



WACO, TEXAS

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## **COURSE SYLLABUS**

**AND**

## **INSTRUCTOR PLAN**

### **MICROBIOLOGY FOR NON-SCIENCE MAJORS**

**(LECTURE + LAB)**

**BIOL 2420 (Sections 03 and 05)**

**Diane Schmaus, MA, MT (ASCP)**

**NOTE: This is a 16-week course**

**COVID 19 Notice:**

McLennan Community College is committed to providing you with every resource you need to reach your academic goals including your safety. We will continue to monitor the evolving situation with COVID 19 and adjust our safety guidelines to make sure we offer a safe environment for you and our faculty. Please make sure to consult your faculty and the MCC website at <https://www.mclennan.edu/crisis-management/coronavirus-updates/index.html> on any changes to these guidelines.

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### **Course Description:**

This course covers basic microbiology and immunology and is primarily directed at pre-nursing, pre-allied health, and non-science majors. It provides an introduction to 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.

### **Prerequisites and/or Corequisites:**

BIOL 1406, 1408, 1409, 2401 or 2404 with a grade of C or better. Semester Hours 4 (3 lec/3 lab).

### **Course Notes and Instructor Recommendations:**

Although this course is considered a face-to-face (in person) class and we will meet twice a week on campus for lecture and lab, we will also use Brightspace and other online tools. Therefore, regular access to a reliable computer with stable internet connection that can stream videos is required.

Brightspace is MCC's official Learning Management System and is the central hub for our course. Most assignments, homework, labs, and exams will be found on the McGraw-Hill *Connect* program deployed through Brightspace. McGraw-Hill *Connect* access and the loose-leaf textbook are provided via McLennan Included. This means that all course materials, including the textbook, are paid with tuition and fees, thus no other materials must be purchased. Note: The *Connect* Access Code must be registered with the student's MCC email address. Read more about *Connect* in this link:

<https://www.mheducation.com/highered/support/connect/beyond.student-success-for-them.html>

Brightspace is also used to access the course syllabus, orientation information, announcements, PowerPoints, supplemental videos, attendance, and gradebook. Please note that Google Chrome is the required browser for Brightspace, as most other browsers will not work properly. Any issues with accessing anything through Brightspace should be brought to my attention ASAP so it can be addressed.

Check grades regularly on Brightspace and bring any grade issues or discrepancies to my attention as soon as there is an issue, not at the end of the semester. I will not address grade issues more than two weeks after a grade is posted.

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Lastly, please send emails to me directly, not through Brightspace, because I may not receive them as promptly. As per MCC policy, all email should be sent and received using an official MCC email account, and not a personal (Gmail, Yahoo, Hotmail, etc.) account. MCC email should be checked at least **daily**.

#### **Instructor Information:**

Instructor Name: Diane Schmaus, MA, MT (ASCP)

MCC Email: dschmaus@mclennan.edu

Office Phone Number: 254-299-8417

Office Location: Science 322 (third floor of Science Building)

Office/Teacher Conference Hours: Monday and Wednesday 2:15-3:30 in office or by Zoom.

*(The Zoom meeting link will be posted on Brightspace)*

Other Instruction Information: Zoom or face-to-face meetings may also be scheduled at times outside of the scheduled conference hours via email request. If I do not answer your phone call, please leave a message and I will return it as soon as possible. Email is usually the best form of communication with me.

#### **Required Text & Materials:**

Title: *Microbiology Fundamentals: A Clinical Approach* (with *Connect* access)

Author: Cowan and Smith

Edition: 4th

Publisher: McGraw-Hill

ISBN: 9781260986112 (*Connect* access)

ISBN: 9781266253874 (loose-leaf text)

Your required materials are included with your fees for the course. See more about MCC's

Included here: <https://www.mclennan.edu/included/index.html>

**MCC Bookstore Website:** <http://www.mclennan.edu/bookstore/>

#### **Methods of Teaching and Learning:**

This course contains 5 units consisting of three chapters and various laboratory exercises per unit. Methods of teaching and assessment of the material include lectures, videos, PowerPoint slides, reading assignments, discussions, chapter homework assignments, virtual and in-person lab exercises, and unit exams.

