



## **BIOL-2420-221CL**

### **Microbiology Non-Science FALL 2021 08/23/2021-12/10/2021**

**Lecture Tuesday 06:00PM - 08:50PM, Steam Bldg. #22, Room 342**

**Lab Thursday 06:00PM - 08:50PM, Steam Bldg. #22, Room 321**

**Instructor Information:** James Mubiru, jmubiru@com.edu, phone number 409-9338245

**Student hours and location:** Tuesday and Thursday 9:00AM-12:00PM, and 5:00-6PM Steam building, room S.325-20

#### **Required Textbook/Materials:**

Tortora, G.J., Funke, B.R. & Case, C.L., 2016. *Microbiology: An Introduction*, 13<sup>th</sup> edition, Boston, MA; Pearson Education, Inc. Publisher. ISBN-13: 9780134605180. This book is purchased at the time of registration as an e-book that you will gain access to once you are in Blackboard.

**Mastering Microbiology:** On-line component for the course. This is purchased at the time of registration.

**Lab Manual:** Alderson, G.D., 2015. *Microbiology Experiments & Lab Techniques*, 14<sup>th</sup> edition. Southlake, TX; Fountainhead Press Publisher. ISBN-13: 9781598718782

**LAB COAT-** made of polyester, cotton, or blend (No disposable plastic coats)

Safety-glasses are recommended purchase if you do not want to use common ones

**Sharpie and Coloring pencils** to be used in the lab. **Calculator with log function**

#### **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:** Two lab-based courses (eight credit hours) selected from biology or chemistry core curriculum courses with a grade of "C" or better

**Course requirements:** (including description of any special projects or assignments)

*First Exam, Midterm Exam & Final Exam*

These exams will be taken face-to face and will consist of multiple-choice, fill-in-the-blank, matching, true-false, essay and identification.

1. The first exam will be taken in week 4 and will cover chapters 1, 3, 4, 5, 27 and 28.
2. The mid-term exam will be taken in Week 8 and will cover the next set of chapters (6, 7, 8, 9, 10,12, and 13).
3. The Final exam is not cumulative and will only cover the last part of the course.

### *Lecture Quizzes*

You will have eight on-line quizzes that are found in Blackboard under the Quiz tab. Each quiz consists of 20 questions and you will have 30 minutes to answer these questions. These tests open on Thursday each week during the session and close the following Sunday. If you experience technical difficulty, please contact me. If I can verify the technical difficulty on my end, I can reset exams if the due date has not passed. I advise you to try and take the quiz earlier in the week vs. the last hour on Sunday!

### *Mastering Homework Assignments*

With the required Mastering Component, you will need to complete ten (10) Mastering Homework Assignments during the course. Please check the schedule for the due dates.

### *In-class activities (50 points)*

You will have in-class activities to cover material that reinforces the course material or is of clinical importance. The activities below will be done in class:

1. Cell wall craft (8 points)
2. Aerobic respiration craft (8 points)
3. Antibody craft (8 points)
4. Virus craft model (8 points)
5. "In the news" disease classroom discussion (8 points)
6. Article summary (10 points)

### *Pre-lab Quizzes*

I will expect for you to be preparing for the upcoming labs outside of class according to the schedule. Please refer to Blackboard for folders containing material to help you with your preparation of upcoming labs according to the schedule. To make sure you understand the BACKGROUND material and the PROCEDURES in the upcoming lab, you will need to take an on-line quiz to demonstrate that you are ready to enter the lab. If you score below 70%, then I will allow you to enter the lab if you have written by hand the procedures that will be covered in that laboratory exercise. Failure to come to class with a hand-written procedure means you will not be able to perform the lab and therefore forfeit the points associated with the laboratory exercises. If you score 70% or above, you do not need to write out the procedure and use your lab manual accordingly. This is a similar policy to how the laboratory exercises are conducted in nursing school. It is my hope that this will help prepare you for this type of laboratory training that most of you will need to have.

### *Lab Assignments*

For each laboratory experiment, there are questions that are associated with carrying out the procedures and analyzing the results. You will be responsible for turning in these questions at the end of every exercise.

