

Biol 255 Laboratory Syllabus/Information

Spring 2021 Semester

Teaching Assistants (office hours scheduled as needed):

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

Section 01 9:30 — 11:20 AM in LSS 171

Laura Hutchison; stei9567@vandals.uidaho.edu

Section 02 12:30 — 2:20 PM in LSS 171

McKenna Hull; hull9449@vandals.uidaho.edu

Section 03 3:30 — 5:20 PM in LSS 171

Keera Paull; paul6965@vandals.uidaho.edu

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.
- constructively critique other scientific work (peer review).
- 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 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.)
2 Practical Exams	100 pts.
Participation	30 pts.
9 Lab Reports	190 pts. (varies from 10-50 pts.)
<u>Unknown</u>	<u>120 pts.</u>
Grand Total	660 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 Tuesday 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 2:30-4:30 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 when dealing with living organisms and CoViD]

Date	Event	Comments
Thursday, January 13	No Lab to allow for CoViD testing.	
Tuesday, January 19 Week 1	Introduction, Safety, Microscope Use – examine prepared slides	Sign the rules.
Thursday, January 21 Week 1	Simple & Gram Staining Glyphosate #1 Experiment Start	Bring Environmental Sample
Tuesday, January 26 Week 2	Glyphosate #1 (make master plate & plate media) Glyphosate #2 Start (make media & inoculate)	
Thursday, January 28 Week 2	Glyphosate #1 (replica plate) Glyphosate #2 (Monitor Growth) Practice Streak for Isolation	Due: Microscope Lab Report
Tuesday, February 2 Week 3	Examine Practice Streak & practice again Glyphosate #1 (examine) Glyphosate #2 (monitor growth)	Quiz #1 (weeks 1 & 2)
Thursday, February 4 Week 3	Glyphosate #1 (examine) Glyphosate #2 (monitor growth) Examine Practice Streak	Fermentation Sign-up
Tuesday, February 9 Week 4	Glyphosate #1 (Kirby-Bauer) Glyphosate #2 (make plate media)	
Thursday, February 11 Week 4	Glyphosate #1 (finish) Glyphosate #2 (streak plates)	
Tuesday, February 16 Week 5	Milk Fermentations Start Glyphosate #2 (Analyze as time; grown enough)	
Thursday, February 18 Week 5	Liquid Fermentations Start Examine Milk Fermentations (hang cheese, analyze yogurt) Glyphosate #2 (Analyze as time)	Due: Glyphosate #1 Report Soda refrigerate Friday
Tuesday, February 23 Week 6	Skin & Throat microbiota & pathogens Glyphosate #2 (Re-Streak Isolates A, B, and D) Finish Soda and Cheese Come in Wednesday (24th)	Quiz #2 (Weeks 3-5) Need to come in Wednesday
Thursday, February 25 Week 6	Skin & Throat microbiota & pathogens finish Glyphosate #2 (Analyze as time)	
Tuesday, March 2 Week 7	Glyphosate #3 Start Bottle/Analyze Beer Glyphosate #2 (examine restreaks and streak R2A)	Due: Milk Fermentation Lab Need to come in Wednesday
Thursday, March 4 Week 7	Glyphosate #3 – Ames Glyphosate #2 (examine R2A)	Due: Skin & Throat Report
Tuesday, March 9 Week 8	Glyphosate #2 (Finish+ streak R2A) Glyphosate #3 – Finish Wednesday Q & A?	Participation #1 Grading
Thursday, March 11 Week 8	Midterm Practical Exam	
March 15-19	Spring Recess!	Have Fun!
Tuesday, March 23 Week 9	No lab to allow for CoViD testing.	

Thursday, March 25 Week 9	No lab to allow for CoViD testing.	
Tuesday, March 30 Week 10	Unknown Start Prepare for Glyphosate #4 – Streak R2A Food Microbiology	Glyphosate #2 & #3 Reports Due
Thursday, April 1 Week 10	Food Microbiology Finish Unknown	
Tuesday, April 6 Week 11	Glyphosate #4 Part A – Chromosomal DNA Isolation Analyze/Bottle Wine & Beer Sensory Unknown	
Thursday, April 8 Week 11	Glyphosate #4 Part A – Chromosomal DNA Isolation and Quantize amount Unknown	Due: Food Report
Tuesday, April 13 Week 12	Glyphosate #4 Part B – 16S PCR Unknown	Quiz #3 (weeks 10 & 11) Due: Liquid Fermentation Report
Thursday, April 15 Week 12	Glyphosate #4 Part C – Electrophoresis Unknown	
Tuesday, April 20 Week 13	Glyphosate #4 Part D – PCR cleanup & PCR Quantify Unknown	
Thursday, April 22 Week 13	Glyphosate #4 Part E – Sequencing reaction Unknown	
Tuesday, April 27 Week 14	Glyphosate #4 Part E – Sequencing Reaction Clean Up & Submit Sequencing reactions Unknown	
Thursday, April 29 Week 14	Analyze Sequence Data – What organism? Finish Unknown if possible Catch up	Bring Computer (SnapGene Viewer) Quiz #4 (weeks 12 - 14)
Tuesday, May 4 Dead Week	Finish Glyphosate 4 Checkout & Q/A for exam Participation #2 Grading Unknown Finish	
Thursday, May 6 Dead Week	Final Practical Exam (9-14 weeks)	Due: Unknown & Glyphosate #4 Report