

# BIOL 2305: Microbiology for Health Sciences

Spring 2022 • CRN # 50384 • Lecture & Lab



## Face to Face

Lecture: Mon. & Wed.

9:00am-10:15am

VAHS Rm. 101

Lab: Wed.

10:30am-1:15pm

VAHS Rm. 110

## Syllabus

### COURSE INFORMATION

This course introduces the basic principles of microbial structure, genetics and physiology, virology, parasitology, disease, pathogenicity, epidemiology, and immunology. Only some emphasis is given to basic biological principles. The course is designed for those obtaining a career in the health sciences.

### Dr. T'S COURSE DESCRIPTION

I love teaching Microbiology—the study of microorganisms. We will start by learning about the different types of microorganisms, bacteria, fungi, and viruses. We will focus most of the semester on bacteria—such interesting little organisms that have more helpful roles to humans than harmful. Can you imagine, we are each a planet to the bacteria on our bodies? First, we will learn about the bacterial cell components and how they grow- environmental requirements, nutrients, and metabolism. Next, we will discuss bacterial DNA- Yes, most microorganisms have it. We will observe that the process of DNA replication is universal, bacteria do have the same DNA components and proteins needed for replication. Have you ever thought about how bacterial cells dividing contribute to microbial pathogenicity? How does pathogenicity contribute to cause disease? These questions will be answered during our discussion of understanding the principles of pathogenicity, disease, and epidemiology. We will also discuss how our immune cells build and maintains a defense against microbial infections in our discussion of Innate and Adaptive Immunity. The last part of the semester we briefly study viruses, an acellular microorganism. Now, you know why I love teaching Microbiology— we learn about microorganisms that are too small to be seen with a naked eye, but can have huge impacts, more helpful than harmful, to humans and ecosystems everywhere on Earth.

Bring the knowledge that you have and take the journey with me as you continue reaching toward your educational goals.



Hand print on a large TSA plate from my 8 1/2 year old son after playing outside.

“I hope to continue to inspire our nation’s youth to pursue careers in science, technology, engineering, and math so they, too, may reach for the stars.”

--ELLEN OCHOA The First Hispanic Woman to Go to Space.



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## COURSE LEARNING OUTCOMES (CLO)

At the completion of this course, students will be able to:

<b>Health-related Critical Thinking</b> CLO 1: Apply critical thinking and the information learned to problems encounter in Health-related professions
<b>Prokaryotic Cell Structure</b> CLO 2: Have a basic understanding of cell structure for different types of bacteria.
<b>Microbial Metabolism</b> CLO 3: Understand the metabolic mechanisms of prokaryotes and the use of these in classification systems
<b>Microbial Genetics and Mutations</b> CLO 4: Understand the genetic mechanisms of prokaryotes and the nature of mutations
<b>Acellular Pathogen</b> CLO 5: Have basic understanding of virus structure and function
<b>Immune system</b> CLO 6: Be able to describe the basic functions of the immune system with respect to infectious disease processes
<b>Microbial Pathogenicity and Epidemiology</b> CLO 7: Understand the principles of pathogenicity, disease, and epidemiology
<b>Antimicrobial Drugs</b> CLO 8: Be able to explain the basics of antimicrobial and antiviral chemotherapy.
<b>Lab skills</b> CLO 9: Be able to apply microbiological lab skills and evaluate results to discover an unknown microbe.

The overall goal of the course is to help you become literate in these scientific concepts and be able to apply them in your life as you move forward in reaching your educational goal.

## Instructor Information

**Tammi R. Duncan, Ph.D.**

Office: Rm 132, Arts & Sciences Building

Phone: 505-925-8726

Email: [tammid31@unm.edu](mailto:tammid31@unm.edu)

Drop-in Hours (Office hours):

- **Face2Face:** Mon. 10:30am-12pm, Tues. 9:30am-10:30am, Wed. 2-3:30pm, Thurs. 9:30am-10:30am & 12:30pm-1:30pm.
- **Zoom:** Fri. Available by appt.  
<https://unm.zoom.us/j/5736149969>
- Password: **biology**

I grew up riding horses on the Navajo Reservation. I found my passion studying bacteria at Diné College in Shiprock, NM in my first microbiology course.



## REQUIRED LEARNING RESOURCES



1. **Electronic Textbook: *Microbiology*** by N. Parker, M. Schneegurt, A. Tu, B. Forster, and P. Lister, 2018, OpenStax Rice University. **REQUIRED.** Free download [https://assets.openstax.org/oscms-prodcms/media/documents/Microbiology-OP\\_C34GvqP.pdf](https://assets.openstax.org/oscms-prodcms/media/documents/Microbiology-OP_C34GvqP.pdf)



2. **UNM Learn:** <https://learn.unm.edu/>. The webpage contains resources you need to succeed in the course. Login using your UNM username and password. ***You are responsible for all announcements, assignments, quizzes, tests and/or any changes to the syllabus will be posted on the webpage. Please check regularly.***



3. **Respondus LockDown Browser:** <https://download.respondus.com/lockdown/download.php?id=35671441>. ***Using this browser, are responsible for taking required exams by the deadline.***

4. **Technology and computer:** In this course, you will need a dependable computer, reliable internet connection, computer speakers and **webcam**, Microsoft PowerPoint and Word, and Adobe Flash Player.

