



**BIOL 2420 Microbiology (BIOL 2420.088 ONLINE)**  
**Course Syllabus: Spring 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
	8:00 – 11:00 a.m. 4:30 – 5:00 p.m. and by appointment	8:00 – 9:30 a.m. and by appointment	8:00 – 11:00 a.m. 4:30 – 5:00 p.m. and by appointment	8:00 – 9:30 a.m. and by appointment	Email <a href="mailto:lpresley@ntcc.edu">lpresley@ntcc.edu</a>

***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.

Lecture/Lab/Clinical: Three hours of lecture and three hours of lab each week.

Study of the morphology, physiology, and taxonomy of representative groups of pathogenic and nonpathogenic microorganisms. Pure cultures of microorganisms grown on selected media are used in learning laboratory techniques. Includes a brief preview of food microbes, public health, and immunology.

**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\*)

20% Unit Assessments 1-4 (taken with Proctorio\*)

20% Midterm Test (taken at an approved proctored location)

20% Final Test (taken at an approved proctored location)

#### **Lab Average 30% of final course grade**

The “lab” component of this course will consist of online and hands-on laboratory activities through eScience Lab Kit for Microbiology:

15% eScience Kit Online and hands-on Lab Reports **with Photos**

15% Lab Practicals (Lab Practical One taken at mid-term and Lab Practical Two taken at final exam; all taken at the proctored testing location)

Lab Reports are graded based on documented evidence of completion of the lab exercise (photos included in your lab report and your signature evident) and successful answering of questions presented. **Photographs represent lab results and evidence of completion of experiment. Lab reports submitted without required photos will result in a deduction of half the possible points for that lab. Short answer questions are expected to 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 and Proctorio 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, 2015, Microbiology Fundamentals: A Clinical Approach, 3rd Edition with Connect, Proctorio Plus and Learn Smart Labs

**Publisher:** McGraw Hill

**ISBN Number:** 9781266545603

**Lab Kit:** eScience Microbiology Lab Kit 6610

**Optional Instructional Materials: None**

**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.

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

**Required Computer Literacy Skills:** To succeed in online courses, 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 during a test taking timeframe.

You will have the best results if you connect using a cable modem or Ethernet—or, if using a smart  
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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/>.

**Course Structure and Overview:** This is an online course in Microbiology. Both lecture and laboratory study materials and assignments will be delivered through the Blackboard Learning Management System at NTCC. You are required to also purchase an eScience lab kit to complete the lab component of the course. Students should ensure that they have the appropriate hardware, software, and technical skills for completing all assignments, labs and tests.

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. Each test will be taken through Proctorio. The unit tests are intended to prepare you for the mid-term exam and/or the final. Read the information in the “Start Here” folder to familiarize yourself with the process for downloading the browser. The mid-term and final exams are proctored exams. You **MUST** schedule a time at an approved testing center to take these exams. There are **NO EXCEPTIONS** to this requirement. Refer to the posted calendar in the “Start Here” folder for appropriate dates.

**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. (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.

All students should feel free to contact your instructor by email, but you are encouraged to think about the most efficient way to do so. Ask your instructor any questions you have about course logistics or requirements, but please try first to take advantage of the information and explanations already posted, talk with your classmates, and check out the many details contained in the syllabus. Our mission is to use digital tools to promote interaction, not discourage it, but we need your help to maximize the value of these conversations.

**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. Lab submissions should include photographs of your experimental results.
3. Be sure to do all your own work. Collusion and plagiarism are acts of academic dishonesty.
4. The last day to drop the course with a grade of W is **Thursday, April 8, 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 make adjustments to this timeline at any point in the term):**

Week 1- and Archaea	Chapter 1 Introduction to Microbes and Their Building Blocks and Chapter 3 Bacteria
Week 2-	Chapter 4 Eukaryotic Cells and Microorganisms
Week 3-	Chapter 5 Viral Structure and Chapter 6 Microbial Nutrition and Growth
Week 4-	<b>Test 1 (Chapters 1, 3 - 6)</b>
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; <b>Test 2 (Chapters 7 - 9, and 11)</b>
Week 8-	<b>Midterm (Chapters 1, 3, 4, 5, 6, 7, 8, 9, and 11) and Lab Practical One</b> Spring Break
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; <b>Test 3 (Chapters 12, 13, 16, and 17)</b>
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; <b>Test 4 (Chapters 18, 19, 20 and 21)</b>
Week 16-	<b>FINAL EXAM (cumulative) and Lab Practical Two</b>

