

Fall 2012  
3444 Section 006  
General Microbiology Lab Syllabus

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**Lab Manual:** Microbiology Laboratory Theory and Application: Third Edition.  
Morton Publishing Company, Leboffe and Pierce

**Supplements:** UTA Microbiology Lab Notebooks  
Available for purchase on the first day of lab.  
**Price: \$20**

Lab Kits for Microbiology Lab available for purchase the first day of lab.  
**Price: \$10**

Lab #	Dates	Topic/Title	Reading
1.	Sept. 10-14	Safety and Laboratory Guidelines.....	p.1-6
		Orientation & Safety .....	Notebook
		Media Prep.....	Ex. 1-2
		Steam Sterilization.....	Ex. 2-12
		Evaluation of Media.....	Ex. 2-5
		Microscopy .....	Ex. 3-1
		Wet Mount Preparation.....	p. 83
		Microscopic Examination of Pond Water.....	Ex. 3-4
		Ubiquity of Microorganisms.....	Ex. 2-1
		Aseptic Techniques.....	Ex. 1-3
2.	Sept. 17 - 21	<b>Observation of Environmental Isolation Plates</b>	
		Macroscopic Colony Morphology .....	Ex. 2-2
		Observe pictures of bacteria on pages 37-43	
		Growth Patterns on Slants.....	Ex. 2-3
		Growth Patterns in Broth.....	Ex. 2-4
		<b>Staining I</b>	
		Bacterial Structure.....	p. 95 - 99
		Smear Preparation and Simple Staining.....	Ex. 3-5
		Gram Staining.....	Ex. 3-7
		Acid-Fast Staining: Ziehl-Neelsen Method.....	Ex. 3-8
3.	Sept. 24 - 28	<b>Gram Stain and Microscope Practical</b>	
		<b>Staining II &amp; Cultivation</b>	
		Capsule Staining.....	Ex. 3-9
		Endospore Staining: Schaeffer-Fulton Method.....	Ex. 3-10
		<b>Pure Culture Techniques</b>	
		Streak Plate Methods of Isolation.....	Ex. 1-4
		Quadrant Streak Method .....	p. 25-26
		Examples of streaks on page 42 - 43	
		T-Streak.....	Notebook

4.	Oct. 1 - 5	<p><b>Culturing Anaerobes &amp; Biochemical Tests I</b>  Read Aerotolerance section.....p. 48  Fluid Thioglycollate Medium.....Ex. 2-7  Anaerobic Jar.....Ex. 2-8  Read – A Word About Biochemical Tests and Acid-Base Reactions.....p. 150  Read - Introduction to Energy Metabolism Tests .....p. 151</p> <p><b>Biochemical Tests: Differential Tests</b>  Read Fermentation Tests.....p. 158  Glucose - Phenol Red Broth.....Ex. 5-3  Methyl Red and Voges-Proskauer Tests.....Ex. 5-4</p> <p><b>Test Identifying Microbial Ability to Respire.....p. 165</b>  Catalase.....Ex. 5-5  Nitrate Reduction Test.....Ex. 5-7</p> <p><b>Media Reference Guide.....Notebook</b></p>
5.	Oct. 8 - 12	<p><b>Biochemical Tests II</b></p> <p><b>Nutrient Utilization Media.....p. 175</b>  Citrate Test.....Ex. 5-8</p> <p><b>Tests Detecting Hydrolytic Enzymes.....p. 184</b>  Starch Hydrolysis.....Ex. 5-12  Urea Hydrolysis .....Ex. 5-13  Casein Hydrolysis Test .....Ex. 5-14  Gelatin Hydrolysis Test.....Ex. 5-15</p> <p><b>Combination Differential Media.....p. 202</b>  SIM Medium.....Ex. 5-20  Triple Sugar Iron Agar (TSIA).....Ex. 5-21</p>
6.	Oct. 15 - 19	<p><b>Midterm</b>  <b>Streak Plate Practical</b>  <b>Notebooks on unknowns.....Notebook</b>  <b>Receive gram-negative unknown</b>  <b>Hand-in notebooks (1<sup>st</sup> time)</b></p>
7.	Oct. 22 - 26	<p><b>Environmental Factors Affecting Microbial Growth</b>  The Effect of Temperature on Microbial Grow ..... Ex. 2-9  The Effect of pH on Microbial Growth..... Ex. 2-10  The Effect of Osmotic Pressure on Microbial Growth..... Ex. 2-11  The Lethal Effect of Ultraviolet Radiation on Microbial Growth ..... Ex. 2-13</p>
8.	Oct. 29 – Nov. 2	<p><b>Control of Growth/Selective and Differential Media</b></p> <p><b>Medical Microbiology ..... p. 263</b>  <b>Bring antiseptic to lab to test</b>  Evaluation of Alcohol ..... Notebook  Evaluation of Antiseptics..... Notebook</p> <p>Antimicrobial Susceptibility Test: Kirby-Bauer Method..... Ex. 7-3  <b>Demonstration</b>  Pipette Handling---Appendix C..... p. 437-440</p> <p>Slide Coagulase Test ..... Ex. 5-27</p> <p>Selective/Differential Media.....Notebook</p>