*"You don't understand anything until you learn it more than one way." -Marvin Minsky*

## TIPS FOR SUCCESS

**PowerPoint Slides.** Use the PowerPoint slides for each chapter to guide your reading and to identify the learning objectives. The Learning objectives should be used to test your knowledge of the material for each chapter.

**Study habits.** Your study habits that might have worked for you in high school, might have to be adjusted for college. Use metacognition, awareness and understanding of one's own thought process, to help you make adjustments in time and methods of your study habits. It's an ongoing process throughout your educational career. Plan time to review your Microbiology concepts everyday. I was encouraged as an undergraduate to think of attending college as an 8am-5pm job. The more you practice reanswering your concepts and learning objectives, the more you can remember it and apply it. Look at figures and read the chapter sections only listed in the beginning of the PowerPoints. It may take more than one reading to understand the material presented. Learn the vocabulary.



**Drop-in hours.** I am available to help you succeed in the class; stop by my office for face-to-face Drop-in hours or pre-scheduled online via Zoom Drop-in (Zoom- Meeting ID: 573 614 9969 PW:5h8C25) and I can clarify information, coach you with homework, bring up other methods besides flashcards to help you remember the material or talk you through a solution to a problem.

**Learning Center.** The learning center has tutors ready to help BIOL 2305 students. To register and set up an appointment, go to the following link: <https://valencia.unm.edu/campus-resources/the-learning-center/learning-center.html>

**Study groups.** Form online study groups or use the 6 ft guidelines at the UNM Valencia library. I always found that by hearing my explanation of the concept in my own words to my classmate helps me remember the information.

## TIPS FOR SUCCESS continue...

### Student Suggestions for studying

1. Record yourself reading the textbook and actively (meaning you are picturing what the words are describing) listen to it later.
2. You can also audio record the information on your flashcards to help you remember.
3. You can write a story in your own words about a mechanism to help you remember.
4. You can imagine you are tiny and picture yourself in one cell. Imagine you are on a trip through the cytoplasm, visualizing the mitochondria producing ATP or energy, and see how the DNA is being made.
5. You can use your body to picture things. For example, to picture the H<sub>2</sub>O water molecule, your hands can be the Hydrogens and your head can be the Oxygen. Your head is bigger than your hands, so it would have more electrons “hanging out” near it, therefore it is more electronegative.
6. You can also imagine your dog as a bacteria and his/her tail as a flagellum. Then you can take sticky notes and start labeling him/her. Or you can draw a big cell on a large piece of paper (or tape six notebook pieces of paper together) and use sticky notes to label the parts. In this practice- you can color code the parts that are in plants with green, the parts for animal cells in pink, and the parts for bacterial cells in black.
7. You can draw logos to describe a mechanism.
8. You can rewrite your notes or draw your notes out.
9. You can draw a [Concept Mapping: Chapter map](#) of what you are going to learn for the Chapter to help you see the big picture and orient you while you read the material.
10. You can use the Learning objectives at the end of the powerpoints as your chapter outline and while you read you can answer the questions as you go.
11. You can create analogies to help you remember the concept.
12. You can pronounce terms with a specific kind of pronunciation that will help you remember. For example, microtubules are small, hollow cylinders about 25um in diameter and 0.2-25um in length. I think of hollow as something that echos... so I would pronounce microtubules as an echo.... (sounds gets fainter and fainter). MICROTUBULES-MICROtubules-microtubules... written as a way that would get fainter and fainter.
13. Draw pictures in the word. For example, a nonstop mutation is mutation that changes an amino acid to a STOP codon. You can draw one of the o's as a  in the word, “nnstop”.
14. You can re-print your homework and pretend it is a test and take without your notes.



*What's nice about making your own study tools is that you can save it and re-use it to study for your final and it could be one way to have fun. Use colors, color pencils, sticky notes, music, smells, sounds and seek ideas from your peers –Dr. T*

## COURSE POLICIES

**This is a four credit-hour face to face course.** Class meets face to face for one 75-minute session of direct instruction and 2h 45 min for lab for sixteen weeks during the Spring 2022 semester. Students are expected to complete a *minimum* of six hours of out-of-class work (readings, homework, study, assignment completion, and class preparation) each week.

**Attendance.** You are responsible for "signing-in" to document your attendance. The student will be held responsible for all material and information regardless of whether the student was in class. Please contact me for notes or a peer for notes. Exceptions will be made per student basis dependent on emergency. Due to the practical and hands-on activities for Microbiology lab, students will be dropped from the class after 3 absences. Attendance will be taken via a daily sign-in sheet. Excessive tardiness (greater than 10 minutes) will be counted as an absence. You are not exempt from assignments or exams if you are in isolation due to Covid positive results. (See Covid pg. 7).

**Make-up Exams.** Make-up exams will be given to students with a documented emergency. You must notify the instructor prior to the day of the missed exam. You are not exempt from assignments or exams if you are in isolation due to Covid positive results.

**Homework.** These will be assigned weekly to help you master the concepts presented.

**Review.** There will be four Reviews. These will help you apply the knowledge that you have gained. One will be due before each regular exam.

**Case studies.** There will be three Case studies. These will help you build your critical thinking skills.

**Late assignment/homework.** Late assignments/homework will only be accepted within the first week following the due date. There will be a 50% reduction in grade. I will not accept assignments after the first week.

