

**BIOL 358 – Introduction to Microbiology Lab, Spring 2016**  
**Section I (MW, 10:30PM-11:50PM, LF217) / Section II (MW, 12:00PM-1:20PM, LF217)**  
**Students must attend section in which they are enrolled.**

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**Teaching Assistant(s):** Margaret Wallen      852-5939      [margaret.wallen@louisville.edu](mailto:margaret.wallen@louisville.edu)

**Lab Manual:** Pierce & Leboffe: "Microbiology Laboratory, Theory and Application", Morton Publishing, 4th edition

**Course Objectives:**

- Demonstrate an understanding of the fundamental concepts and principles related to microbiology.
- Identify the role of microorganisms in the environment/food and as they relate to human health.
- Identify major characteristics and classification strategies for prokaryotic organisms.
- Demonstrate fundamental laboratory skills as related to microbiology procedures.
- Identify methods used to control microorganisms in the environment and the chemical control of microorganisms in the human body.
- Learn how to identify an unknown bacterium and how to communicate the discovery process using appropriate scientific method.

**Assessment:** Three practical exams, quizzes, lab reports/notebook, and a written report about the process used in identifying an unknown bacterium—the latter report demonstrates the understanding of the methods and reasoning used in the clinical microbiology laboratory for the identification of disease causing bacteria.

**Grading:**

Lab Practicals (3)	60% (20% each)
Unknown Report	15%
Lab Quizzes (6)	10% (drop lowest)
Lab Report/Activities	10%
Lab Clean-up/Etiquette	5%

Grading scale:  
**≥90% A; 80-89% B;**  
**70-79% C; 60-69% D;**  
**<60% F**

**Expectations**

You are expected to attend every lab session. Students are expected to have read the lab manual in advance of the laboratory session and to come to the lab fully prepared to perform the exercises. You must follow at all times lab safety procedures. Students who will miss a lab for excused University reasons must notify the teaching assistant in advance so that alternate arrangements can be made. For medical emergencies, documentation must be provided to the TA during the next lab section to occur.

**Attendance/academic policies for this course**

- Attendance will be taken every day by signing an attendance sheet at the beginning of class. This is your responsibility to do, not the teaching assistant. If you fail to sign in for 3 lab sessions, you will be given an automatic grade of "F".
- There will be NO make-ups for lab quizzes.
- There will be NO make-ups for lab practicals except for documented emergencies.
- You will not pass with a failing average grade on the 3 lab practicals (<60%).
- Late assignments will be assessed penalties (up to the full points awarded for that particular assignment) at the discretion of the lab teaching assistant.
- Your lab notebook may be checked prior to EVERY session. It is your responsibility to have the details for the day's work plan in your notebook prior to coming to class. Anyone who fails to do so will be dismissed from class and will receive a 0 for all assignments for that day.
- All assignments/lab/reports are to be done individually unless otherwise noted by the T.A.
- Plagiarism and/or cheating of any kind will result in an automatic grade of "F" for the course. \*\* See the U of L code of Student Rights and Responsibilities\*\*

**Lab etiquette**

Disruptive or dangerous behavior will be taken very seriously in this course. You will be expected to be careful and respectful at all times. We will be working with dangerous human pathogens and any instance of careless, disruptive, and/or dangerous behavior will be grounds for point penalties or immediate dismissal from class. At

all times, you should practice safe lab practices such as wearing gloves and sterile technique, proper handwashing techniques, treating equipment properly especially the microscopes, and disposing of biological wastes in the appropriate containers (agar plates in the biohazard bin; liquid and slant tubes should be placed in the autoclaving section after tape has been removed; pipettes in the glass bin; micropipette tips and spreaders in the correct receptacles). Failure to do any of these proper disposal techniques will result in point penalties. Point penalties can also be incurred at the group level, where everyone in a group is penalized.

Additionally, the appropriate attire must be worn when working with bacteria. Open-toed shoes are not allowed at any time. Shorts, short skirts, and tank tops are allowed but a lab coat should be donned for the duration of the lab class to protect exposed skin. Shoulder-length hair or longer needs to be tied back so as to not get into your cultures. Failure to wear the appropriate attire to lab will result in the teaching assistant asking you to leave the class until you can find the appropriate attire for that day. Those who do not return within 20 minutes will receive a 0 for that day's activities.

### **Lab Cleanup**

You must sign up for two lab sessions in which you will help the teaching assistant clean up lab materials following a lab session. Failure to sign up or perform the duties you are assigned that day will result in a reduction in your points for the semester up to 5% of your grade and will be decided by the teaching assistant.

### **Notebooks/Lab Reports/Graded Activities**

Periodically notebooks will be checked for how complete your observations, results and conclusions are on the lab experiments that we do. You are expected to bring all materials to each class and be prepared to work independently for that lab session.

Notebook guidelines: Must have a bound notebook, first 2 pages must be "Table of Contents", number your notebook pages, start each new lab on a new page by putting title at the top of the page, do not scatter a single lab over nonadjacent several pages, and record everything pertaining to labs in your notebook.

Genus and species named must be italicized or underlined. Genus name starts with a capital letter and species name starts with a small letter. For example, *Bacillus subtilis* (italicized) or Bacillus subtilis (underlined) should be used. Points will be removed for this when done incorrectly.

How to Record an Experiment or Activity:

1. Title/date
2. Hypothesis/Purpose: What question are you trying to answer or state the purpose of the activity
3. Procedure: Description of what you did for the lab.
4. Results: Record all observations.
5. Conclusion: Describe what the results mean, include any issue or special circumstances. Answer all questions.

