

MMBB 155 Introductory Microbiology Laboratory

Spring 2013 – 1 Credit

Learning Outcomes: MMBB 155 Introductory Microbiology Laboratory is a course designed to complement the topics covered in the MMBB154 lecture (Introductory Microbiology). The laboratory experience is aimed at introducing non-science majors to the skills of scientific observation, interpretation, and logical conclusion that are the basis for hypothesis testing. The students will be familiarized with basic microbial techniques at the end of the semester.

Tim Steffens, Lab Instructor: LSS 168, 885-8953, email: tims@uidaho.edu

Teaching Assistants: Office Hours by Appointment

Section 01 Room 171 3:30-6:00 pm
Victoria Murrell murr7914@vandals.uidaho.edu

Section 02 Room 170 3:30-6:00 pm
Liz Brandon bran9316@vandals.uidaho.edu

Sections 03 Room 171 7:00-9:30 pm
Kami Cole cole2839@vandals.uidaho.edu

Section 04 Room 170 7:00-9:30 pm
Katie Slavens slav6484@vandals.uidaho.edu

Section 05 Room 167 3:30-6:00 pm
Zahra M Amiri moha2893@vandals.uidaho.edu

Section 06 Room 167 7:00-9:30 pm
Zahra M Amiri moha2893@vandals.uidaho.edu

Required Materials:

1. A Laboratory Coat (Chemstores, Old oversize shirt, or Borrowed)
2. A Sharpie Marking Pen (there are some in the lab)
3. Laboratory Manual for Introductory Microbiology Third edition
author: C.H. Bohach
4. **Bound** Notebook for Reports (50-100 pages)
5. Optional Text: Photographic Atlas for Microbiology, 3rd Edition
Also available as an eBook (see Blackboard's Web link for more info.)

Grading: (600 possible points) **If you miss 2 lab meetings, unexcused, you will receive a F.**

Attendance/Participation	100 points
Lab Reports	220 points
Exam I	80 points
Exam II	100 points
Final Exam	100 points

Grade Point Spread:	90-100%	540-600 pts	A
	80-89%	480-539 pts	B
	70-79%	420-479 pts	C
	60-69%	360-419 pts	D
	≤ 59%	≤ 359 pts	F

Attendance & Participation

Attendance:	10 pts
Quizzes: 9 @ 10pts each	<u>90 pts</u>
	100 pts

- Attendance is required unless the absence is University excused. **If you miss 2 lab meetings, unexcused, you will receive a F.**
- Quizzes will be given at the beginning of each lab, excluding exam days. The quizzes will cover the material from the current week's lab.

Lab Reports

Lab Reports: 11 @ 20 pts each for a total of 220 pts

Report Format: The lab reports are to be legibly written in a bound notebook. These notebooks will be collected by 5:30pm on **3/6** and **5/1** and **will not** be accepted late. DO NOT remove any pages from your notebooks; you will turn in the entire bound notebook. DO NOT type the reports.

Point Breakdown will be:

Title: **2 pts.** (Copy as written in the lab manual). Give your partner's name.

Objective: **4 pts.** (In your own words, state the overall purpose of the lab).

Results: **6 pts.** (State the results from the experiments. Graphs, tables, or charts may be cut or photographed and taped or glued neatly into this section).

Conclusion: **8 pts.** (Discuss your results **and** answer the questions posed in the lab manual chapter).

Unexcused, missed exams or missed assignments will count as 0 points. If you miss 2 lab meetings, unexcused, you will receive a F. Excused-exam/assignment-absence will be granted as defined by the University of Idaho General Catalog. Refer to General Requirements and Academic Procedures section M.

Academic Dishonesty. Acts of cheating or plagiarism in MMBB 155 can result in an automatic zero for that exam or assignment and can result in an automatic F as a final grade in the course. Please be aware that all parties involved in the act of cheating or plagiarism will be penalized. Cheating refers to the acquisition of answers to test questions or assigned materials in a dishonest fashion. Plagiarism is defined as 1) the use of another student's writing as your own and/or 2) the use of writing from published sources without citation. Plagiarism includes copying or paraphrasing another's writing with slight changes of wording.

Notes about the following schedule:

- * The schedule does not reflect that many of the laboratory procedures require the growth of microorganisms and therefore must be completed during the following laboratory period(s). Learn to organize and schedule your lab time efficiently. Your T.A. will help orient the class at the beginning of each laboratory meeting.
- ** Several metabolic reactions must be observed after 24 or 48 hours, if you are unable to come into the laboratory and check your cultures the T.A. will record your results for you.

The Schedule

Date	TOPIC
1/14	Introduction and Laboratory Safety The Microscope and Microscopic Observations
1/21	No labs this week: University Holiday
1/28	Examining and Transferring Microorganisms in Culture*
2/4	Culturing Microorganisms from the Environment and the body
2/11	<u>Exam I (80 points) material covered in the first 3 lab meetings</u>
2/18	No labs this week: University Holiday
2/25	Microbial Staining Techniques (This and the streak is one report) Streak Dilution Technique for Pure Culture
3/4	Determining Bacterial Numbers
3/6	Notebooks Due for grading by 5:30pm Do not remove pages from the notebook
3/11	No labs: University SPRING RECESS
3/18	Using Heat to Control Microorganisms
3/25	Disinfectants and Hand Washing
4/1	<u>Exam II (100 Points) material covered in the last 5 lab exercises</u> Metabolic Activity of Microorganisms 4/2 Check reactions at 24 hours [Optional]** 4/3 Check reactions at 48 hours [Optional]**
4/8	Environmental Stress and Preparation of Yogurt
4/15	Analysis of Yogurt
4/22	Finish analysis of Yogurt And Gel Electrophoresis of Bacterial Plasmid DNA.
4/29	<u>Final Examination (100 points) cumulative exam</u>
5/1	Laboratory Notebooks Due for final grading by 5:30pm Do not remove pages from lab notebook

The Microscope (2 pts)

Objective (4 pts)

In this lab we will learn how to properly handle, and care for, a bright field, compound light microscope.

Results (6 pts)

[cut & paste OR copy & paste the drawings you made of *Candida albicans* and *Staphylococcus aureus* under the low-power, high-power, and oil-immersion objective lenses; label each drawing as shown on p. 9]

Conclusions & Questions (8 pts)

Under the low-power objective, the differences between the two species was not evident. They both looked like little, tiny purple/pink cocci. When viewed under the high-power objective lens, the differences between the species became more obvious. *Candida albicans* cells were in loosely organized aggregates, while *Staphylococcus aureus* was seen to be in ordered bunches, looking almost honeycomb-like. Under the oil immersion lens, the differences were very clear. The *Staphylococcus aureus* was much smaller than *Candida albicans*. In addition, I could clearly see budding (reproduction) on the *Candida albicans* slide. The oil-immersion lens allowed me to make more detailed observations due to the increased resolving power of the lens/oil/sample-on-glass interface versus the lens/air/sample-on-glass interface that occurs when using the high-power (and lower) lenses.

If there had been questions to answer, as in Lab three, you would write them into the lab report as follows, using question 1. on p. 21 as the example:

1. Before beginning my lab work today, I washed the lab bench top with a 5% bleach disinfectant in order to decrease the potential of sample contamination.