**Withdrawal.** If a student drops the course after the drop deadline, a "W" will be issued. I will not automatically withdraw a student if there are consecutive absences.

**Cell phones.** As a courtesy to the class, please turn off the sound on your cell phones. Please do not text message during class. Any sight of a cell phone during exams will result in an automatic fail for that assignment. If you leave for a break during an exam, leave your cell phone at your table.

**Disruptive behavior.** Please avoid any disruptive behaviors in the classroom and online communications. For online communication and interactions follow netiquette and dress for the meeting like you are attending class.

**Plagiarism.** Only submit work that is yours. Always cite any work used using APA format. <https://libguides.unm.edu/c.php?g=326014&p=2187071> Be sure to write answers in your own words.

**Netiquette.** The rationale of providing **Rules of Netiquette** for students is to provide guidelines for online behavior and communication between you and your classmates. We (myself included) are all held to the following guidelines that will provide a safe and respectful online classroom space for constructive critiques, discussion, and scholarly reports between you and your classmates. These guidelines are expected to be upheld in any online communications (Email, Discussion Board Forums, Messaging, and Blogs) between all of us.

## **Rules of Netiquette continue.**

1. Your online behavior and communication should be like how you would treat and speak to a person in standing in front of you.
2. Be mindful of different backgrounds, which include cultural, linguistic, political, and religious differences.
3. Be respectful of other's views and opinions and try to remain open minded. You can have respectful disagreements. Avoid flaming, which is publicly attacking or insulting another person's view.
4. Provide constructive and concise responses to the subject of the posts in Discussion Forums and Blogs. Stay on topic, read all comments/viewpoints in discussion before contributing to discussion, avoid slang and profanity, be prepared to correct information if your comment is misunderstood or misinterpreted, and avoid using personal identifying information.
5. Practice good grammar and spelling skills. Use 12 pt. font Times New Roman or Calibri, avoid text shortcuts, define acronyms, use correct spelling, limit use of emoticons, and use clear and concise language.
6. Avoid the use of all CAPITAL LETTERS. It suggests shouting, impoliteness, or can be aggressive. Reread you post, checking for sarcasm, slang or anger, before submitting it. Avoid sending a message out of anger or written if you are angry.
7. Call your instructor if you conflict with them or another student.
8. In relation to security, protect your passwords and don't send confidential information through email. If you suspect your password has been used, change your password.
9. There are specific listings of practices for email netiquette and message board netiquette below.

### **Discussion Forum and Journal Netiquette**

Include "topic-your name" in subject line. Write concise paragraph on the topic. Paraphrase and cite your references with APA and credit classmates work if appropriate. Read all messages in thread before replying. Don't repeat another person's post.

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## **THINGS TO KEEP IN MIND**

### **Accommodations:**

If you have a documented disability and you need a reasonable accommodation made for you in this course, please consult with me immediately or the campus tutoring center as soon as possible so we can meet your needs suitably and quickly.

**Academic Dishonesty:** Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course. Academic dishonesty includes, but not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others, hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

**Equal Opportunity and Non-discrimination** In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered "responsible employees" by the Department of Education (see page 15--[offices/list/ocr/docs/qa-201404-title-ix.pdf](https://oeo.unm.edu/title-ix/docs/qa-201404-title-ix.pdf)). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct, and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity ([oeo.unm.edu](http://oeo.unm.edu)). For more information on the campus policy regarding sexual misconduct, see: <https://oeo.unm.edu/title-ix/index.html>



**COVID-19. You can prevent the spread of the Coronavirus to your family, fellow students, and your community.**

**Protocol as of 1/17/2022** for vaccinated individuals testing positive (No quarantine for exposure).

1. Upload your information to the Self-Reporting of Positive Covid-19 Diagnosis ([https://lobowebapp.unm.edu/apex\\_ods/f?p=135:LOGIN\\_DESKTOP:16863389260097:::](https://lobowebapp.unm.edu/apex_ods/f?p=135:LOGIN_DESKTOP:16863389260097:::)).
2. Provide documentation (The Covid PCR Test) to me via email (you are not exempt from assignments or exams).
3. Isolate for 5 days- Day 0 is the onset of symptoms or positive viral test (The Covid PCR Test).

COVID-19 Symptoms and Positive Test Results:

Please do not come to a UNM campus if you are experiencing symptoms of illness or have received a positive COVID-19 test (even if you have no symptoms). Contact me and let me know that you should not come to class due to symptoms or diagnosis. Students who need support addressing a health or personal event or crisis can schedule an appointment with a counselor at UNM Valencia through the PASOS Resource Hub. To schedule an appointment call (505) 925-8591.

UNM Requirement on Masking in Indoor Spaces

All students, staff, and instructors are required to wear face masks in indoor classes, labs, studios and meetings on UNM campuses, see the **masking requirement**. Students who do not wear a mask indoors on UNM campuses can expect to be asked to leave the classroom and to be dropped from a class if failure to wear a mask occurs more than once in that class. Students and employees who do not wear a mask in classrooms and other indoor public spaces on UNM campuses are subject to disciplinary actions. Medical/health grade masks are the best protection against the omicron variant and these masks should be used, rather than cloth. **\*I strongly recommend that you keep your masks on at all times.**

UNM Administrative Mandate on Required Vaccinations

UNM requires COVID-19 vaccination and a booster for all students, faculty, and staff, or an approved exemption (see: **UNM Administrative Mandate on Required Vaccinations**). Proof of vaccination and booster, or a **medical, religious, or online remote exemption**, must be uploaded to the **UNM vaccination verification site**. Failure to provide this proof may result in a registration hold and/or disenrollment for students and disciplinary action for UNM employees.