- 1. Lab exercises sent through e-mail will not be accepted.**
- 2. If a student does not follow proper laboratory safety protocol during the completion of the experiment, or does not clean the microscope, he/she will be penalized 2 points on the laboratory assignment.**

### *Lab Practicals*

There will be 2 laboratory practicals which will consist of a Power Point presentation and a written section.

### *Unknown Project*

Students will be expected to use their knowledge and experience in the lab to determine the identification of a two unknown samples. The rubric for this project is as followed.

Completion of the Dichotomous KEY = 10 points

Complete of the Bacterial Characteristics Chart = 10 points

Determination by Gram-Stain = 10 points

Carrying out selective media testing = 5 points

Correct Identification of Bacterial Strains in Mixture = 5 points

*Bonus Points (Extra points)*

There will be opportunities for you to earn bonus points. Bonus points are not part of the course requirements so any bonus points earned will help your grade and any bonus points lost will not affect your grade negatively. **In order to earn bonus points, attendance is mandatory!**

The extra credit opportunities are as below:

*Vaccine hesitancy extra points (10 points added on the midterm) Only one absence allowed.*

This research project covers vaccine hesitancy. There are some people who do not accept vaccines for themselves or their family members. Student will write a one-page single line assay on vaccine hesitancy clearly giving reasons people give for refusing vaccines. The assay should have a summary paragraph that states your view on vaccine hesitancy.

*COVID-19 vaccine extra points (10 points added on the final) Only one absence allowed.*

This research project covers COVID-19 vaccines. Students write a two-page single spaced paper summarizing the currently available COVID-19 vaccines. Students will pretend they are in charge of a country other than America and they are responsible for choosing a suitable vaccine for that country.

*Sickle cell club activities extra points Must do something for the club.*

These points will be awarded to students who do activities related to sickle cell disease. Currently we do not know what activities will be available.

**Determination of Course Grade/Detailed Grading Formula:** (methods of evaluation to be employed to include a variety of means to evaluate student performance)

Course Assessment	Total Points	Percentage of Course
<b>LECTURE PORTION</b>	<b>650</b>	<b>65.0%</b>
Lecture Quizzes (8)	160	16.0%
Pearson Homework (10)	140	14.0%
In-class activities	50	5.0%
First Exam	50	5%
Mid-term Exam	120	12%
Final Exam	130	13%
<b>LABORATORY PORTION</b>	<b>350</b>	<b>35.0%</b>
Pre-Lab Quizzes (10)	60	6.0%
Lab Assignments (10)	100	10.0%
Unknown Bacteria project	40	4%
Lab Practical # 1	75	7.5%
Lab Practical # 2	75	7.5%
<b>TOTAL POINTS</b>	<b>1000</b>	<b>100%</b>

**Grading Scale**

- A** A Sum of the points earned for course assessments that equals between 900 and 1000 points
- B** A Sum of the points earned for course assessments that equals between 800 and 899 points
- C** A Sum of the points earned for course assessments that equals between 700 and 799 points
- D** A Sum of the points earned for course assessments that equals between 600 and 699 points
- F** A Sum of the points earned for course assessments that equals below 600 points.
- I** An incomplete may be assigned at the discretion of the instructor in accordance with college policy.
- W** A withdrawal may be assigned in accordance with college policy.

**Lab Science Policy**

**This course consists of both a lecture and laboratory grade component. Students must earn a 70% or better in the laboratory component to successfully pass the course. Earning less than 70% in the laboratory component will result in an F for the course regardless of the lecture grade. Passing the laboratory component and failing the lecture component will not guarantee a passing grade for the course. Deviations from this policy will be at the sole discretion of the instructor.**

**Late Work, Make-Up, and Extra-Credit Policy:**

1. For online tests/exams, if you experience technical difficulty, please contact me. If I can verify the technical difficulty on my end, I can reset exams if the due date has not passed.
2. I do not reset exams for students who just want to improve their grades.
3. Issues with a particular grade should be brought to in my attention as soon as possible. After two weeks have passed since the due date, I will not change the grade or reset the test.
4. If a student has a sickness or a family emergency, I will reset the exam/test after the student brings suitable documentation. However, if two weeks have passed, I will not accept the documentation.

