



BIOL2420.101CL
Microbiology Non-Science
Spring 2023

Lecture will take place in STEAM Building #22 Room 342 on Mondays from 11 am until 1:50 pm
Lab will take place in STEAM Building #22 Room 317 on Wednesdays from 11 am until 1:50 pm

Instructor Information: Dr. Jennifer Bieszke, jbieszke@com.edu (preferred) 409-933-8332

Student hours and location:

Monday and Wednesday: (2:00 pm-3:00 pm) STEAM Building 325.28

Monday: 5:00 pm- 7:00 pm Virtual Office Hours (use provided link in Brightspace)

Wednesday: 5:00 pm – 6:30 pm STEAM Building 325.28*

Tuesday and Thursday: 5-6 pm STEAM Building 325.28*

- For evening office hours: You will need to call my office phone number to receive entrance into my office during this time.

Important! Appointments upon request

Course Communication: Email preferred method of communication with me.

Responses can be expected within 24 hours.

Required Textbook/Materials:

Textbook: Tortora, G.J., Funke, B.R. & Case, C.L., 2016. Microbiology: An Introduction, 13th 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.

These required materials listed above were purchased at the time of registration and you will gain access to these in Blackboard when classes begin. These items are required and you cannot choose an option to discontinue their use.

Lab Manual: Alderson, G.D., 2015. Microbiology Experiments & Lab Techniques, 14th 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 -check Walmart

Disposable Masks (only-required if you are wearing masks in public)- you cannot come in with a mask and leave with the same mask due to the biohazards in the lab. If you are preferring to wear masks at this time, make sure you bring a disposable mask that will be worn during lab and then disposed of at the end of the lab.

Sharpie to be used in the lab

SCANTRON 888E -2 of these scantrons are needed for course

COM Brightspace COM D2L Brightspace will be used for online activities, quizzes, and more. In addition, D2L Brightspace will allow students to communicate with each other and the instructor. Many class resources will be available through D2L Brightspace. Training is not required to access D2L Brightspace; however, the "Online Learner Workshop on Demand" for acquiring D2L Brightspace skills is available for self-enrollment. The self-enrollment link is located on the "Login page". If you have any questions regarding course access or training, please submit a D2L Brightspace Support Ticket to the EdTech Services department.

You are responsible for maintaining your own online access to the course. If your computer does not allow you to complete the assignments in the course, please use the computers available on campus. Be aware that the college computers are only available during the hours of operation for the computer labs and library. It is up to you to be aware of those times and get all assignments turned in on time.

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 this course covers basics of culture and identification of bacteria and microbial ecology.

PREREQUISITES: Two lab based courses (eight credit hours) selected from biology or chemistry core curriculum courses, grade "C" or better.

Course requirements:

Midterm Exam & Final Exam

Both these exams will be taken in-class. The exams will be timed and the format for these exams will be discussed at a later date. The Mid-term Exam will cover the lecture material from the first half of the class and the Final Exam will cover the material from the second half of the class only. Please make sure you are aware of the dates these tests must be completed in the Schedule below. **NO MAKE-UP POLICY for missed exams unless there is documented extenuating circumstances such as illness or death in family.**

Study Guide Quizzes

You will have 10 on-line quizzes that will cover the study guides for each chapter(s). These quizzes will be in Brightspace, and you will have two attempts for each quiz. The idea of the quiz is to help you see which areas in the Study guide are your weakest and the second attempt is to help you master this material. Please make sure you are aware of the dates these tests must be completed in the Schedule below. **NO MAKE-UP POLICY for missed quizzes unless there is documented extenuating circumstances such as illness or death in family.**

Mastering Homework Assignments

With the required Mastering Component, you will need to complete eight Mastering homework assignments during the course. Please check the schedule for the due dates. **NO MAKE-UP POLICY for missed mastering homework assignments unless there is documented extenuating circumstances such as illness or death in family.**