**BIOL 2420.088 Online Microbiology Lecture and Lab Schedule**

Week 1	Jan	19	Classes Begin
Week 2		24	Chapter 1 & 3 Homework Due Virtual Labs Tutorial Due
		26	Chapter 1 & 3 Quiz Due
Week 3		31	Chapter 4 Homework Due Identification of Bacterial Unknown 1 – 5 Virtual Labs Due
	Feb	2	Chapter 4 Quiz Due
Week 4		7	Chapter 5 Homework Due Chapter 6 Homework Due Identification of Bacterial Unknown 6 – 10 Virtual Labs Due
		9	Chapter 5 Quiz Due Chapter 6 Quiz Due
		10	Lab Kit Verification Due
		11	Test 1 Opens (Chapters 1, 3, 4, 5, and 6)
Week 5		14	Test 1 Closes Chapter 7 Homework Due Lab 2 Due Lab 3 Due
		16	Chapter 7 Quiz Due

Week 6		21	Chapter 8 Homework Due Lab 4 Due
		23	Chapter 8 Quiz Due
Week 7		28	Chapter 9 HW Due Chapter 11 HW Due Lab 6 Due
	Mar	2	Chapter 9 Quiz Due Chapter 11 Quiz Due
		4	Test 2 Opens (Chapters 7, 8, 9, and 11)
Week 8		7	Test 2 Closes Lab 5 Due
		8	PROCTORED MIDTERM (CHAPTERS 1, 3, 4, 5, 6, 7, 8, 9, & 11) AND LAB PRACTICAL ONE (Labs 2, 3, 4, 5, and 6) taken at approved testing center by appointment only
		9	PROCTORED MIDTERM (CHAPTERS 1, 3, 4, 5, 6, 7, 8, 9, & 11) AND LAB PRACTICAL ONE (Labs 2, 3, 4, 5, and 6) taken at approved testing center by appointment only
		10	PROCTORED MIDTERM (CHAPTERS 1, 3, 4, 5, 6, 7, 8, 9, & 11) AND LAB PRACTICAL ONE (Labs 2, 3, 4, 5, and 6) taken at approved testing center by appointment only
		11	PROCTORED MIDTERM (CHAPTERS 1, 3, 4, 5, 6, 7, 8, 9, & 11) AND LAB PRACTICAL ONE (Labs 2, 3, 4, 5, and 6) taken at approved testing center by appointment only
Week 9		21	Chapter 12 HW Due Chapter 13 HW Due
		23	Chapter 12 Quiz Due Chapter 13 Quiz Due
Week 10		28	Chapter 16 HW Due
		30	Chapter 16 Quiz Due
Week 11	Apr	4	Chapter 17 HW Due Lab 7 Due
		6	Chapter 17 Quiz Due
		8	Test 3 Opens (Chapters 12-13, 16, and 17) Last Day to Withdraw "W"
Week 12		11	Test 3 Closes Chapter 18 HW Due
		13	Chapter 18 Quiz Due
Week 13		18	Chapter 19 HW Due Lab 8 Due
		20	Chapter 19 Quiz Due
Week 14		25	Chapter 20 HW Due Lab 9 Due
		27	Chapter 20 Quiz Due
Week 15	May	2	Chapter 21 HW Due Lab 10 Due
		4	Chapter 21 Quiz Due
		6	Test 4 Opens (Chapters 18, 19, 20, and 21)
Week 16		9	Test 4 Closes Lab 13 Due
		10	PROCTORED <b>COMPREHENSIVE</b> FINAL EXAM & LAB PRACTICAL 2 (Labs 7, 8, 9, 10, 13 and Identification of Bacterial Unknown Virtual Labs) taken at approved testing center by appointment only

		11	PROCTORED <b>COMPREHENSIVE</b> FINAL EXAM & LAB PRACTICAL 2 (Labs 7, 8, 9, 10, 13 and Identification of Bacterial Unknown Virtual Labs) taken at approved testing center by appointment only
		12	PROCTORED <b>COMPREHENSIVE</b> FINAL EXAM & LAB PRACTICAL 2 (Labs 7, 8, 9, 10, 13 and Identification of Bacterial Unknown Virtual Labs) taken at approved testing center by appointment only
		15	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) Learn Smart, 2) Chapter Assignment, and 3) Quiz.