Each instructor will design and implement their own teaching and learning methods. In addition, all BIOL 2420 sections will utilize various internal and/or external assessments to measure the

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required core objectives of critical thinking, communications, empirical/quantitative, and teamwork. Rubrics or common assessment criteria may be used to assess core objectives.

### **Course Objectives and/or Competencies:**

#### Core Objectives:

1. Critical Thinking Skills: Creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information. Assessed via class discussions, laboratory exercises, lecture quizzes and/or examinations.
2. Communication Skills: Effective development, interpretation and expression of ideas through written, oral, and visual communication. Assessed via class/lab exercises or presentations, either individually or in small groups, using oral, written, and visual components.
3. Empirical and Quantitative Skills: Manipulation and analysis of numerical data or observable facts resulting in informed conclusions. Assessed via lecture quizzes and/or examinations, laboratory exercises, and written homework assignments.
4. Teamwork: Ability to consider different points of view and to work effectively with others to support a shared purpose or goal. Assessed via group discussions, group laboratory activities, or group presentations.

In addition to the above listed competencies, upon successful completion of this course, students will:

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.

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9. Use and comply with laboratory safety rules, procedures, and universal precautions.
10. Demonstrate proficient use of a compound 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 methods.
16. Demonstrate basic identification protocols based on microscopy morphology of some common fungi and parasites.

### **Course Outline or Schedule:**

#### Unit 1

- Unit 1 Discussions
- Chapter 1 – Introduction to Microbes and Their Building Blocks
- Chapter 3 – Bacteria and Archaea
- Chapter 4 – Eukaryotic Cells and Microorganisms
- Unit 1 Labs
- Unit Exam One

#### Unit 2

- Unit 2 Discussions
- Chapter 5 – Viral Structure and Multiplication
- Chapter 6 – Microbial Nutrition and Growth
- Chapter 7 – Microbial Metabolism
- Unit 2 Labs
- Unit Exam Two

#### Unit 3

- Unit 3 Discussions
- Chapter 8 – Microbial Genetics and Genetic Engineering
- Chapter 11 – Interactions Between Microbes and Humans
- Chapter 12 – Host Defenses I: Overview and Nonspecific Defenses
- Unit 3 Labs
- Unit Exam Three

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### Unit 4

- Unit 4 Discussions
- Chapter 16 – Infectious Diseases Affecting the Skin and Eyes
- Chapter 17 – Infectious Diseases Affecting the Nervous System
- Chapter 18 – Infectious Diseases Affecting the Cardiovascular & Lymphatic
- Unit 4 Labs
- Unit Exam Four

### Unit 5

- Unit 5 Discussions
- Chapter 19 – Infectious Diseases Affecting the Respiratory Systems
- Chapter 20 – Infectious Diseases Affecting the Gastrointestinal Tract
- Chapter 21 – Infectious Diseases Affecting the Genitourinary System
- Unit 5 Labs
- Unit Exam Five

**\*\*Note:** Chapters 2, 9, 10, 13, 14, 15, and 22 will not be covered this semester

### **Course Grading Information:**

The course grade will be based on a total of:

- **5 Unit Exams** (50%)
- **15 SmartBook** Chapter Reading Assignments (10%)
- **15 Homework** Assignments (20%)
- **20 Virtual Lab** Assignments (5%)
- **5 Lab Quizzes** (15%)
- Required **Discussion Board** posts for Attendance

A = 90-100

B = 80-89

C = 70-79

D = 60-69

F = <60

There are 5 units in the course. Each unit consists of 3 chapters (see Course Outline above). Each Chapter will consist of in-person lectures, a chapter overview, a *SmartBook* reading assignment via *Connect*, chapter PowerPoints, and a homework assignment. In addition, each unit contains several *Virtual Lab* assignments and a lab quiz which be assigned once the student completes the

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*“In-person” Lab* assignment. Besides one’s physical presence and participation in class and lab, students will be asked to post on the Discussion Board for attendance purposes. Upon completion of unit chapter assignments, a unit exam will be given via *Connect* through Brightspace.

Each **Unit Exam** will consist of 100 multiple choice and true/false questions. The 5 exam grades will be averaged and count for 50% of the final course grade.