**Attendance Policy:**

1. Being called in at work is not a valid excuse in this course.
2. A student is required to come to lab to complete the face-to-face laboratory exercises required in the laboratory component of this course. Absences in **three** required lab meetings will result in a "F" for the course grade unless there is a documented excuse approved by the instructor (e.g. illness or death in the family).
3. A student can only miss one lab.
4. Attendance is taken every class meeting and verified at the end of class. Do not leave class early!
5. If a student accumulates 2 absences, I MUST submit his/her name to the Early Alert System and extra credit will not be added to the student's grade.

**Communicating with your instructor:** ALL electronic communication with the instructor must be through your COM email. Due to FERPA restrictions, faculty cannot share any information about performance in the class through other electronic means.

<b>Student Learner Outcome</b>	<b>Maps to Core Objective</b>	<b>Assessed via this Assignment</b>
1.		

2.		
3.		
4.		
5.		

### Academic Dishonesty:

The practice of taking someone else's work or ideas and passing them off as one's own. Plagiarism is a very serious offense. Plagiarism includes paraphrasing someone else's words without giving proper citation, copying directly from a website and pasting it into your paper, using someone else's words without quotation marks. Any assignment containing any plagiarized material will receive a grade of zero and the student will be referred to the Office of Student Conduct for the appropriate discipline action. In addition, I am providing you with an internet link to a video on Plagiarism. I would strongly urge you to look this over early in the course.

[https://video.search.yahoo.com/search/video;\\_ylt=Awr9CJ2Y5apgKIAA2WJXNyoA;\\_ylu=Y29sbwNncTEEEcG9zAzEEdnRpZAMEc2VjA3BpdnM-?p=Plagiarism&fr2=piv-web&fr=yfp-t-s#id=1&vid=7cd373337514bc2e27ced094c7fc08e6&action=view](https://video.search.yahoo.com/search/video;_ylt=Awr9CJ2Y5apgKIAA2WJXNyoA;_ylu=Y29sbwNncTEEEcG9zAzEEdnRpZAMEc2VjA3BpdnM-?p=Plagiarism&fr2=piv-web&fr=yfp-t-s#id=1&vid=7cd373337514bc2e27ced094c7fc08e6&action=view)

**Student Concerns:** If you have any questions or concerns about any aspect of this course, please contact me using the contact information previously provided. If, after discussing your concern with me, you continue to have questions, please contact Sheena Abernathy, Chair of the Science Department, at 409-933-8330 or by email: [sabernathy@com.edu](mailto:sabernathy@com.edu)

### Course outline

Wk	Date	Daily Schedule	Assigned Reading	Assignments
W1	Tues 8/24	Introduction and The Microbial World & You Observing Microorganisms Functional Anatomy of Prokaryotic & Eukaryotic Cells	<ul style="list-style-type: none"> <li>Chapter 1</li> <li>Chapter 3</li> <li>Chapter 4</li> </ul>	<ol style="list-style-type: none"> <li>In the news classroom discussion due 11/28</li> <li>Article summary assignment starts (due 9/19)</li> </ol>
	Thurs 8/26	Lab Safety Introduction to Microscope Advanced Microscopy	<ul style="list-style-type: none"> <li>Exercise 3</li> <li>Exercise 5</li> </ul>	<ol style="list-style-type: none"> <li>Pre-lab 1C quiz due before lab</li> <li>Lab Assignment for Ex 3 &amp; 5 due 8/25</li> </ol>
W2	Tues 8/31	Introduction and The Microbial World & You Observing Microorganisms Functional Anatomy of Prokaryotic & Eukaryotic Cells	<ul style="list-style-type: none"> <li>Chapter 1</li> <li>Chapter 3</li> <li>Chapter 4</li> </ul>	<ol style="list-style-type: none"> <li>Pearson Mastering Homework 1 due 9/5</li> <li>Lecture quiz 1 due 9/5</li> <li>Cell wall craft due 9/5</li> </ol>
	Thurs 9/2	LABORATORY SCHEDULE Contamination Lab Transfer Technique Medical Asepsis	<ul style="list-style-type: none"> <li>Exercise 1</li> <li>Exercise 6</li> <li>Exercise 18</li> </ul>	<ol style="list-style-type: none"> <li>Pre-lab 3C due before lab</li> <li>Lab Assignment for Ex. 1, 6 and 18 due in week 3</li> </ol>
	Sun 9/5	<b>LECTURE QUIZ 1 in BLACKBOARD DUE! (CHAPTERS 1,3,4) ASSIGNMENT 1 in MASTERING DUE</b>		