Selective Media.....	p. 129
Mannitol Salts Agar.....	Ex. 4-4
MacConkey Agar.....	Ex. 4-5
Eosin Methylene Blue Agar.....	Ex. 4-6
Bile Esculin.....	Ex. 4-3
SFMedium Agar.....	Notebook p.32
Blood Agar.....	Ex. 4-2

9. Nov. 5 -9 **Gram-negative unknown report due**  
**Receive mixed unknowns.....Notebook**

10. No Open lab

11. Nov. 12 – 16 Food Microbiology  
 Making Yogurt ..... Ex. 9-2  
 ..... Notebook p.39  
**Bacteriological Examination of Water: Qualitative Tests**  
**Understand the purpose & nature of the tests.....** Notebook p.40  
 Spread Plate Method..... Ex. 1-5  
 Serial Dilutions..... Notebook p  
 Standard Plate Count: (Viable Count)..... Ex. 6-1  
 Membrane Filter Technique..... Ex. 8-12  
 Closed-System Growth (Read Only)..... Ex. 6-4  
 The Spectrophotometer..... p. 445-447

**Notebook check (2<sup>nd</sup> time)**

12. Nov. 26 -30 **Clean up/Check-out**  
**Mixed unknown reports due**  
**Final Lab Exam**

**You will be responsible for reading the designated exercises before coming to each week’s lab.** What you will actually be doing in the lab that day may vary somewhat from what is written in the lab manual. You will be informed of any changes made to the lab procedure at the beginning of that lab period.

**Academic Integrity:** It is the philosophy of The University of Texas at Arlington that academic dishonesty is a completely unacceptable mode of conduct and **will not be tolerated in any form**. All persons involved in academic dishonesty will be disciplined in accordance with University regulations and procedures. Discipline may include suspension or expulsion from the University. According to the UT System Regents’ Rule 50101, §2.2, "Scholastic dishonesty includes but is not limited to cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student *or the attempt* to commit such acts."

**Electronic Communication Policy:** Check your MavMail and Blackboard accounts **REGULARLY** (i.e. 3-4 times throughout the week).

**No electronic devices** are allowed during any examination (including quizzes and practicals). This will result in an automatic grade of 0 for the assignment and will be promptly reported to the Office of Student Conduct by your TA.

**Laboratory Policies**

Attendance is required; **this will often include checking cultures 24-48 hours or more post-inoculation.** Missed labs can only be "made up" by having permission to attend another lab section the same week since equipment and supplies for each exercise are only available during the week the exercise is scheduled. As lab sections are full, you must obtain permission from both your Graduate TA and the Graduate TA of the alternative lab section you plan to attend prior to your making up the lab. Students with disabilities please contact your Graduate TA to discuss any special needs that you may have within the first 2 weeks of lab. **PLEASE DO NOT PLAN TO ATTEND ANOTHER LAB SECTION WITHOUT PRIOR PERMISSION.**

**Open Lab Hours:** The micro lab is open to all micro students M-F from 8 A.M. to 1 P.M. You **MUST** still wear proper lab attire during open lab hours or you will be asked to leave. You may also check on your cultures after lab is over for the day. **DO NOT INTERRUPT OTHER LAB SECTIONS!**

**Make-up Exam policy:**

Students are required to be present for quizzes and examinations. Whether or not an absence for an exam or quiz will be excused is at the discretion of the instructor. A quiz missed for a reason deemed excusable by the TA must be taken before the time the student attends any lab. An exam missed due to an excused absence must be taken as directed by the GTA (in the presence of the GTA). An unexcused absence for an exam will result in an exam grade of zero.