Multiple Posts in Discussion Forums in Brightspace

You will have three discussion forums where you are going to have to make an initial post to the discussion forum. This post will have specific criteria that you must meet when making your post. You will also have to make a second post to another student's post to extend the discussion further in a positive manner. It is important to recognize if wrong information is being posted by another person but please be respectful of others when notifying a person of mis-informing information. **NO MAKE-UP POLICY for Discussion Posts unless there is documented extenuating circumstances such as illness or death in family.**

Course Project

At the end of the semester, you will be assigned into small groups in order to delegate the work needed in order to study the infectious diseases that invade the different organ systems in the body. You will have to identify the pathogen for different diseases, recognize characteristic signs & symptoms, discuss treatment, and use this information in working through a case study. More information to come! There will be multiple parts to this assignment and the grade will be determined by individual and group performance. **NO MAKE-UP POLICY for Group Project unless there is documented extenuating circumstances such as illness or death in family.**

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 Brightspace 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 (either in Mastering or Brightspace) to demonstrate that you are ready to enter the lab. If you score 70% or above, you do not need to write out the procedure and use your lab manual accordingly. **If you score below 70% (3.5/5.0) on the Pre-lab exam 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.**

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. These will need to be completed and turned in on the "results" day of the lab experiment **MAKE-UP POLICY: If you are absent and I excuse the absence, I will still accept the discussion questions by an extended due date set by me but you will not receive credit for the results.** In addition, if this experiment is turned in late, you will be penalized 11% of the score. **Also, keep in mind absences (excused or not) in the lab do count against the Science Lab Policy and may result in a failing grade.**

If you or any class member does not follow proper laboratory safety protocol during the completion of an experiment, and it is observed by me then everyone will be penalized 1 point on the laboratory assignment.

In addition, Exercise 6 must be completed in order to participate in any other laboratory exercise that follows.

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 = 4 points

Determination by Gram-Stain = 10 points

Carrying out selective media testing and analysis = 8 points

Correct Identification of Bacterial Strains in Mixture = 8 points (4 points for each bacteria)

If a student misses the classes associated with this project, they may not be able to complete this project. In addition, students will only be allowed to use limited resources when conducting the unknown project. Details about this project are outlined in the lab manual.

Lab Practicals

There will be two practicals in this course. Both these exams will be in-class. The exams will be timed and will consist of the following format. You will have some identification and most of the questions will be short-answer. Please make sure you are aware of the dates these tests must be completed in the Schedule below. **NO MAKE-UP POLICY for missed exams unless there is documented extenuating circumstances such as illness or death in family.**

(Grade Feedback)

All Assignments/Quizzes and Exams will be graded with grades posted in Brightspace within one week of the due date. If you question a grade, this must be discussed within one week of the posting of the grade. **Grades cannot be disputed on individual course requirements after this one-week deadline.**

Determination of Course Grade/Detailed Grading Formula:

Course Assessment	Total Points	Percentage of Course
LECTURE PORTION	650	65.0%
Study Guide Quizzes (10)	100	10.0%
Discussion Forums (3)	30	3.0%
On-line Assignments (8)	80	8.0%
Course Project	120	12.0%
Mid-term Exam	160	16.0%
Final Exam	160	16.0%
LABORATORY PORTION	350	35.0%
PLQ-Pre-Lab Quizzes (11)	55	5.5%
Lab Assignments (10)	100	10.0%
Unknown Assignment	40	2.0%
Lab Practical # 1	80	8.0%
Lab Practical # 2	75	7.5%
TOTAL POINTS	1000	100%

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.

Make-Up Policy and Extra-Credit:

Mid-term and Final Exam: With a documented excuse approved by me, these exams will be taken in the testing-center according to a schedule that is determined by the instructor.

Study Guide Quizzes: With a documented excuse approved by me, the score of either the upcoming mid-term or final exam can be used to calculate the corresponding score for these quizzes using the percentage earned on the exam.

Mastering Assignments, Discussion posts and Course Project Assignments: With a documented excuse approved by me, time may be extended on the deadlines for these assignments. (Since these have generous deadlines- it is very rare for me to grant extensions!)