W3	Tues 9/7	Microbial Metabolism Environmental Microbiology Applied & Industrial Microbiology	<ul style="list-style-type: none"> <li>Chapter 5</li> <li>Chapter 27</li> <li>Chapter 28</li> </ul>	<ul style="list-style-type: none"> <li>Aerobic Respiration craft due 9/12/21</li> <li>Pearson Mastering Homework 2 due 9/12</li> <li>Lecture quiz 2 due 9/12</li> </ul>
	Thurs 9/9	LABORATORY SCHEDULE Make sure you complete your	<ul style="list-style-type: none"> <li>Exercise 7</li> <li>Exercise 8</li> <li>Exercise 9</li> </ul>	<ol style="list-style-type: none"> <li>Streak Plate Technique</li> <li>Counting Microbial Populations</li> <li>Simple Stain &amp; Bacterial Morphology</li> <li>Pre-lab quiz 4C due before lab.</li> <li>Lab Assignment for Ex. 7, 8 and 9 due in week 4</li> </ol>
	Sun 9/12	<b>LECTURE QUIZ 2 in BLACKBOARD DUE! (CHAPTERS 5,27,28) ASSIGNMENT 2 in MASTERING DUE</b>		
W4	Tues 9/14	Microbial Growth Control of Microbial Growth	<ul style="list-style-type: none"> <li>Chapter 6</li> <li>Chapter 7</li> </ul>	Pearson Mastering Homework 3 due 9/19
	<b>FIRST EXAM due 9/14/ 21 (COVERS CHAPTERS 1, 3, 4, 5, 27, 28)</b>			
	Thurs 9/16	LABORATORY SCHEDULE Gram stain Capsule stain	<ul style="list-style-type: none"> <li>Exercise 10</li> <li>Exercise 11</li> </ul>	<ol style="list-style-type: none"> <li>Lab Assignment 4 DUE upon completion of labs above</li> <li>Pre-lab 5C quiz due before lab</li> </ol>
	Sun 9/19	<b>ASSIGNMENT 3 in MASTERING DUE</b>		
W5	Tues 9/21	Microbial Genetics Biotechnology & DNA Tech.	<ul style="list-style-type: none"> <li>Chapter 8</li> <li>Chapter 9</li> </ul>	<ol style="list-style-type: none"> <li>Lecture quiz 3 due 9/26</li> <li>Pearson Mastering Homework 4 due 9/26</li> </ol>
	Thurs 9/23	LABORATORY SCHEDULE Control of microorganisms <ul style="list-style-type: none"> <li>Moist and Dry heat</li> <li>Ultraviolet Light</li> <li>Disinfectants</li> <li>Antibiotics</li> </ul>	<ul style="list-style-type: none"> <li>Exercise 19</li> <li>Exercise 20</li> <li>Exercise 21</li> <li>Exercise 22</li> </ul>	<ol style="list-style-type: none"> <li>Pre-lab 2C quiz due before lab.</li> <li>Lab Assignment 5 due in week 6</li> </ol>
	Sun 9/26	<b>LECTURE QUIZ 3 in BLACKBOARD DUE! (CHAPTERS 6,7,8) ASSIGNMENT 4 in MASTERING DUE</b>		
W6	Tues 9/28	Classifying Microorganisms The Eukaryotes	<ul style="list-style-type: none"> <li>Chapter 10</li> <li>Chapter 12</li> </ul>	
	Thurs 9/30	LABORATORY SCHEDULE Spore Stain Acid Fast Stain	<ul style="list-style-type: none"> <li>Exercise 12</li> <li>Exercise 13</li> </ul>	<ol style="list-style-type: none"> <li>Pre-lab 6C quiz on due before lab</li> <li>Lab Assignment assn. for Ex 12 &amp; 13 DUE upon completion of labs above</li> </ol>
W7	Tues 10/5	Viruses, Viroids, & Prions	<ul style="list-style-type: none"> <li>Chapter 13</li> </ul>	Virus craft due 10/10
	Thurs 10/7	<b>LAB PRACTICAL 1 due 10/7/21</b>		
	Sun 10/10	<b>LECTURE QUIZ 4 in BLACKBOARD DUE! (CHAPTERS 10,12,13) ASSIGNMENT 5 in MASTERING DUE</b>		
W8	<b>MIDTERM EXAM Due 10/12</b>			
	Thurs 10/14	LABORATORY SCHEDULE Bacterial Conjugation Epidemiology	<ul style="list-style-type: none"> <li>Exercise 14</li> <li>Exercise 33</li> </ul>	<ol style="list-style-type: none"> <li>Pre-lab 13 C due before lab</li> <li>Lab Assig. For Ex. 14 &amp; 33 DUE in week 9</li> </ol>