- 1) **LearnSmart assignments are not figured into your course grade;** however, students have said that doing the LearnSmart exercises improved their grades as LearnSmart 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 Learn Smart to take average of 30-45 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 2<sup>nd</sup> 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 2<sup>nd</sup> 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.

The required lab kit is a separate purchase available from the NTCC College Store.

### **Other course (lab) requirements:**

The eScience Lab Kit contains almost all of the materials that you will need. There are a few items that you should be prepared to supply to complete some labs. These include access to a microwave oven or hot water bath; isopropyl (rubbing alcohol); soil sample; local water samples; an apple; disposable plastic pan, and household bleach.

### **\*What is McGraw Hill Proctorio?**

Proctorio is a Learning Integrity Resource. This course will use Proctorio, a browser-locking and remote proctoring solution designed to protect the integrity of this course's assessments, within some of your Connect assignments. As your instructor, I've chosen the secure exam settings required by this course, and only I will make a judgment as to any potential academic integrity violation.

### **Assignments with Proctorio**

You'll be able to see which assignments in Connect include Proctorio settings because they will be clearly labeled with "Proctoring Enabled" in the assignment title. The settings that I use may vary depending on the assignment. When you start a proctored assignment, the settings in use will be indicated.

### **Proctorio Minimum System Requirements**

Proctorio offers a flexible service, which may include recording of video, audio, and screen activity or none of the above. The [Proctorio system requirements](#) are dependent on the exam settings and may require a webcam and a microphone. Test takers are encouraged to use a practice exam to test their system prior to taking an exam. Virtual machines and proxy connections will not work.

### **Equity and Fairness**

The reason I've chosen to enable Proctorio settings for specific assignments in this course is to make education more equal by allowing each student to earn the grades they deserve. The US Federal Government also requires that all schools have a process in place for verifying student identity to protect against Federal Student Aid (FSA) fraud.

### **Privacy**

Proctorio is a trusted resource for remote proctoring because of the company's commitment to student privacy. Proctorio uses single sign-on through Connect, and only I or approved individuals, here at our institution, will have access to your exam data. Proctorio never requires personally identifiable information from students, and Proctorio will never sell your data to third parties. Read more about [Proctorio's approach to privacy](#).

### **Security**

Proctorio only runs as an extension in your Chrome browser. This means that Proctorio works within a sandbox and has limited access to your computer system, unlike traditionally installed software applications that have complete access to your computer's hard drive, or other resources.

Proctorio does not continuously run in Connect. Proctorio only runs while you are taking your proctored Connect assignment. After your proctored assignment ends, you may uninstall the extension by right-clicking on it, to bring you peace of mind. Just remember, if you choose to do this, you'll need to reinstall

the extension again before starting your next proctored assignment.

All student data is kept safe using zero-knowledge encryption, meaning student data is scrambled and unreadable by anyone outside of our institution's learning platform. Proctorio cannot see your proctored assignment data. Read more about [Proctorio security](#).

### **Getting Started**

Before getting started on your first proctored assignment, please watch the Student Orientation Video on Proctorio, and then make sure to follow the instructions in [Proctorio's Quick Start Test Taker Guide](#) for the extension. To verify your computer system meets the requirements, take the practice quiz. This will ensure that everything will run smoothly on the day of the proctored assignment.

If, after reading the Quick Start Test Taker Guide, you have any trouble while using Connect & Proctorio, you can access quick help guides or reach out to Connect or Proctorio support for troubleshooting. Support can assist in troubleshooting any extension related issues before, during, and after your proctored assignment.