Course Project quiz: This grade is based on a group effort. If one person is missing- the score for the missing student will result in a zero unless there is a documented excuse. The absent student will then receive some points based on the work that contributed to answers on the test.

For *Laboratory assignments, project and exam*, please refer to the course requirements above.

Attendance Policy:

Your attendance is critical to the success you will have in this course. Attendance will be taken every class meeting and verified at the end of class. Do not leave class early!

Attendance and participation in the laboratory portion of this class is mandatory and critical to the understanding of the course material. All students must attend 13 out of the 17 laboratory meetings. Failure to attend 80% of the face-to-face lab meetings (4 days) will result in a failing laboratory grade and an "F" grade for the course. Documented excused absences (i.e. death in the family or a documented illness) will be handled on a case by case bases and at the discretion of the instructor.

TARDY POLICY: Tardiness may result in an absence if not present when attendance is taken and may prevent you from participation in lab experiments or examinations.

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. (Faculty may add additional statement requiring monitoring and communication expectations via Brightspace or other LMS)

(Additional Policy regarding Course Communication) If you need to contact me, please use my email for reasons of tardiness as well as questions and concerns. Also, please sign the email with your name and identify your course number and section when contacting me. If you are having difficulty with the course material, come to office hours or please contact me via phone or email to make an appointment.

Student Learner Outcome	Assessed via this Assignment
1. Describe distinctive characteristics and diverse growth requirements of prokaryotic organisms compared to eukaryotic organisms.	Mastering Assignment 1

2. Provide examples of the impact of microorganisms on agriculture, environment, ecosystem, energy, and human health, including biofilms.	Mastering Assignment 2
3. Distinguish between mechanisms of physical and chemical agents to control microbial populations.	Lab Assignment 5
4. Explain the unique characteristics of bacterial metabolism and bacterial genetics.	Mastering Assignment 4
5. Describe evidence for the evolution of cells, organelles, and major metabolic pathways from early prokaryotes and how phylogenetic trees reflect evolutionary relationships.	Mastering Assignment 5
6. Compare characteristics and replication of acellular infectious agents (viruses and prions) with characteristics and reproduction of cellular infectious agents (prokaryotes and eukaryotes).	Mastering Assignment 6
7. Describe functions of host defenses and the immune system in combating infectious diseases and explain how immunizations protect against specific diseases.	Group Project
8. Explain transmission and virulence mechanisms of cellular and acellular infectious agents.	Lecture Quiz 3
9. Use and comply with laboratory safety rules, procedures, and universal precautions.	Laboratory Safety Quiz
10. Demonstrate proficient use of a compound light microscope.	lab assignment 1- Exercise 3
11. Describe and prepare widely used stains and wet mounts, and discuss their significance in identification of microorganisms.	Lab assignment 1- Exercise 5
12. Perform basic microbiology procedures using aseptic techniques for transfer, isolation and observation of commonly encountered, clinically significant bacteria.	Lab assignment 2
13. Use different types of bacterial culture media to grow, isolate, and identify microorganisms.	Unknown Project
14. Perform basic bacterial identification procedures using biochemical tests.	Lab assignment 9
15. Estimate the number of microorganisms in a sample using methods such as direct counts, viable plate counts, or spectrophotometric measurements.	Lab assignment 3
16. Demonstrate basic identification protocols based on microscopic morphology of some common fungi and parasites.	Lab assignment 8

Academic Dishonesty:

Disciplinary actions will be taken for students who exhibit disorderly conduct, cheat on exams, submit plagiarized work (see below), or are involved in collusion (helping others cheat or plagiarize) as defined in the Student Handbook under the heading, "Discipline and Penalties." The maximum penalty imposed for violations will be an F in the course. The student will also be referred to the Associate Vice President of Student Success and Conduct for further disciplinary action. Please read through the "Standards of Student Conduct" in the Student Handbook for a more complete discussion of these issues and your rights and responsibilities.

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 Sheena Abernathy, Chair of the Science Department, at 409-933-8330 or by email: sabernathy@com.edu.

Course outline (Tentative Schedule)

Refer to Weekly Announcements in Brightspace for updated information!

