

Biol 255 Laboratory Syllabus/Information

Fall 2020 Semester

Teaching Assistants (office hours scheduled as needed):

Instructor: Tim Steffens; tims@uidaho.edu; LSS 168, 885-8953; office hours scheduled as needed

Section 01 9:30 — 11:20 AM

Laura Hutchison; stei6567@vandals.uidaho.edu

Zoom Meetings scheduled as needed

Section 02 12:30 PM — 2:20 PM

Tim and Laura

Zoom Meetings scheduled as needed

Section 03 3:30 — 5:20 PM

Marinda Stanton; stan9957@vandals.uidaho.edu

Zoom Meetings scheduled as needed

Learning Outcomes:

This lab course is a companion course for Biol 250, General Microbiology. Students will:

- design experiments and be able to determine the appropriate controls.
- carry out accurate and reproducible science experiments.
- make media and solutions; use scientific equipment properly.
- work with living organisms safely.
- generate and interpret graphic representations of different data sets and predict their validity for making projections.
- communicate science; create graphs/charts to share results.
- learn basic microbiological skills (i.e. streaking for isolation, aseptic technique, microscope use, dilutions, monitor growth, and staining).
- learn to isolate and identify bacteria.
- carry out fermentations and evaluate the safety of food products.

Disability Support for Reasonable Accommodations:

Students with disabilities needing accommodations to fully participate in this class should contact Center for Disability Access and Resources (CDAR). All accommodations must be approved through CDAR prior to being implemented. Center for Disability Access and Resources (CDAR) is located in the Bruce M. Pitman Center, Suite 127.

[Phone: 208-885-6307 Email: cdar@uidaho.edu Website: <http://www.uidaho.edu/cdar> Please notify the instructor during Week One of classes if accommodations are required.]

Requirements:

1. All students must bring a printout of that week's lab procedures to class. The lab manual may be found at BbLearn (<https://bblearn.uidaho.edu/>). **In lab content** all items in red are the procedures and the blue items are the reports/observation recording documents that need to be printed out. *Please read the procedures of the day before lab.* Use a three-ring binder to keep things organized; use tabs to help find things quickly. It is recommended to print out all the material and bring all of it to lab each week. An excellent addendum and helpful purchase (not required) is the "A Photographic Atlas for the Microbiology Laboratory" by Leboffe & Pierce (copies may be found in lab). Please note the background information area in BbLearn to help in studying for quizzes and exams.
2. Before entering the lab a new disposable face mask (supplied) must be put on in the hallway to protect others. While in the laboratory all students are required to wear lab coats and safety glasses. There are safety glasses and lab coats available for use in the lab; coats may be bought at Chemstores (cheapest) or the bookstore. **No open toed shoes** (i.e. sandals) allowed in the lab. Legs need to be covered, i.e. pants, tights, dress to ankles. Students will be asked to leave if not complying with these dress code requirements.

3. **Attendance in the laboratory is mandatory.** If more than two labs are missed without an official excused absence, then you will get a zero (F) for your lab grade. Notify your TA or Tim Steffens before class if possible.
4. **A note about time.** Please be aware that since we are working with biological systems, we have to schedule our time around the organisms involved in the experiments. You will therefore be expected to come in times other than those scheduled. We will try to keep these at a minimum.
5. **Academic Dishonesty.** Acts of cheating or plagiarism in the Biol 255 laboratory will result in an automatic zero for that quiz, report, and/or practical exam. Any repetition of this will result in a zero for the laboratory itself. Cheating refers to the acquisition of answers to test (quiz) 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. Please see UI Faculty-Staff Handbook, Chapter 2 (2300), Article 2 — Academic Honesty for more information.

Grading:

This laboratory will be graded on a straight scale (i.e. $\geq 90\%$ is an A, ≥ 80 to 89 is a B, ≥ 70 to 79 is a C, ≥ 60 to 69 is a D, and < 60 is a F). *Any errors in grading must be brought to the instructor/TA attention within 1 week after the student received the graded material back.*

Points:

4 Quizzes	30 pts. Each (120 pts.)
1 Practical Exam	100 pts.
1 Online Essay Quiz	50 pts.
Participation	30 pts.
10 Lab Reports	210 pts. (varies from 10-50 pts.)
Unknown	120 pts.
Grand Total	630 pts.

General Information:

Microscopes. If your microscope is improperly stored or abused after the second week of lab, you will lose 2 pts. for the first, 5 pts. for the second, and 10 pts. for every following infraction.

Quizzes. Quizzes will be approximately every other Wednesday and will cover the previous weeks' labs since the last quiz or test. Make-up quizzes will be allowed only for officially excused absences.

Unknowns. Your unknown, starting during the second half of the semester, will test your ability to isolate and identify a mix of two organisms to genus and species.

Lab Reports. All observations will be written in the report templates found on BBLearn (blue colored items under lab content). You may also digitally place them into the templates directly, they are Word documents, and a digital copy sent to Tim Steffens by the given Due Date. Your observations/data will be the same as everyone else in your group, but any conclusions or question answers must be in your own words, i.e. no plagiarism.