**Booster Requirement:** Individuals who received their second dose of a Pfizer or Moderna vaccine on or before June 15, 2021, or their single dose of a Johnson & Johnson vaccine on or before October 15, 2021, must provide documentation of receipt of a booster dose no later than January 17, 2022. Individuals who received their second dose of a Pfizer or Moderna vaccine after June 15, 2021 or who received their single dose of Johnson & Johnson after November 15, 2021 must provide documentation of receipt of a booster within four weeks of eligibility, according to the criteria provided by the FDA (6 months after completing an initial two-dose Moderna vaccine, 5 months after completing the Pfizer sequence, and 2 months after receiving a one-dose Johnson and Johnson vaccine).

**Exemptions:** Individuals who cannot yet obtain a booster due to illness should request a **medical, religious, or online remote exemption** (which may have an end date) and upload this to the **vaccination verification site**.

Medical and religious exemptions validated in Fall 2021 (see your email confirmation) are also valid for Spring 2022 unless an end date was specified in the granting of a limited medical exemption. Students must apply for a remote online exemption every semester.

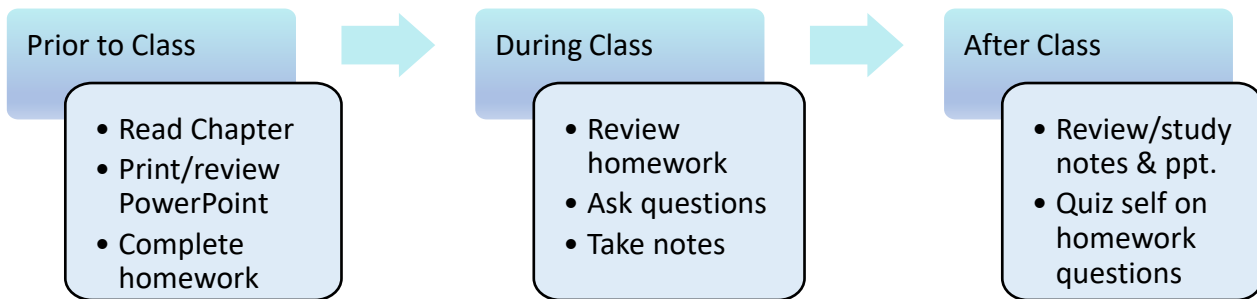
Citizenship and/or Immigration Status: All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: <http://undocumented.unm.edu/>.

Support in Receiving Help and in Doing What is Right: I encourage students to be familiar with services and policies that can help them navigate UNM successfully. Many services exist to help you succeed academically and to find your place at UNM, see [students.unm.edu](http://students.unm.edu) or ask me for information about the right resource center or person to contact. UNM has important policies to preserve and protect the academic community, especially policies on student grievances (Faculty Handbook D175 and D176), academic dishonesty (FH D100), and respectful campus (FH CO9). These are in the *Student Pathfinder* (<https://pathfinder.unm.edu>) and the *Faculty Handbook* (<https://handbook.unm.edu>) Please ask for help in understanding and avoiding plagiarism or academic dishonesty, which can both have very serious disciplinary consequences.

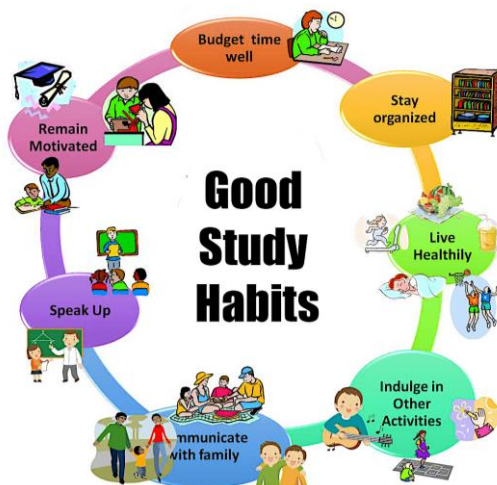
Land Acknowledgement: (see <https://diverse.unm.edu> on appropriate use) Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The original peoples of New Mexico Pueblo, Navajo, and Apache since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

**DEVELOP GOOD STUDY HABITS. DON'T WAIT UNTIL THE LAST MINUTE.**

For class: Review notes and readings everyday.



In general:





## OVERALL GRADING CRITERIA

**Exams:** There are three exams. Each of these exams is worth 100 pts and their total is 300 pts. You will be given one hour and 15 min to complete this exam. You will not be able to use your notes, textbook, or online resources. Review your homework and Review questions to prepare for your exam.

**Homework (HW):** Homework are question sets that are each worth 8 pts. Homework is due to UNM Learn at 11:59pm on the due date. Bring a printed copy to class. *Failure to submit to UNM Learn by due date will result in an automatic deduction of 4pts. Submitted HW with no name will be deducted 1 pt.*

**Case studies:** Three case studies, each worth 12 pts each, will help you build your critical thinking and self-assessment skills. Due to UNM Learn by due date.