<u>Week(s)</u>	<u>Lecture Material</u>	<u>LABS</u>
<u>Week 1</u> 1/17 -1/21	MARTIN LUTHER KING JR DAY- NO CLASS 1/16 CH 1 The Microbial World and You CH 3 Observing Microorganisms under the Microscope Intro Discussion should be completed by 1/21/23 DISCUSSION BOARD FORUM 1 -1st Post DUE 1/19/23 DISCUSSION BOARD FORUM 1-2nd Post DUE 1/21/23	Lab Safety Quiz (PLQ 1) DUE 1/19/23 Exercises 3 (Intro to Microscope) Exercise 5 (Advanced Microscopy) Lab Assignment 1 DUE 1/18/23
<u>Week 2</u> 1/22 - 1/28	CH 4 Functional Anatomy STUDY GUIDE QUIZ 1 in BRIGHTSPACE DUE 1/28/23 ASSIGNMENT 1 in MASTERING DUE 1/28/23	PLQ2 DUE 1/24/23 Exercise 1 Contamination Lab Technique Exercise 6 (Transfer Technique) Exercise 18 (Medical Asepsis)
<u>Week 3</u> 1/29 -2/04	CH 5 Microbial Metabolism CH 27 Environmental Microbiology STUDY GUIDE QUIZ 2 in BRIGHTSPACE DUE 2/04/23 ASSIGNMENT 2 in MASTERING DUE 2/04/23	PLQ3 DUE 1/31/23 Exercise 7 (Streak Plate Lab)-SLO 12 Exercise 8 (Counting Microbial Populations) <u>Review plates from Week 2</u> Lab Assignment 2 DUE 2/01/23
<u>Week 4</u> 2/05 -2/11	CH6 Microbial Growth CH28 Applied & Industrial Microbiology STUDY GUIDE QUIZ 3 in BRIGHTSPACE DUE 2/11/23 DISCUSSION BOARD FORUM 2 -1st Post DUE 2/09/23 DISCUSSION BOARD FORUM 2- 2nd Post DUE 2/11/23	PLQ4 DUE 2/07/23 <u>Review Plates from Exercise 7 & 8</u> Exercise 9 (Simple Stain & Morphology) Lab Assignment 3 DUE 2/08/23
<u>Week 5</u> 2/12-2/18	CH8 Microbial Genetics STUDY GUIDE QUIZ 4 in BRIGHTSPACE DUE 2/18/23 ASSIGNMENT 3 in MASTERING DUE 2/18/23	PLQ5 DUE 2/14/23 Exercise 10 Gram Stain Exercise 11 Capsule Stain Lab Assignment 4 DUE 2/15/23
<u>Week 6</u> 2/19-2/25	CH 10 Classifying Microorganism CH 12 The Eukaryotes STUDY GUIDE QUIZ 5 in BRIGHTSPACE DUE 2/25/23 ASSIGNMENT 4 in MASTERING DUE 2/25/23	PLQ6 DUE 2/21/23 Exercise 19 Moist and Dry Control Exercise 20 Ultraviolet Light Control Exercise 21 Disinfectants Control Exercise 22 Antibiotics
<u>Week 7</u> 2/26 -3/04	MIDTERM EXAM DUE 2/27/23	PLQ7 DUE 2/28/23 Exercise 12 Spore Stain Exercise 13 Acid Fast Stain Lab Assignment 6 DUE 3/01/23 <u>Review plates from Week 6</u> Lab Assignment 5 DUE 3/01/23
<u>Week 8</u> 3/05 -3/11	CH 13 Viruses, Viroids, & Prions STUDY GUIDE QUIZ 6 in BRIGHTSPACE DUE 3/11/23 DISCUSSION BOARD FORUM 3 -1st Post DUE 3/09/23 DISCUSSION BOARD FORUM 3- 2nd Post DUE 3/11/23	Lab Practical 1 DUE 3/08/23

