinations with the following weight in calculating your final average:

10% online homework and quizzes (taken in Connect*)

30% Unit Assessments 1-4

10% Midterm

20% Final Test

Lab Average 30% of final course grade

The lab component of this course will consist of online laboratory activities through Connect and hands-on activities performed in the laboratory.

10% Lab Reports, Quizzes, and Connect Virtual Labs

10% Lab Practicals/Assessments (Mid-term and Final)

10% Unknown Identification Experimental Procedure, Dichotomous Key, and Written Report

Lab Reports are graded based on attendance in lab, completion of the lab exercises, and successful answering of questions presented. Short answer questions are expected be answered in complete sentences in **your own** words. Lab Reports that show evidence of being copied from any web site or are identical with any other submitted reports will be given a grade of zero.

*See Connect description in the Appendix of Additional Information located on the last pages of the syllabus.

Final Grades will be determined as follows:

90.0 --- 100 = A
80.0 --- 89.9 = B
70.0 --- 79.9 = C
60.0 --- 69.9 = D
59.9 and < = F

Required Instructional Materials:

Textbook: Cowan, 2022, Microbiology Fundamentals: A Clinical Approach, 4th Edition with Connect
Publisher: McGraw Hill **ISBN Number:** 978-1-260-70243-9

Lab Manual: Hearron & Deming, 2021, Biology 2420/21 Laboratory Manual for Microbiology
Publisher: NTCC Bookstore

Minimum Technology Requirements: Students should have the following programs, software, and operating system on their computers prior to participating in online courses. Frequently online instructors use these programs and software. The instructor will not accept written work from students who are using incompatible programs.

	Windows	Mac	Linux	Chrome OS
Operating System	Windows 7+	macOS 10.11+	Ubuntu 18.04+	Chrome 58+
Processor	Intel Pentium or better	Intel	Intel Pentium or better	Intel or ARM
Free Disk Space	250 MB	250 MB	250 MB	250 MB
Free RAM	2 GB[1]	2 GB[1]	2 GB[1]	1 GB[1]
Upload Speed	0.092 Mbps - 0.244 Mbps[2]			
Microphone	Any Microphone, either internal or external[3]			
Webcam	320x240 VGA resolution (minimum) internal or external[3]			

Required Computer Literacy Skills: To succeed, you will need basic computer skills that include how to use email, attach a document to an email message, navigate web pages, download and upload files. You will need to participate in discussion forums and use the Internet to research information. Additionally, you will need a computer with regular access to a reliable Internet connection, a current web browser (such as Chrome or Firefox), a technology "back-up" plan in case your primary computer is unavailable.

You will have the best results if you connect using a cable modem or Ethernet—or, if using a smart phone or tablet, over a 4G network. Use a wired connection, whenever possible, as it is more stable and

often faster than wireless connections. Your connection will be smoothest if you are able to download data at a rate of at least 5 Mbps (megabits-per-second). Keep in mind that connection speed and Internet performance varies depending on the number of programs and computers sharing your connection, and also the amount of Internet traffic in your area. As a result, your connection speed may fluctuate during a live session. To get a sense for your connection speed, you may test it here: http://www.speedtest.net/.

Homework and quizzes are assigned using McGraw-Hill Connect. Each assignment or quiz will be due at a specific time in the semester related to the lecture schedule. There are 4 Unit Tests.

Communications: NTCC email is the official form of communication used by the college. The instructor will respond to student emails within 24 hours of receipt. **You should NOT expect an immediate response from your instructor in reply to your email.** While I will try to respond in a timely fashion, I do not always have my phone on my person, and I do not have notifications set on my phone to alert me the moment an email arrives in my inbox. (On the weekends it may be up to 48 hours after receipt of email.) Feedback and grades on assignments and postings will be posted 48 to 72 hours after due date/time of assignment.

Institutional/Course Policy: Northeast Texas Community College is a "community of scholars." Please remember that you and all students in this class are pursuing very important goals in your lives. As scholars, I expect every student to be courteous to other students and the instructor in all online experiences. As your instructor, I will make a conscientious effort to provide you with a variety of teaching and learning formats to help you in your efforts to be successful in microbiology.