	Sun 10/17		•	
W9	Tues 10/19	Principles-Disease & Epidemiology Microbial Mechanisms of Pathogenicity	• Chapter 14 • Chapter 15	
	Thurs 10/21	LABORATORY SCHEDULE	• Exercise 31	1. Parasitology 2. Pre-lab 12 C due before lab 3. Lab Assignment 8 DUE upon completion of labs above
	Sun 10/24	<b>LECTURE QUIZ 5 in BLACKBOARD DUE! (CHAPTERS 14,15)</b>		
W10	Tues 10/26	Innate Immunity	• Chapter 16	
	Thurs 10/28	LABORATORY SCHEDULE Make sure you complete your pre-lab quiz on 10/31.	• Exercise 27 • Exercise 29	1. Pathogenic cocci 2. Cultures of Anaerobic Bacteria 3. Pre-lab 10 C due before lab 4. Lab Assignment 9 DUE upon completion of labs above
	Sun 10/31	<b>ASSIGNMENT 6 in MASTERING DUE</b>		
W11	Tues 11/2	Adaptive Immunity	• Chapter 17	Antibody craft due 11/7
	Thurs 11/4	LABORATORY SCHEDULE	• Exercise 30	1. Enteric bacteria 2. Pre-lab 11C quiz is due before coming to the lab 3. Lab Assignment 10 DUE upon completion of labs above
	Sun 11/7	<b>LECTURE QUIZ 6 in BLACKBOARD DUE! (CHAPTERS 16,17,18)</b>		
W12	Tues 11/9	Practical Application of Immunology Disorders of Immune System	• Chapter 18 • Chapter 19	
		LABORATORY SCHEDULE Review Plate Cultures		
	Thurs 11/11	Antimicrobial Drugs	• Chapter 20	
		LABORATORY SCHEDULE <b>Receive Unknown</b>	• Exercise 35 (modified)	1. Dichotomous Key Due 2. Characteristic Table Due 3. Gram-strain 4. Culture the samples on plate
	Sun 11/14	<b>ASSIGNMENT 7 in MASTERING DUE</b>		
W13	Tues 11/16	Microbial Diseases of the Skin and Eyes Microbial Diseases of the Nervous System	• Chapter 21 • Chapter 22	
	Thurs 11/18	LABORATORY SCHEDULE Unknown Completion		
	Sun 11/21	<b>LECTURE QUIZ 7 in BLACKBOARD DUE! (CHAPTERS 19,21,22)</b> <b>ASSIGNMENT 8 in MASTERING DUE</b>		
W14	Tues 11/23	Microbial Diseases of the Cardiovascular and Lymphatic System	• Chapter 23 • Chapter 24	"In the news" classroom discussion ends in week 14