**Reflections:** Three Reflections on what and how you're are learning and your approach/adjustments to learning the material will be issued. This is a practice of metacognition, (the process of "thinking about thinking," or reflecting on personal habits, knowledge, and approaches to learning) in order to help you adjust your learning. These Reflections are due to UNM Learn by due date.


**Reviews:** There are four Reviews. The total is 40 pts. The goal of the review is to be used as one tool to help you prepare for your exams. Be sure to review homework and lectures notes.

**Attendance/Participation:** You must be in the class on time to get the most out of this course and participate. You are responsible for "signing-in" to document your attendance in class. If you are missing more than 15 minutes of class, it will count as an absence. 0.5pt/class or 1pt/week.

**Cumulative Final:** The Final is worth 125pts and given at the end of the semester. You will have 1.5 hours to take this exam online using the Respondus LockDown Browser.

**Lab Activities:** Includes Lab Reports (7) , Pre-Lab Quizzes (9) , Midterm Exam (1), Final Exam (1), Toothbrush Unknown Lab Report (1) and Attendance and Participation (16). See page 12 for details.

*In summary, every point counts. There is no extra credit. The due dates are firm. Communicate. Be on time. Study every day. Ask questions. Try your best. -Dr. T*

	Points per assignment:	Total Points:	Percentage of overall Biol 2305 grade (out of 850pts):
Intro. to Homework	5 pts	5 pts	1%
Intro. to Respondus LockDown Quiz	5 pts	5 pts	1%
Homework (11)	8 pts each	88 pts	10%
Case Studies (3)	12 pts each	36 pts	4%
Reflections (3)	5 pts each	15 pts	2%
Attendance/Participation (16)	1 pt/week	16 pts	2%
Reviews (4)	10 pts each	40 pts	5%
Exams (3)	100 pts each	300 pts	35%
Cumulative Final Exam (1)	125 pts each	125pts	15%
Lecture total		630pts	
Lab Activities	(see page 11 for assignments)	220pts	26%
<b>TOTAL</b>		850 pts	100 %
<b>A+ 100% or higher</b> <b>A 91-99%</b> <b>A- 90%</b>	<b>B+ 88-89%</b> <b>B 81-87%</b> <b>B- 80%</b>	<b>C+ 78-79%</b> <b>C 71-77%</b> <b>C- 70%</b>	<b>D+ 68-69%</b> <b>D 61-67%</b> <b>D- 60%</b> <b>F &lt;60%</b>

## LECTURE COURSE SCHEDULE

Week	Date	Chapter: Topic	Items Due	Due Date @ 11:59pm
1	Mon. 1/17	<b>Martin Luther King Day</b> University Holiday – No class		
	Wed. 1/19	Overview of Microbiology	Intro. Online Homework Intro. Online Quiz	Fri. 1/21 Fri. 1/21
2	Mon. 1/24	1: Invisible World.	Homework 1: Ch 1 & Ch 3	Sun. 1/23
	Wed. 1/26	3: The Cell <b>Case Study 1</b>		
3	Mon. 1/31	4.1: Prokaryotic Diversity & 9: Microbial Growth	Homework 2: Ch 4.1 & 9	Sun. 1/30
	Wed. 2/2	9: Microbial Growth  (Feb. 4 Last day to drop class without "W")	<b>Case Study 1</b>	<b>Fri. 2/4</b>
4	Mon. 2/7	Review 1 (Ch. 1, 3, 4.1, 9)		
	Wed. 2/9	<b>Exam 1 (Ch. 1, 3, 4.1, 9)</b>	Review 1	Wed. 2/9
5	Mon. 2/14	8: Microbial Metabolism	Homework 3: Ch 8	Sun.2/13
	Wed. 2/16	8: Microbial Metabolism	<b>Reflection 1</b>	<b>Fri. 2/18</b>
6	Mon. 2/21	11: Mechanisms of Microbial Genetics Part 1	Homework 4: Ch 11 Part 1	Sun. 2/20
	Wed. 2/23	11: Mechanisms of Microbial Genetics Part 1		
7	Mon. 2/28	11: Mechanisms of Microbial Genetics Part 2 <b>Case Study 2</b>	Homework 5: Ch 11 Part 2	Sun. 2/27
	Wed. 3/2	11: Mechanisms of Microbial Genetics Part 2		
8	Mon. 3/7	Review 2 ( Ch. 8, 11 Part 1 &2)	<b>Case Study 2</b>	<b>Fri. 3/8</b>
	Wed. 3/9	Exam 2 (Ch. 8, 11 Part 1&2)	Review 2	Wed. 3/9
9	<b>Mon. 3/14</b>	<b>Spring Break- No Class</b>		
	<b>Wed. 3/16</b>	<b>Spring Break-No Class</b>		