I care about your learning experience and your success in this course, however that ultimate success does depend largely on **YOU**. Your success can be maximized and your potential achieved by making the commitment to meet these online expectations:

1. Schedule and plan to complete all lecture and laboratory assignments and submit them when they are due. Be sure to print off the calendar to help you keep up with assignment due dates. Late assignments are not accepted unless the student can provide a compelling reason for submitting late work. No tests or exams may be taken late.
2. Be sure to do all your own work. Collusion and plagiarism are acts of academic dishonesty.
3. The last day to drop the course with a grade of W is **Tuesday, November 16, 2021.** If circumstances require you to withdraw from this course, you must do so by that date. It is the student's responsibility to initiate the withdrawal with the registrar's office. Failure to officially withdraw will result in your receiving a grade of F.

Alternate Operations During Campus Closure and/or Alternate Course Delivery Requirements

In the event of an emergency or announced campus closure due to a natural disaster or pandemic, it may be necessary for Northeast Texas Community College to move to altered operations. During this time, Northeast Texas Community College may opt to continue delivery of instruction through methods that include, but are not limited to, online through the Blackboard Learning Management System, online conferencing, email messaging, and/or an alternate schedule. It is the responsibility of the student to monitor NTCC's website (http://www.ntcc.edu/) for instructions about continuing courses remotely, Blackboard for each class for course-specific communication, and NTCC email for important general information.

Additionally, there may be instances where a course may not be able to be continued in the same delivery format as it originates (face-to-face, fully online, live remote, or hybrid). Should this be the case, every effort will be made to continue instruction in an alternative delivery format. Students will be informed of any changes of this nature through email messaging and/or the Blackboard course site.

NTCC Academic Honesty/Ethics Statement:
NTCC upholds the highest standards of academic integrity. The college expects all students to engage in their academic pursuits in an honest manner that is beyond reproach using their intellect and resources designated as allowable by the course instructor. Students are responsible for addressing questions about allowable resources with the course instructor. Academic dishonesty such as cheating, plagiarism, and collusion is unacceptable and may result in disciplinary action. This course will follow the NTCC Academic Honesty and Academic Ethics policies stated in the Student Handbook. Refer to the student handbook for more information on these subjects.

ADA Statement:
It is the policy of NTCC to provide reasonable accommodations for qualified individuals who are students with disabilities. This College will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the student's responsibility to request accommodations. An appointment can be made with the Academic Advisor/Coordinator of Special Populations located in Student Services and can be reached at 903-434-8264. For more information and to obtain a copy of the Request for Accommodations, please refer to the special populations page on the NTCC website.

Family Educational Rights and Privacy Act (FERPA):
The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. The law applies to all schools that receive funds under an applicable program of the U.S. Department of Education. FERPA gives parents certain rights with respect to their children's educational records. These rights transfer to the student when he or she attends a school beyond the high school level. Students to whom the rights have transferred are considered "eligible students." In essence, a parent has no legal right to obtain information concerning the child's college records without the written consent of the student. In compliance with FERPA, information classified as "directory information" may be released to the general public without the written consent of the student unless the student makes a request in writing. Directory information is defined as: the student's name, permanent address and/or local address, telephone listing, dates of attendance, most recent previous education institution attended, other information including major, field of study, degrees, awards received, and participation in officially recognized activities/sports.

Tentative Course Timeline (*note* instructor reserves the right to adjust this timeline at any point in the term):

Week 1- Chapter 1 Introduction to Microbes and Their Building Blocks and Chapter 3 Bacteria and Archaea
Week 2- Chapter 4 Eukaryotic Cells and Microorganisms
Week 3- Chapter 5 Viral Structure and Chapter 6 Microbial Nutrition and Growth
Week 4- **Test 1 (Chapters 1, 3 - 6)**
Week 5- Chapter 7 Microbial Metabolism
Week 6- Chapter 8 Microbial Genetics
Week 7- Chapters 9 Physical and Chemical Control of Microbes and Chapter 11 Interactions Between Microbes and Humans
Week 8- **Test 2 (Chapters 7 - 9, and 11) and Lab Practical One**
Week 9- Chapter 12 Host Defenses I: Overview and Nonspecific Defenses and Chapter 13 Host Defenses II: Specific Immunity and Immunization
Week 10- Chapter 16 Infectious Diseases Affecting the Skin and Eyes
Week 11- Chapter 17 Infectious Diseases Affecting the Nervous System; **Test 3 (Chapters 12, 13, 16, and 17)**

Week 12- Chapter 18 Infectious Diseases Affecting the Cardiovascular and Lymphatic Systems
Week 13- Chapter 19 Infectious Diseases Affecting the Respiratory System
Week 14- Chapter 20 Infectious Diseases Affecting the Gastrointestinal Tract
Week 15- Chapter 21 Infectious Diseases Affecting the Genitourinary System; **Test 4 (Chapters 18 - 21)**
Week 16- **FINAL EXAM (cumulative) and Lab Practical Two**