There will be 14 lab reports due over the course of the semester and 3 additional graded activities. These will be announced by the TA and will be given firm due dates. Failure to complete any of these assignments will result in a 0 for that assignment unless you have a documented medical emergency.

**Blackboard** is an important component of this course, grades will be posted, course syllabus, and lecture materials will be uploaded on blackboard.

### **Unknown lab report**

You will be assigned a case report for an unknown bacterium. You will be responsible for working on your own to complete the required tests to determine the species of bacterium in the sample. You will need to use many of the tests you have done in the first portion of the course and thus being familiar with these tests will aid in the ease in which you will complete the work. Three weeks have been assigned for this process; should you require more time, you must use any extra time at the end of the subsequent lab periods for your work only. The teaching assistant will not be responsible for any work you are unable to complete in the given time. You should arrive on the first day having read your case report and be prepared to undertake the experiments. On subsequent lab days, you should also come to lab prepared for the experiments you need to do.

### **Important things to bear in mind while you are working on your unknown project.**

This lab space is shared with 144 other students from the BIOL 258 lab course. Things such as culture tubes or plates left on the bench will not be accounted for by the TA or TAs from BIOL 258 labs. You are responsible

for incubating all inoculated media plates and tubes in the designated 37°C incubator for your section. There will be two racks, one labeled refrigerator and the other labeled incubator. The refrigerator rack goes in the refrigerator and the incubator rack goes in the incubator. Make sure your inoculated culture tubes go in the correct rack. The TA will not be responsible for making sure inoculated tubes are in the correct rack. Also remember repetition is a normal process in science, do not feel otherwise when you are asked to repeat your Gram stain or any test to ensure you obtain a more accurate result. Detailed guidelines and a flowchart will be provided on how to carry out the entire process.

**Course Schedule: Dr. Yoder-Himes and the teaching assistant reserved the rights to make changes.**

Date	Topic	Exercise/pages
January 6, 2016	<i>No class</i>	
January 11, 2016	Introduction; Safety, Handwashing demo	Pages 1-11, custom lab experiment
January 13, 2016	Microscopy I: Introduction to light microscopy; wet mounts	3-1, 3-11
January 18, 2016	<u><i>Martin Luther King, Jr. Day – no classes</i></u>	
January 20, 2016		
January 25, 2016	Microscopy II: Simple stains	3-5, 3-6
January 27, 2016	Microscopy III: Gram Stain, Capsule stain	3-7, 3-9
February 1, 2016	Microscopy IV: Acid fast stain, Endospore stain	3-8, 3-10
February 3, 2016	Culturing techniques (streaking, transferring)	1-3, 1-4, 1-5
February 8, 2016	Environmental conditions affecting microbial growth	2-7, 2-9, 2-11, 2-13
February 10, 2016	<b><u>LAB PRACTICAL I</u></b>	--
February 15, 2016	Media definitions; selective media	4-4, 4-5, 4-6, 4-7
February 17, 2016	Differential Tests I – Fermentation Tests	5-2, 5-3
February 22, 2016	Differential Tests I – Fermentation Tests continued	5-4, 5-21
February 24, 2016	Differential Tests II- Respiration/Nutrient Utilization	5-5, 5-6, 5-7, 5-8
February 29, 2016	Differential Tests III – Miscellaneous Tests	5-25, 5-27, 5-20, 5-29
March 2, 2016	Effect of handwashing; germicides	2-14 (modified)
March 7, 2016	Antimicrobial agents	7-3, case reports given
March 9, 2016	<b><u>LAB PRACTICAL II</u></b>	--
March 14-20, 2016	<u><i>Midterm Break – no classes</i></u>	
March 21, 2016	Introduction to unknown identification	5-31
March 23, 2016	Unknown Identification I	
March 28, 2016	Unknown Identification II	--
March 30, 2016	Enumeration of microbes; dilutions	6-1
April 4, 2016	Environmental microbiology I	8-11
April 6, 2016	Environmental microbiology II	Custom lab experiment
April 11, 2016	Epidemic simulations	7-5, Custom lab experiment
April 13, 2016	Biofilm growth	Custom lab experiment
April 18, 2016	Genomic DNA preparations from bacteria <b><u>Unknown lab report due</u></b>	10-1
April 20, 2016	<b><u>LAB PRACTICAL III</u></b>	--

Last day to drop/add – January 12, 2016

Last day to withdraw – March 7, 2016

**Disability Resource Center**

The University of Louisville is committed to providing access to programs and services for qualified students with disabilities. If you are a student with a disability and require accommodation to participate in and complete requirements for this class, contact the Disability Resource Center (Robbins Hall, 852-6938) for verification of eligibility and determination of specific accommodations.

**Title IX/Clery Act Notification**

Sexual misconduct (sexual harassment, sexual assault, and sexual/dating/domestic violence) and sex discrimination are violations of University policies. Anyone experiencing sexual misconduct and/or sex discrimination has the right to obtain confidential support from the PEACC Program 852-2663, Counseling Center 852-6585 and Campus Health Services 852-6479.

Reporting your experience or incident to any other University employee (including, but not limited to, professors and instructors) is an official, non-confidential report to the University. To file an official report, please contact the Dean of Student's Office 852-5787 and/or the University of Louisville Police Department 852-6111. For more information regarding your rights as a victim of sexual misconduct, see the Sexual Misconduct Resource Guide (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).