**\*I reserve the right to make necessary changes.**

## LECTURE COURSE SCHEDULE CONTINUE

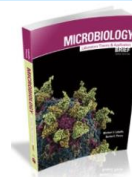
Week	Date	Chapter: Topic	Items Due	Due Date @ 11:59pm
10	Mon. 3/21	13: Control of Microbial Growth	Homework 6: Ch 13 <b>Reflection 2</b>	Sun. 3/20 <b>Fri. 3/25</b>
	Wed. 3/23	13: Control of Microbial Growth		
11	Mon. 3/28	14: Antimicrobial Drugs	Homework 7: Ch 14	Sun. 3/27
	Wed. 3/30	14: Antimicrobial Drugs		
12	Mon. 4/4	15: Microbial Metabolisms of Pathogenicity	Homework 8: Ch 15	Sun. 4/3
	Wed. 4/6	15: Microbial Metabolisms of Pathogenicity		
13	Mon. 4/11	16: Disease and Epidemiology	Homework 9: Ch 16	Sun. 4/10
	Wed. 4/13	Review 3 (Ch. 13, 14, 15&16) <i>(Apr. 15 Last day to drop class without Deans Permission)</i>		
14	Mon. 4/18	<b>Exam 3 (Ch. 14, 15&amp;16)</b>	Review 3	Mon. 4/18
	Wed. 4/20	Host Defenses 17: Innate Nonspecific	Homework 10: Ch 17 &18	Tues. 4/19
15	Mon. 4/25	Host Defenses 18: Adaptive Specific <b>Case Study 3</b>		
	Wed. 4/27	6: Acellular Pathogens  <i>4/29 Course Evaluations open</i>	Homework 11: Ch 6	Tues. 4/26
16	Mon. 5/2	6: Acellular Pathogens	<b>Case Study 3</b> <b>Reflection 3</b>	<b>Fri. 5/6</b> <b>Fri. 5/6</b>
	Wed. 5/4	Semester Final Review (Review 4)  <i>5/6 Course Evaluations close at 5pm</i>	<b>Review 4</b>	Wed. 5/11
<b>Final</b>	<b>Wed. 5/11</b> <b>9:00-11:00am</b>	<b>Cumulative Final Exam Due</b>	<b>Remote Final Exam</b>	<b>Wed. 5/11</b> <b>9:00-11:00am</b>

**\*I reserve the right to make necessary changes.**

# Microbiology for Health Sciences Lab

**Meeting time:** Wed. 10:30am-1:15pm VAHS Rm. 110

**Lab Manual:** Microbiology: Laboratory Theory and Application, Brief, Third Edition, Michael J. Leboffe & B.E. Pierce, 2016. Morton Publishing. SBN-10: 1-61731-477-3 or ISBN-13: 978-1-61731-477-3 **Required**



**Lab coat or lab apron is required.**

## LAB POLICIES



**1.) Attendance is Required. These are practical, hands-on activities and cannot be made up.** Students may be dropped from the class after 3 absences. Attendance will be taken via a daily sign-in sheet. Excessive tardiness (greater than 10 minutes) will be counted as an absence.

**2.)** No food, drink or chewing gum is allowed in the lab.

**3.)** You must wear a **lab coat or apron** during lab.

**4.)** Wash your hands before leaving the lab for the day.

**5.)** You must tie your hair back.

**6.)** Treat all lab equipment carefully and with respect.



## LAB GRADE CRITERIA

**Lab Reports:** For each separate lab, a lab report will be assigned. Seven total lab reports will be assigned, with each report worth 12 points.

**Pre-Lab Quizzes:** Nine quizzes will be given over the semester. These will be given at the beginning of class and will cover the lab activity that day. Each quiz will be worth 3pts.

**Exams:** Two exams will be given in lab. A midterm exam and the final cumulative exam. Each exam will be worth 34pts and will contain a combination of hands-on practical questions and lab manual questions.