BIOL 2420 Microbiology Lecture Due Dates

Week 1	Aug	23	Classes Begin
Week 2		29	Chapter 1 & 3 Homework Due
		31	Chapter 1 & 3 Quiz Due
Week 3	Sept	5	Chapter 4 Homework Due
		7	Chapter 4 Quiz Due
Week 4		12	Chapter 5 Homework Due Chapter 6 Homework Due
		14	Chapter 5 Quiz Due Chapter 6 Quiz Due
		16	**Test 1 (Chapters 1, 3, 4, 5, and 6)**
Week 5		19	Chapter 7 Homework Due
		21	Chapter 7 Quiz Due
Week 6		26	Chapter 8 Homework Due
		28	Chapter 8 Quiz Due
Week 7		3	Chapter 9 HW Due Chapter 11 HW Due
	Oct	5	Chapter 9 Quiz Due Chapter 11 Quiz Due
		7	**Test 2 (Chapters 7, 8, 9, and 11)**
Week 8		12	**LAB PRACTICAL 1**
		14	**MIDTERM**
Week 9		17	Chapter 12 HW Due Chapter 13 HW Due
		19	Chapter 12 Quiz Due Chapter 13 Quiz Due
Week 10		24	Chapter 16 HW Due
		26	Chapter 16 Quiz Due
		31	Chapter 17 HW Due
Week 11	Nov	2	Chapter 17 Quiz Due
		4	Test 3 (Chapters 12-13, 16, and 17)
Week 12		7	Chapter 18 HW Due
		9	Chapter 18 Quiz Due
Week 13		14	Chapter 19 HW Due
		16	Chapter 19 Quiz Due **Last Day to Withdraw "W"**
Week 14		21	Chapter 20 HW Due
		23	Chapter 20 Quiz Due
		28	Chapter 21 HW Due
Week 15		30	**LAB PRACTICAL 2** Chapter 21 Quiz Due
	Dec	2	Test 4 (Chapters 18, 19, 20, and 21)
Week 16		9	**FINAL EXAM 9:30 – 11:20 a.m.**

		10	NTCC Graduation

Appendix of Additional Information:

***What is McGraw-Hill Connect?**

The McGraw-Hill Connect provides you with access to your ebook. Additionally, within each Connect Folder in Blackboard you will see a link to three different activities: 1) SmartBook, 2) Chapter Assignment, and 3) Quiz.

1) **SmartBook assignments are not figured into your course grade**; however, students have said that doing the LearnSmart exercises improved their grades as SmartBook assignments are beneficial to your understanding of the material. This guided reading helps identify areas that you are having trouble understanding and provides you with some "tutoring" in those areas. I have set the SmartBook to take average of 60 - 90 minutes, however, you can spend as much time on these reading activities as you need.
2) **Homework assignments are required and figured into the course grade**. These can be done 2 times before the due date. Five percent will be deducted for the 2nd try. There is no time limit, so it is advisable to start early and work on this all during the week. Use of the eBook and hints are available with no deductions. Feedback will be shown after submitting each attempt. After the first attempt, you will see what questions you got correct or incorrect. After the 2nd attempt, a more detailed feedback is given. Printing is allowed on homework assignment questions. Study attempts: After the due date, these homework assignments will be available for practice without changing your grade. Assignments are automatically submitted on the due date. If you do not complete the assignment before that time, a grade of zero will automatically be recorded in the gradebook. If you open the assignment after the due date as a study attempt, you cannot receive an extension on the work.
3) **Quizzes are required and figured into the course grade**. Quizzes are usually 20 – 25 questions with a time limit of 30 minutes. Please use these quizzes to determine whether you have a true understanding of the material. Each quiz can be taken 2 times before the due date. Five percent will be deducted for the 2nd try, but I have set the quizzes and the homework assignments to take the highest grade, so it is to your advantage to correct your work and review the questions. The quizzes will be submitted automatically on the due date.

Inclusive Access: We have negotiated with the Publisher to obtain a discounted price for your lecture course materials. Your ebook and Connect Access Code are included with your tuition and will be available through Blackboard on the first-class day (use the link found on the Bb course homepage). The materials are required for your class and essential in your success. If you also determine that you would like a print copy of your text in addition to your inclusive access loose- leaf copies will be available in the College Store at a discounted price. You may opt out of purchasing your materials from the College Store through the Census Date for the course. If you choose to opt out you will be responsible for purchasing your Connect Access Code from another vendor. You will receive a refund for the Inclusive Access if you opt out.