SPRING BREAK 3/12-3/18		
<u>Week 9</u> 3/19 - 3/25	CH 14 Epidemiology CH 15 Microbial Pathogenicity STUDY GUIDE QUIZ 7 in BRIGHTSPACE DUE 3/25/23 ASSIGNMENT 5 in MASTERING DUE 3/25/23	PLA8 DUE 3/22/23 Exercise 31 – Parasitology Lab Assignment 7 DUE 3/23/23
<u>Week 10</u> 3/26 -4/01	CH 16 Innate Immunity STUDY GUIDE QUIZ 8 in BRIGHTSPACE DUE 4/01/23 ASSIGNMENT 6 in MASTERING DUE 4/01/23	PLQ9 DUE 3/28/23 Exercise 14 Bacterial Conjugation Exercise 33 Epidemiology
<u>Week 11</u> 4/02 - 4/08	CH 17 Adaptive Immunity STUDY GUIDE QUIZ 9 in BRIGHTSPACE DUE 4/08/23 ASSIGNMENT 7 in MASTERING DUE 4/08/23	PLQ10 DUE 4/04/23 Exercise 27 – Pathogenic Cocci Exercise 29 Cultures of Anaerobic Bacteria <u>Review plates from Week 10</u> Lab Assignment 8 DUE 4/05/23
<u>Week 12</u> 4/09 - 4/15	CH 18 Practical Application of Immunology CH 19 Disorders of Immune System COURSE PROJECT OVERVIEW (CHAPTERS 21-26) (Assignment of Groups 4/10/23) STUDY GUIDE QUIZ 10 in BRIGHTSPACE DUE 4/15/23 ASSIGNMENT 8 in MASTERING DUE 4/15/23	PLQ11 DUE 4/11/23 Exercise 30 – Enteric Bacteria <u>Review Plate Cultures from last week</u> Lab Assignment 9 DUE 4/12/22
<u>Week 13</u> 4/16 -4/22	WORK ON COURSE PROJECT THIS WEEK OUTSIDE CLASS Lab work will take place both days – report to lab. Attendance required! Course Project Assignments 1-4 DUE 4/22/23	1 st Day –Review Plate Cultures from last week Lab Assignment 10 DUE 4/17/23
		2 nd Day – Turn in Exercise 35 (Dichotomous Key and Table) Due 4/19/23 UNKNOWN PROJECT- Gram-staining begins
<u>Week 14</u> 4/23 - 4/29	WORK ON COURSE PROJECT THIS WEEK OUTSIDE CLASS Lab work will take place both days – report to lab. Attendance required! Course Project Assignments 5-8 DUE 4/29/23	1 st Day – Gram-staining and START BIOCHEMICAL TESTS
		2 nd Day – Evaluate Biochemical Tests
<u>Week 15</u> 4/30 - 5/06	COURSE PROJECT GROUP QUIZ 5/01/23 And REVIEW for UPCOMING EXAMS	Lab Practical 2 DUE 5/03/23
<u>Week 16</u> 5/07 - 5/12	FINAL EXAM DUE 5/08/23	

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 [Student Handbook 2022-2023 v4.pdf \(com.edu\)](#). *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.*

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 Kimberly Lachney at 409-933-8919 or klachney@com.edu. The Office of Services for Students with Disabilities is located in the Student Success Center.

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. The last date to withdraw from the 1st 8-week session is March 1. The last date to withdraw from the 16-week session is April 24. The last date to withdraw for the 2nd 8-week session is May 3.

FN Grading: The FN grade is issued in cases of *failure due to a lack of attendance*, as determined by the instructor. The FN 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 FN grade is at the discretion of the instructor. The last date of attendance should be documented for submission of an FN 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.

Resources to Help with Stress:

If you are experiencing stress or anxiety about your daily living needs including food, housing or just feel you could benefit from free resources to help you through a difficult time, please click here <https://www.com.edu/community-resource-center/>. College of the Mainland has partnered with free community resources to help you stay on track with your schoolwork, by addressing life issues that get in the way of doing your best in school. All services are private and confidential. You may also contact the Dean of Students office at deanofstudents@com.edu or communityresources@com.edu.