**Toothbrush Unknown Lab Report:** One Toothbrush Unknown Lab Report will be completed. It is worth 25pts.

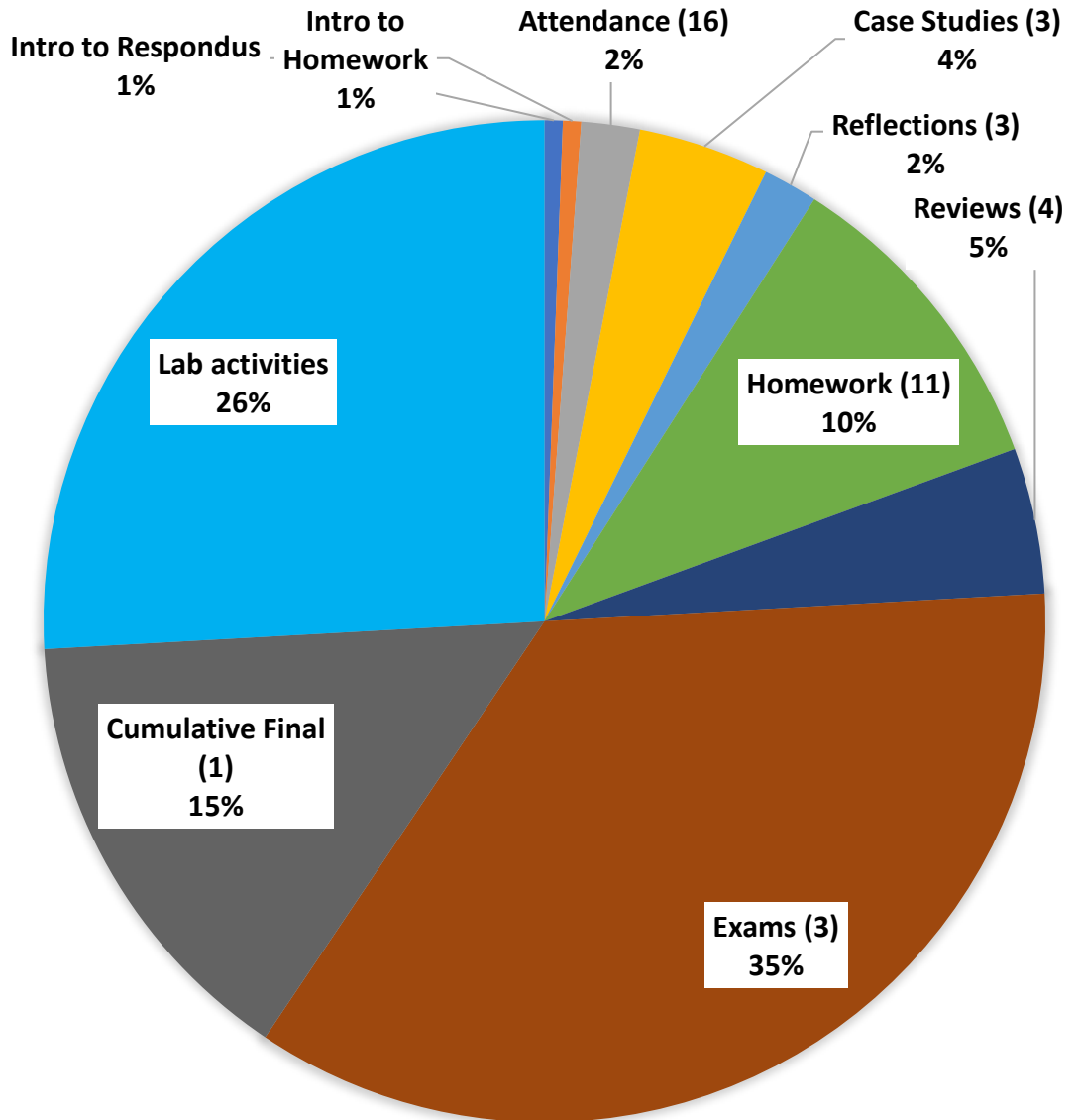
Lab Activities	Points per assignment:	Total Points:	Percentage of overall Biol 2305 grade (out of 850pts):
Lab Reports (7)	12 pts each	84pts	~10%
Pre-Lab Quizzes (9)	3 pts each	27pts	~3%
Midterm Exam (1)	34 pts	34 pts	4%
Final Exam (1)	34 pts	34 pts	4%
Unknown Lab Report (1)	25pts	25 pts	3%
Attendance and Participation (16)	1pt/week	16pts	2%
<b>TOTAL</b>		220 pts	26%

## LAB COURSE SCHEDULE

Week	Wed. 10:30am- 1:15pm	Lab Activity	Assignments	Due Dates at 11:59pm or in class
1	Jan. 19	<b>Lab 1: Lab Safety</b> Read pgs. 1-8 and initial pg. 13 <b>Exercise 1-1:</b> Glo Germ Hand Wash, <b>1-2:</b> Hand-Cleansing Agents		
2	Jan. 26	<b>Lab 1: Aseptic Technique &amp; Quadrant Streak</b> <b>Exercises 1-4:</b> Aseptic Transfers and Inoculation Method, <b>1-5:</b> Streak Plate Methods of Isolation	<b>Pre-Lab Quiz 1</b>	Wed. 1/26
3	Feb. 2	<b>Lab 2: Microbial Growth</b> <b>Exercises 2-1:</b> Ubiquity of Microorganisms, <b>2-2:</b> Colony Morphology, <b>2-8:</b> Temperature on Microbial Growth	<b>Pre-Lab Quiz 2</b> Lab Report 1	Wed. 2/2 Fri. 2/4
4	Feb. 9	<b>Lab 3: Microscopy and Simple Staining</b> <b>Exercises 3-4:</b> Simple Stains	<b>Pre-Lab Quiz 3</b> Lab Report 2	Wed. 2/9 Fri. 2/11
5	Feb. 16	<b>Lab 3: Gram Staining</b> <b>Exercises 3-6:</b> Gram Stain	<b>Pre-Lab Quiz 4</b>	Wed. 2/16
6	Feb. 23	<b>Lab 4: Body Surfaces &amp; Acid-fast Stain</b> <b>Review Commercial Slides &amp; Exercise 3-7:</b> Acid-fast Stain	<b>Pre-Lab Quiz 5</b> Lab Report 3	<b>Wed. 2/23</b> Fri. 2/25
7	Mar. 2	Lab Exam Review		
8	Mar. 9	<b>Lab Midterm Practical Exam</b>		
9	Mar. 16	<b>SPRING BREAK No Classes</b>		
10	Mar. 23	<b>Lab 4: Selective Media</b> <b>Exercises 4-2:</b> Blood Agar, <b>4-3:</b> Mannitol Salt Agar, <b>4-4:</b> MacConkey Agar	<b>Pre-Lab Quiz 6</b>	<b>Wed. 3/23</b>
11	Mar. 30	<b>Lab Exercise 5: Differential Tests</b> <b>Exercises 5-4:</b> Catalase Test (Respire), <b>5-10:</b> Starch Hydrolysis (Amylase Test-Hydrolytic Enzyme), <b>5-11:</b> DNA Hydrolysis (DNase Test-Hydrolytic Enzyme), <b>5-16:</b> Bile Esculin Test	<b>Pre-Lab Quiz 7</b> Lab Report 4	<b>Wed. 3/30</b> Fri. 4/1
12	Apr. 6	<b>Lab Exercise 6: Differential Tests</b> <b>Exercises 5-2:</b> Phenol Red Fermentation Broth, <b>5-8:</b> Amino Acid Decarboxylation (Decarboxylase Test), <b>5-9:</b> Phenylalanine Deaminase Test, <b>5-15:</b> Urea Hydrolysis (Urease Test), <b>5-18:</b> SIM Medium (Sulfur Reduction, Indole Production, and Motility)	<b>Pre-Lab Quiz 8</b> Lab Report 5	<b>Wed. 4/6</b> Fri. 4/8
13	Apr. 13	<b>Lab Exercise 7: Quantitative Technique</b> <b>Exercise 6-3:</b> Urine Culture	<b>Pre-Lab Quiz 9</b> Lab Report 6	<b>Wed. 4/15</b> Fri. 4/15
14	Apr. 20	Toothbrush Unknown Lab Report	Lab Report 7	Fri. 4/22
15	Apr. 27	Review for Final		
16	May 4	<b>Lab Cumulative Final Exam</b>	<b>Toothbrush Unknown Lab Report</b>	Fri. 5/6

