Spring 2016
3444 (Sections 003 - 009)
General Microbiology Lab Syllabus

Graduate TA: **Email:**
Office Hours/Location: **Room:** LSB 338 (Sections 003, 004, 005, 008)
Class day & Time: Monday – Thursday, 2:00 – 4:50 p.m. LSB 341 (Sections 006, 007, 009)

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

Supplements: UTA 3444 Microbiology Lab Handouts available for purchase for the **price of $20.00.**

Lab Kits for Microbiology Lab – Purchase Price: $15 can be purchased in LS 127.

Lab #	Dates	Topic/Title	Reading

1. Feb. 8 – Feb. 11 **Introduction to Micro Lab**
Safety and Laboratory Guidelines p.1-7

Refer to Microbiology Lab Notebook Handouts (MLNH)
Orientation & Safety ..... MLNH p. 4 – 5

Refer to Microbiology Lab Notebook Handouts (MLNH) pages 6-7
Media Prep ..... Ex. 1-2
Steam Sterilization ..... Ex. 2-12
Evaluation of Media ..... Ex. 2-5
Microscopy ..... Ex. 3-1
Wet Mount Preparation ..... p. 221-222
Microscopic Examination of Pond Water ..... Ex. 3-4
Ubiquity of Microorganisms ..... Ex. 2-1
Aseptic Techniques and Inoculation Methods ..... Ex. 1-3

2. Feb. 15 – Feb. 18 **Observation of Environmental Isolation Plates & Staining I**
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 8 - 9
Colony Morphology ..... Ex. 2-2
Observe pictures of bacteria on pages 64 - 71
Growth Patterns on Slants ..... Ex. 2-3
Growth Patterns in Broth ..... Ex. 2-4

Staining I
Bacterial Structure ..... p. 181 - 184
Smear Preparation and Simple Staining ..... Ex. 3-5
Gram Staining ..... Ex. 3-7
Acid-Fast Staining: Ziehl-Neelsen Method ..... Ex. 3-8

3. Feb. 22 – Feb. 25 **Gram Stain and Microscope Practical**
Staining II & Streaking
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 10 - 13
Capsule Staining ..... Ex. 3-9
Endospore Staining: Schaeffer-Fulton Method ..... Ex. 3-10

Pure Culture Techniques
Streak Plate Methods of Isolation ..... Ex. 1-4
T-Streak Method……..p. 42 - 43
Quadrant Streak Method ..... p. 43
Examples of streaks on page 42 - 43
T-Streak ..... MLNH p. 12 - 13

4. Feb. 29 – Mar. 3 **Biochemical Tests I**
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 14 - 15
Read Aerotolerance ..... p. 91
Fluid Thioglycollate Broth ..... Ex. 2-7
Anaerobic Jar ..... Ex. 2-8
Read – A Word about Biochemical Tests and Acid-Base Reactions ..... p. 286
Read - Introduction to Energy Metabolism Tests ..... p. 287

Biochemical Tests: Differential Tests
Read Fermentation Tests ..... p. 303
Glucose - Phenol Red Broth ..... Ex. 5-3
Methyl Red and Voges-Proskauer Tests ..... Ex. 5-4
Catalase ..... Ex. 5-6
Nitrate Reduction Test ..... Ex. 5-8
Media Reference Guide ..... MLNH p. 43 - 47

5. Mar. 7 – Mar. 10 **Biochemical Tests II**
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 16 - 18
Nutrient Utilization Media ..... p. 339
Citrate Test ..... Ex. 5-9

Tests Detecting Hydrolytic Enzymes ..... p. 361
Starch Hydrolysis ..... Ex. 5-13
Urea Hydrolysis ..... Ex. 5-18
Casein Hydrolysis Test ..... Ex. 5-16
Gelatin Hydrolysis Test ..... Ex. 5-17

Combination Differential Media ..... p. 393
SIM Medium ..... Ex. 5-20
Triple Sugar Iron Agar (TSIA) ..... Ex. 5-21

Mar. 14 – Mar. 17 SPRING BREAK – NO LABS

6. Mar. 21 – Mar. 24 **Midterm**
Streak Plate Practical
Receive gram-negative unknown
Gram Negative Unknown
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 19 - 24
Hand-in notebooks (1st time)

7. Mar. 28 – Mar. 31 **Environmental Factors Affecting Microbial Growth**
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 25 - 26
The Effect of Temperature on Microbial Growth ..... 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

8. Apr. 4 – Apr. 7 **Control of Microbial Growth/Selective and Differential Media**
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 27 - 33
Medical Microbiology ..... p. 517

Bring antiseptic to lab to test
Evaluation of Alcohol.....MLNH p. 31
Evaluation of Antiseptics.....MLNH p. 33

Antimicrobial Susceptibility Test: Kirby-Bauer Method.....Ex. 7-3
Demonstration
Glass Pipette Handling---Appendix C .....p. 839 – 842
Digital Pipette—Appendix D…… p. 843 - 846
Slide Coagulase Test.....Ex. 5-27
Selective Media.....p. 235
Mannitol Salts Agar .....Ex. 4-4
MacConkey Agar.....Ex. 4-5
Eosin Methylene Blue Agar.....Ex. 4-6
Bile Esculin Agar.....Ex. 4-3
SF Medium Agar .....MLNH p. 32
Blood Agar .....Ex. 4-2

9. Apr. 11 – Apr. 14 **Gram-negative unknown report due**
Receive mixed unknowns (Gram (-) and Gram (+)
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 34 - 37

10. Apr. 18 – Apr. 21 Yogurt and Water Quality
Refer to Microbiology Lab Notebook Handouts (MLNH) pages 39 - 42
Making Yogurt .....Ex. 9-2
Bacteriological Examination of Water: Qualitative Tests.....MLNH p. 40
Spread Plate Method .....Ex. 1-5
Standard Plate Count: (Viable Count).....Ex. 6-1
Membrane Filter Technique .....Ex. 8-12
Closed-System Growth (Read Only) .....Ex. 6-4
The Spectrophotometer— Appendix E……p 847-849
Notebook check (2nd time).....

11. Apr. 25 – Apr. 28 **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.

Microbiology Lab Notebook Handouts (MLNH)
PLEASE NOTE THE **Microbiology Lab Notebook Handouts (MLNH) ARE VERY IMPORTANT, THEE HANDOUTS ARER THE DIRECTIVES THAT WILL GUIDE YOU IN THE LAB!**

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. **PLEASE DO NOT PLAN TO ATTEND ANOTHER LAB SECTION WITHOUT PRIOR PERMISSION.**

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. 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%
TOTAL	**100%**

*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 Supplies
A loose leaf notebook is required in which you will accumulate any handouts, the lab lecture notes, the results and quizzes for each of the labs. This notebook will be graded twice during the semester.

Lab Kit
Individual components are available in the bookstore or you may lease a kit from Phi Sigma (the Biology Graduate Student Society) and the Mu Sigma Microbiology Society. These items will be available for purchase of $10. You may rent these kits during the first couple 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 time while 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, you may be asked to leave the lab.**

You will need the following for lab:
Sharpie permanent marker
Gloves will be provided
Lock for drawer (optional) - Please let the Graduate TA know which drawer you take.

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.