**SmartBook** Reading Assignments will be assigned for each Chapter we study. This adaptive learning tool is administered through McGraw-Hill *Connect* and will help the student master the required material. These “practice” assignments take approximately 60 minutes to complete for most students. One may repeat the *SmartBook* reading assignment as many times as they’d like to reach their desired grade (until the deadline at midnight on Sunday). In addition, I recommend using the *SmartBook* practice questions in the “self-study” mode as an excellent tool for exam preparation! The total of 15 *SmartBook* grades will be averaged and count for 10% of the final course grade.

Chapter **Homework** will include multiple choice and true/false questions, video exercises, case studies, critical thinking activities, and podcasts, all administered via McGraw-Hill *Connect* through Brightspace. The homework cannot be redone once it is submitted. The total of 15 homework grades will be averaged and count for 20% of the final course grade.

**Virtual Lab** Assignments will be accessed via McGraw-Hill *Connect* through Brightspace. The number of labs vary week-by-week. The goal of the virtual labs is to master the concepts, thereby preparing the student for the in-person lab procedures. The *Virtual Lab* Assignments may be ‘redone’ (until the deadline at midnight on Sunday) if results were not successful. The total of 20 virtual labs will be averaged and count for 5% of the final course grade.

A **Lab Quiz** will be assigned at the end of each unit. To be prepared for the in-person lab procedures, the virtual lab assignments should be completed before attending in-person labs. The Lab Quiz will include information from the virtual and in-person labs. Students must be present and participate in the in-person lab to receive full credit for the lab quiz as points will be deducted for absences or lack of participation. A Lab Quiz cannot be redone once it is submitted. The total of 5 lab quiz grades will be averaged and count for 15% of the final course grade.

**Discussion Boards** do not count for a direct grade but are required for attendance purposes. There will be a discussion board topic for the first 2 weeks in a unit. (The third week is an “exam week” and there will not be a discussion; spend your time studying!) Each board requires posting

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a thread on the discussion board and a reply to at least one other student's thread. Failure to participate in and complete a discussion board will be counted as an 'absence'.

#### **Late Work, Attendance, and Make Up Work Policies:**

Because there is an entire week to complete all work for that week, extensions and/or makeup work are not granted. The instructor has the prerogative of determining whether a student may make up an Exam missed due to rare circumstance. Extensions are usually only granted if one of the following apply to the situation: (1) authorized participation in official College functions, (2) documented personal illness, (3) an illness or a death in the immediate family, or (4) the observance of a religious holy day. Documentation of the above reason must be given to the instructor as soon as reasonably possible before any makeup work is allowed or extension granted. Forgetting to complete work is not an excuse for granting extensions. Because you have chosen to register for the course at this time, it should take precedence over work-related matters. Please be responsible with keeping up with all due dates and times!

MCC policy states that absence from more than 25 percent of scheduled lecture and/or laboratory meetings will be taken as evidence that a student does not intend to complete the course. For this course, a student's physical presence in class and lab and their participation in the discussion boards is used to assess attendance. I will use these 3 checks to record attendance each week:

1. Presence in lecture *and* lab for day one of the week
2. Presence in lecture *and* lab for day two of the week
3. Participation in discussion board or exam

Therefore, students have 45 checks possible (3x15 weeks). Missing more than 25% (11 checks) before the official drop date, will result in the student being withdrawn from the course with a grade of W. If the 'absences' are reached after the official drop date, the instructor may assign a W, if the student is passing and requests to be withdrawn. However, if a student who is not passing reaches the 25 percent point after the official drop date, the student will receive an F.

#### **Student Behavioral Expectations or Conduct Policy:**

Unless otherwise instructed, students should turn off all cell phones and put them away so that the classroom and lab will not be disturbed. If you are required to carry a cell phone or have extenuating circumstances, please inform the instructor. Disturbances such as cell phones ringing will be counted as an absence from class on that day.

Lab behavior is particularly important since we will be dealing with living bacterial cultures. No eating or drinking is allowed in the laboratory. Appropriate attire as described by the instructor (depending on lab procedure) is expected. Wash your hands whenever you leave the laboratory.