Participation. Includes group work, surveys, and any pre-labs. You will grade your partner(s) at least twice for input to the instructor, around midterms and finals.

Extra Credit. There may be some extra credit points available on the quizzes and/or practical exams. There may be more available (to be determined).

Open Labs. There will be an open lab every Friday from 1:30-3:00 PM where you can get help and/or finish things that you were not able to finish earlier in the week.

Schedule of Events

[subject to change - BBlearn is kept up to date]

Date	Event	Comments
Monday, August 24 Week 1	Introduction, Safety, Microscope Use – examine prepared slides	Sign the rules.
Wednesday, August 26 Week 1	Simple & Gram Staining Glyphosate #1 Experiment Start	Bring Soil/Environmental Sample
Monday, August 31 Week 2	Glyphosate #1 (pick orgs. & make plate media) Glyphosate #2 Start (make broth & inoculate) Finish Staining if needed	
Wednesday, September 2 Week 2	Glyphosate #1 (replica plate) Glyphosate #2 (examine) Practice Streak for Isolation	
Monday, September 7 Week 3	UI Closed	Labor Day
Wednesday, September 9 Week 3	Examine Practice Streak & practice again Practice Dilution Glyphosate #1 (examine) Glyphosate #2 (monitor growth)	Quiz 1 (weeks 1 & 2) Microscope Lab Report Due
Monday, September 14 Week 4	Practice Dilution (results) Glyphosate #1 (examine) Glyphosate #2 (monitor growth) Fermentation Sign-up Examine Practice Streak	
Wednesday, September 16 Week 4	Glyphosate #1 (Kirby-Bauer) Glyphosate #2 (make plate media)	
Monday, September 21 Week 5	Glyphosate #1 (finish) Glyphosate #2 (streak plates) Milk Fermentations Start	
Wednesday, September 23 Week 5	Liquid Fermentations Start Examine Milk Fermentations (hang cheese, analyze yogurt)	Soda refrigerate Friday?
Monday, September 28 Week 6	Skin & Throat microbiota & Pathogens Glyphosate #2 (Re-Streak Isolates) Finish Soda and Cheese Come in Tuesday (29th)	Glyphosate #1 Report Due
Wednesday, September 30 Week 6	Skin & Throat microbiota & Pathogens finish Glyphosate #2 (Analyze if time)	Quiz #2 (weeks 3 & 4 & 5)
Monday, October 5 Week 7	Enteric Pathogens Start Bottle/Analyze Beer Glyphosate #2 (streak R2A) Come in Tuesday (6th)	Milk Fermentation Lab Due
Wednesday, October 7 Week 7	Enteric Biochems Glyphosate #2 (examine R2A isolate)	Skin & Throat Report Due

Monday, October 12 Week 8	Analyze Enterics Restreak Glyphosate Degradar Tuesday Q & A?	Participation #1 Grading
Wednesday, October 14 Week 8	Midterm Practical Exam	Exam covers weeks 1-8
Monday, October 19 Week 9	Glyphosate #3 Ames (skip part A) Unknown Start	Enteric Report Due
Wednesday, October 21 Week 9	Unknown Food Microbiology Glyphosate #3 – Finish Prepare for Glyphosate #4 - Streak	Due Glyphosate #2 Report
Monday, October 26 Week 10	Glyphosate #4 Part A – Chromosomal DNA Isolation Start Unknown Food Microbiology Finish	
Wednesday, October 28 Week 10	Glyphosate #4 Part A – Chromosomal DNA Isolation and Quantize amount Analyze/Bottle Wine & Beer Sensory Unknown	Happy Halloween! Glyphosate #3 Report Due
Monday, November 2 Week 11	Glyphosate #4 Part B – 16S PCR Unknown	Food Safety Report Due Quiz #3 (weeks 9 & 10)
Wednesday, November 4 Week 11	Glyphosate #4 Part C – Electrophoresis Unknown	Liquid Fermentation Report Due
Monday, November 9 Week 12	Glyphosate #4 Part D – PCR cleanup & PCR Quantify Unknown	
Wednesday, November 11 Week 12	Glyphosate #4 Part E – Sequencing reaction Unknown	
Monday, November 16 Week 13	Glyphosate #4 Part E – Sequencing Reaction Clean Up & Submit Sequencing reaction Unknown	
Wednesday, November 18 Week 13	Possible Analyze Sequence Data (see Monday 11- 30) Checkout Participation #2 Grading Unknown – Finish Lab work	Quiz #4 (weeks 11- 12)
Nov. 23-27	Fall Recess!	Enjoy!
Monday, November 30 Week 14	Online Analyze Sequence Data – What organism?	(SnapGene Viewer)
Wednesday, December 2 Week 14	Online Analyze Sequence Data – What organism?	Due: Unknown, and Glyphosate #4 Quiz #5 (online)
Monday, December 7 Dead Week	Done	
Wednesday, December 9 Dead Week	Done	