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## Grade Breakdown Chart



**Figure 1. Grade breakdown of points in percentages.** Notice that many of your points (~74%) will be from the Lecture portion of class. To pass the course you will have to receive a 71% C or better. Try your best and contact me [tammid31@unm.edu](mailto:tammid31@unm.edu) for guidance if you need help.



## Advice from your Biol 2305 Microbiology Peers

- *If you could take Biol 2305 Microbiology again, what would you do differently?*

“I’d probably set up a study schedule and practice it before I started the class so that I could develop those study habits early on.”

“Probably [I would] get a tutor and prioritize better.”

“I could take Microbiology 2305 again I would study and put more time into my assignments. I would also try to remind myself that it's okay to stress but to not overwhelm myself and that it will be okay. I have always tried to thrive for As, this semester taught that I don't need perfect grades as long as I am trying my best.”

““If I took Microbiology 2305 again, I would probably investigate the details of every chapter more. I seem to only grasp on the broad points of a chapter and not really the details. I know that learning the details helped me understand the whole topic more.”

“I would work harder to stay organized and try not to miss any assignments. Other than that, it was a great course and I really enjoyed it.”

“If I could take Microbiology 2305 again, I would take more time to study before an exam or quiz. I feel like I studied but didn’t study enough to where I felt 100% confident before taking the test. I would also try to focus on all material equally instead of on one topic more than the other. I made this mistake a lot in past exams and during the exam I noticed it myself. Therefore, studying everything at a certain pace would really help.”

“I think I would find a study group outside my normal class.”

- *What advice regarding course work, preparation for exams, homework, completing lab material, or preparing for lecture would you like to share with next semester’s students?*

“Make time to go over the material (even if it’s just a little bit) every day so that you really try to understand what you are learning and how it can be applied to your career field.”

“The advice I would give is read and study the material before coming to class. Do not wait until last minute to do homework.”

“I would give other students advice to follow the learning objectives from the PowerPoints and take the time to understand them. The learning objectives are what helped me prepare for the exams. As far as lab goes, read the procedures before going to class.”

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## Advice from your Biol 2305 Microbiology Peers

“Some advice I would share with next semester's students would be to always try your best and to remember that it will be okay as long as you thrive for your goal. As far as homework and exams, I would study as much as you can [and] really put effort into the class. For lab materials it was really fun for me so I feel like if students are engaged in lab it will be easy to complete lab assignments and lab reports.”

“Do not stress too much even if it seems to get hard. Use all the resources such as CAPS or even the instructor's office hours/email for help. Always copy board notes and do your best on the homework. Use past work and notes to help study for tests and exams. The PowerPoints are also good sources to use for studying. What ever happens, do your best and just keep going.”

“If I took Microbiology 2305 again, I would probably investigate the details of every chapter more. I seem to only grasp on the broad points of a chapter and not really the details. I know that learning the details helped me understand the whole topic more.”

“Make sure to read and understand what the question are asking! That is with just about any class. I have missed so many questions because I mis-read them! Take the time to answer questions completely and don't be afraid to write longer explanations on assignments. Take really good lecture notes and study those because most of the test question come from them. Makes sure to use and review corrections for future exams.”

“I would say buy the book. It's not that expensive and makes a huge difference in completing the homework and just learning in general. For some reason, its easier to learn with the physical copy.”

“Pay attention in class and make sure to take good notes. Use those to study [from], they will do you wonders in this class.”

“The advice that I would give future students regarding preparation for exams would be to study the material issued thoroughly and class notes. Another tip regarding completing lab materials would be to make sure to stay on top of it. I say this because if you fall behind it'll be difficult to catch up and you'll end up falling behind in other assignments. Another tip of advice regarding preparing for lecture would be to print the slides from the PowerPoint chapters. It comes in handy when studying and saves time instead of having to go back to UNM learn and look at the slides.”

“Be honest with yourself, if you are not understanding something, ask questions. Take lots of notes. Read, read, read!”



ASM Agar Art Contest <https://asm.org/Events/ASM-Agar-Art-Contest/Home>