		Microbial Diseases of the Respiratory System		
	Thurs 11/25			
	Sun 11/28	<b>ASSIGNMENT 9 in MASTERING is DUE</b>		
W15	Tues 11/30	Microbial Diseases of the Digestive System Microbial Diseases - Urinary and Reproductive System	<ul style="list-style-type: none"> <li>• Chapter 25</li> <li>• Chapter 26</li> </ul>	
	Thurs 12/2	<b>LAB PRACTICAL 2 due 12/2</b>		
	Sun 12/5	<b>LECTURE QUIZ 8 in BLACKBOARD DUE (CHAPTERS 23,24,25,26) ASSIGNMENT 10 in MASTERING is DUE</b>		
W16	Tues 12/7	<b>FINAL EXAM due 12/7</b>		
	Thurs 12/9			

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## Institutional Policies and Guidelines

**Grade Appeal Process:** Concerns about the accuracy of grades should first be discussed with the instructor. A request for a change of grade is a formal request and must be made within six months of the grade assignment. Directions for filing an appeal can be found in the student handbook. <[https://build.com.edu/uploads/sitecontent/files/student-services/Student\\_Handbook\\_2019-2020v5.pdf](https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf). *An appeal will not be considered because of general dissatisfaction with a grade, penalty, or outcome of a course. Disagreement with the instructor's professional judgment of the quality of the student's work and performance is also not an admissible basis for a grade appeal.* [https://build.com.edu/uploads/sitecontent/files/student-services/Student\\_Handbook\\_2019-2020v5.pdf](https://build.com.edu/uploads/sitecontent/files/student-services/Student_Handbook_2019-2020v5.pdf)

**Academic Success & Support Services:** College of the Mainland is committed to providing students the necessary support and tools for success in their college careers. Support is offered through our Tutoring Services, Library, Counseling, and through Student Services. Please discuss any concerns with your faculty or an advisor.

**ADA Statement:** Any student with a documented disability needing academic accommodations is requested to contact Holly Bankston at 409-933-8520 or [hbankston@com.edu](mailto:hbankston@com.edu). The Office of Services for Students with Disabilities is located in the Student Success Center.

**Counseling Statement:** Any student needing counseling services is requested to please contact Holly Bankston in the student success center at 409-933-8520 or [hbankston@com.edu](mailto:hbankston@com.edu). Counseling services are available on campus in the student center for free and students can also email [counseling@com.edu](mailto:counseling@com.edu) to set up their appointment. Appointments are strongly encouraged; however, some concerns may be addressed on a walk-in basis.



**Textbook Purchasing Statement:** A student attending College of the Mainland is not under any obligation to purchase a textbook from the college-affiliated bookstore. The same textbook may also be available from an independent retailer, including an online retailer.

**Withdrawal Policy:** Students may withdraw from this course for any reason prior to the last eligible day for a “W” grade. Before withdrawing students should speak with the instructor and consult an advisor. Students are permitted to withdraw only six times during their college career by state law.

**F<sub>N</sub> Grading:** The F<sub>N</sub> grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The F<sub>N</sub> grade may be issued for cases in which the student ceases or fails to attend class, submit assignments, or participate in required capacities, and for which the student has failed to withdraw. The issuing of the F<sub>N</sub> grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an F<sub>N</sub> grade.

**Early Alert Program:** The Student Success Center at College of the Mainland has implemented an Early Alert Program because student success and retention are very important to us. I have been asked to refer students to the program throughout the semester if they are having difficulty completing assignments or have poor attendance. If you are referred to the Early Alert Program you will be contacted by someone in the Student Success Center who will schedule a meeting with you to see what assistance they can offer in order for you to meet your academic goals.

**COVID-19 Statement:** All students, faculty, and staff are expected to familiarize themselves with materials and information contained on the College of the Mainland’s Coronavirus Information site at [www.com.edu/coronavirus](http://www.com.edu/coronavirus). In compliance with Governor Abbott's May 18 Executive Order, face coverings/masks will no longer be required on COM campus. Protocols and college signage are being updated. We will no longer enforce any COM protocol that requires face coverings. We continue to encourage all members of the COM community to distance when possible, use hygiene measures, and get vaccinated to protect against COVID-19. Please visit [com.edu/coronavirus](http://com.edu/coronavirus) for future updates.