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Each student is expected to behave in a civil and respectful manner toward the instructor and other students in all forms of communication, written, verbal, and visual. Threatening, harassing, obscene, racist, sexist, or bigoted communication on discussion boards or in any other form of communication with the instructor or other students will not be tolerated and will be grounds for dismissal from the class and name submitted to the office for Student Conduct.

Cheating will not be tolerated in any form. Cheating includes but is not limited to copying answers from another student's work, turning in work that is not one's own, having someone else conduct the coursework, copying anything from another source without appropriate credit given to the author by including quotation marks and references, or using unauthorized external aid on course work. Suspected cheating will result in an appropriate disciplinary action including, but not limited to receiving a zero on that assignment/exam and notification of the infraction submitted to the MCC Academic Integrity Office. Further disciplinary action may be taken by the college. More than one incident of cheating during the semester is grounds for removal from the class and course grade of 'F' recorded. Also, posting any course material on external websites, social media, etc. will be grounds for removal from class, a grade of F assigned for the course, and notification of the infraction turned in to the MCC Academic Integrity Office.

**[Click Here for the MCC Attendance/Absences Policy](https://www.mclennan.edu/highlander-guide/policies.html)**

**(<https://www.mclennan.edu/highlander-guide/policies.html>)**

Click on the link above for the college policies on attendance and absences. Your instructor may have additional guidelines specific to this course.



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## ACADEMIC RESOURCES/POLICIES

### **Accommodations/ADA Statement:**

Any student who is a qualified individual with a disability may request reasonable accommodations to assist with providing equal access to educational opportunities. Students should contact the Accommodations Coordinator as soon as possible to provide documentation and make necessary arrangements. Once that process is completed, appropriate verification will be provided to the student and instructor. Please note that instructors are not required to provide classroom accommodations to students until appropriate verification has been provided by the Accommodations Coordinator. For additional information, please visit [www.mclennan.edu/disability](http://www.mclennan.edu/disability).

Students with questions or who require assistance with disabilities involving physical, classroom, or testing accommodations should contact:

[disabilities@mclennan.edu](mailto:disabilities@mclennan.edu)

254-299-8122

Room 319, Student Services Center

### **Title IX:**

We care about your safety, and value an environment where students and instructors can successfully teach and learn together. If you or someone you know experiences unwelcomed behavior, we are here to help. Individuals who would like to report an incident of sexual misconduct are encouraged to immediately contact the Title IX Coordinator at [titleix@mclennan.edu](mailto:titleix@mclennan.edu) or by calling Dr. Drew Canham (Chief of Staff for Diversity, Equity & Inclusion/Title IX) at (254) 299-8645. Individuals also may contact the MCC Police Department at 299-8911 or the MCC Student Counseling Center at MCC at (254) 299-8210. The MCC Student Counseling Center is a confidential resource for students. Any student or employee may report sexual harassment anonymously by visiting <http://www.lighthouse-services.com/mclennan/>.

Go to McLennan's Title IX webpage at [www.mclennan.edu/titleix/](http://www.mclennan.edu/titleix/). It contains more information about definitions, reporting, confidentiality, resources, and what to do if you or someone you know is a victim of sexual misconduct, gender-based violence or the crimes of rape, acquaintance rape, sexual assault, sexual harassment, stalking, dating violence, or domestic violence.

**Student Support/Resources:**

MCC provides a variety of services to support student success in the classroom and in your academic pursuits to include counseling, tutors, technology help desk, advising, financial aid, etc. A listing of these and the many other services available to our students is available at <http://www.mclennan.edu/campus-resource-guide/>

College personnel recognize that food, housing, and transportation are essential for student success. If you are having trouble securing these resources or want to explore strategies for balancing life and school, we encourage you to contact a Success Coach by calling (254) 299-8226 or emailing [SuccessCoach@mclennan.edu](mailto:SuccessCoach@mclennan.edu). Students may visit the Completion Center Monday-Friday from 8 a.m.-5 p.m. to schedule a meeting with a Success Coach and receive additional resources and support to help reach academic and personal goals. Paulanne's Pantry (MCC's food pantry) provides free food by appointment to students, faculty and staff based on household size. Text (254) 870-7573 to schedule a pantry appointment. The Completion Center and pantry are located on the Second Floor of the Student Services Center (SSC).