**Grading**

Weekly quizzes*	20%
Midterm	20%
Final	20%
Unknowns	20%
Practicals	15%
Notebook	5%
<b>TOTAL</b>	<b>100%</b>

\*Weekly quizzes will typically be composed of approximately 60% material from the last week's lab and 40% from reading material assigned for that week's lab. The lowest quiz grade will be dropped before calculating the final lab grade. **The final exam will be comprehensive.**

"**A grade of I (incomplete)** may be assigned for a course if, in the opinion of the instructor, there are extenuating documentable circumstances which prevent the student from completing the required work within the semester of enrollment for the course. The incomplete must be removed by the end of the final examination period of the following semester, excluding the summer session, for the student to receive credit for the course. If the incomplete is not removed during the allotted time period, it will revert automatically to an F."

**Lab Kit**

Individual components are available in the bookstore or you may lease a kit from the Mu Sigma Microbiology Society. These items will be available for purchase of \$10 during the first two weeks of lab.

- Inoculating loop
- Lens Paper (10-15 sheets)
- Bibulous paper (5-6 sheets)
- 10 glass microscope slides
- 1 Clothespin (spring-type, for holding slides)
- Matches

**Aprons and Goggles** must be worn at **all times** while working in the lab – you will be given an apron and a pair of goggles to use during the semester, **but the goggles must be returned at the end of the semester. Please note that if you do not wear your lab apron and goggles along with proper lab attire, YOU WILL BE ASKED TO LEAVE the lab.**

**You will need the following for lab:**

- Sharpie permanent marker
- 3-ring binder (optional) – to keep your notebook, lab manual, graded papers, handouts, etc.
- Lock for drawer (optional) – if you wish to keep lab kit, long pants, close-toed shoes, etc. in the lab

**IMPORTANT NOTE:**

**All microbiology lab students, please note that at the end of the semester, during the lab clean-up, if you do not clear out ALL ITEMS with your name, initials, and or lab section, from the cold room, hot room, incubators, lab drawers, and benches, you will receive 5 points off your overall lab grade.**

## **Mandatory Online Safety Training:**

1. Go to <http://www.uta.edu/training>.
2. Log on using your network log-on ID and password (what you use to access email). If you do not know your NetID or need to reset your password, visit <https://webapps.uta.edu/oit/selfservice/>.
3. The available courses for completion will be listed under "Training I'm Enrolled In". Complete the course entitled 'Student Lab Safety Training – General.' \*\*\*NOTE: If you completed Wet, Dry or Biology Lab Safety Training course last semester for another class, that training is still applicable until the end of this academic year. Please follow instructions in #4 to print the certification page for your TA.
4. Go to 'Training I've Completed' and print the displayed page for your TA. Verify that it shows clearly your name, and that 'General, Wet, Dry or Biology' training is completed/passed and the date when the training was completed. If you have just completed the training but it is not updated on the 'Training I've Completed' page, please log out of the system and log back in. If the training still does not show up on this page, call the Helpline at 817-272-5100.
5. If you were enrolled in a course with a lab last semester and did not complete the training or if you do not see training for this academic year listed, email [compliance@uta.edu](mailto:compliance@uta.edu) providing your name, a contact phone number, NetID and course (e.g. BIOL 1441-005) and request the appropriate training for your course.
6. Students who have not completed the training by census date may be dropped from the lab (and consequently the lecture).
7. Lab Safety Training is required to be completed once every academic year. Training completed in the Fall semester is valid for the Fall, Spring and Summer sessions. It is your responsibility to print your training certification page and turn it in each semester to your TA for each course with a lab you are enrolled in.

*For training specific questions, contact the Environmental Health and Safety office at 817-272-2185.*

*For technical assistance with the training, please contact the Office of Institutional Compliance at 817-272-5100 or email [compliance@uta.edu](mailto:compliance@uta.edu)*