**MCC Foundation Emergency Grant Fund:**

Unanticipated expenses, such as car repairs, medical bills, housing, or job loss can affect us all. Should an unexpected expense arise, the MCC Foundation has an emergency grant fund that may be able to assist you. Please go to <https://www.mclennan.edu/foundation/scholarships-and-resources/emergencygrant.html> to find out more about the emergency grant. The application can be found at [https://www.mclennan.edu/foundation/docs/Emergency\\_Grant\\_Application.pdf](https://www.mclennan.edu/foundation/docs/Emergency_Grant_Application.pdf).

**MCC Academic Integrity Statement:**

Go to [www.mclennan.edu/academic-integrity](http://www.mclennan.edu/academic-integrity) for information about academic integrity, dishonesty, and cheating.

**Minimum System Requirements to Utilize MCC's D2L|Brightspace:**

Go to <https://www.mclennan.edu/center-for-teaching-and-learning/Faculty-and-Staff-Commons/requirements.html> for information on the minimum system requirements needed to reliably access your courses in MCC's D2L|Brightspace learning management system.

**Minimum Technical Skills:**

Students should have basic computer skills, knowledge of word processing software, and a basic understanding of how to use search engines and common web browsers.

**Backup Plan for Technology:**

In the event MCC's technology systems are down, you will be notified via your MCC student email address. Please note that all assignments and activities will be due on the date specified in the Instructor Plan, unless otherwise noted by the instructor.

**Email Policy:**

McLennan Community College would like to remind you of the policy (<http://www.mclennan.edu/employees/policy-manual/docs/E-XXXI-B.pdf>) regarding college email. All students, faculty, and staff are encouraged to use their McLennan email addresses when conducting college business.

A student's McLennan email address is the preferred email address that college employees should use for official college information or business. Students are expected to read and, if needed, respond in a timely manner to college emails. For more information about your student email account, go to [www.mclennan.edu/student-email](http://www.mclennan.edu/student-email).

**Instructional Uses of Email:**

Faculty members can determine classroom use of email or electronic communications. Faculty should expect and encourage students to check the college email on a regular basis. Faculty should inform students in the course syllabus if another communication method is to be used and of any special or unusual expectations for electronic communications.

If a faculty member prefers not to communicate by email with their students, it should be reflected in the course syllabus and information should be provided for the preferred form of communication.

**Email on Mobile Devices:**

The College recommends that you set up your mobile device to receive McLennan emails. If you need assistance with set-up, you may email [Helpdesk@mclennan.edu](mailto:Helpdesk@mclennan.edu) for help.

You can find help on the McLennan website about connecting your McLennan email account to your mobile device:

- [Email Setup for iPhones and iPads](https://support.microsoft.com/en-us/office/set-up-an-outlook-account-in-the-ios-mail-app-b2de2161-cc1d-49ef-9ef9-81acd1c8e234?ui=en-us&rs=en-us&ad=us) (<https://support.microsoft.com/en-us/office/set-up-an-outlook-account-in-the-ios-mail-app-b2de2161-cc1d-49ef-9ef9-81acd1c8e234?ui=en-us&rs=en-us&ad=us>)
- [Email Setup for Androids](https://support.microsoft.com/en-us/office/set-up-email-in-android-email-app-71147974-7aca-491b-978a-ab15e360434c?ui=en-us&rs=en-us&ad=us) (<https://support.microsoft.com/en-us/office/set-up-email-in-android-email-app-71147974-7aca-491b-978a-ab15e360434c?ui=en-us&rs=en-us&ad=us>)

**Forwarding Emails:**

You may forward emails that come to your McLennan address to alternate email addresses; however, the College will not be held responsible for emails forwarded to an alternate address that may be lost or placed in junk or spam filters.

For more helpful information about technology at MCC, go to [MCC's Tech Support Cheat Sheet](#) or email [helpdesk@mclennan.edu](mailto:helpdesk@mclennan.edu).

**Disclaimer:**

The resources and policies listed above are merely for informational purposes and are subject to change without notice or obligation. The College reserves the right to change policies and other requirements in compliance with State and Federal laws. The provisions of this document do not constitute a contract.