

BIOL 239 Experimental Microbiology

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Spring Semester 2016
Thursdays 1:10 Higley 322

Microbiology is the study of organisms too small to be seen by the unaided eye. We investigate microbes from Antarctica, from our local environment, and from our own bodies. We learn techniques of microscopy, culturing, identification, and genetic analysis.

Prerequisite courses: BIOL 109 and BIOL 238.

Lab procedures. Lab procedures are linked on line for each lab. All lab procedures must be read before the day the exercise is performed; check the blackboard for modifications. Note that some labs require work on Friday. This is compensated by lab-free date March 24.

Textbook (SF): Slonczewski & Foster (2014) *Microbiology: An Evolving Science* (Norton, 3E).

Lab reports. Reports are due on Moodle by 11:59 midnight of the date shown.

- All reports are submitted electronically using Moodle. No paper accepted.
- Crop photos, and keep size <500kb.
- Each lab report must show all results, including those of your lab partner(s). Always cite the names of all your lab partners. You are encouraged to discuss results with your fellow students, and cite their assistance (as professional scientists do) but the text and graphics of your report must be your own work.
- Each report must contain Introduction, Methods, Results, Discussion, and References.

Evaluation. Your final grade is based on lab reports and attendance: Labs 1- 7. A missed lab results in final grade F for the course.

Attendance. Lab attendance is 100% absolutely required.

Special needs. The Coordinator of Disability Services must be consulted.

No Withdrawals. Passing this course assumes 100% participation including the final lab.

Date		Lab Exercise	Read	Due on Moodle
Jan	21	Lab 1. Microscopy: Protists from Antarctica and Kenyon Greenhouse.	Lab 1; SF Ch 2	1/26
	22	Complete observations as needed.		
Jan	28	Lab 2. Stained Bacteria: Acid-Evolved <i>E. coli</i>.	Lab 2; SF Ch 4	2/02
	29	Start skin microbiome. Complete stains. Store skin plates.		
Feb	04	Lab 3. Streak Plates: Hospital Lab Tests.	Lab 3; SF Ch 5	2/09
	05	Check streaked plates.	Skin.	
Feb	11	Lab 4A. Kenyon Drug Producers.	Lab 4; SF Ch 7	3/03
	12	Check tester plates.		
Feb	18	4B. Discussion; Prep genomic DNA.		
	19	Nanodrop and Qubit measure DNA.		

Feb	25 26	4C. Growth curves. Analyze growth curves.		
Mar	03	Hospital Field Trip.	SF Ch 28	
SPRING BREAK				
Mar	24	No lab.		
Mar Apr	31 01	Lab 5A. Screen Environmental Microbiomes. Check plates.	Lab 5.	4/11
Apr	07 08	5B. Biolog Plate Tests. Check plates.		
Apr	14 15	Lab 6. Drug-producer Genome Analysis. Check plates.	Lab 6. SF Ch 8	4/19
Apr	21 22	Lab 7. Water Testing for Coliforms. Check tubes and plates.	Lab 7.	4/26
Apr	28	TBA		
May	05	Water Treatment Plant Field Trip	SF pp 839-841	

Laboratory Safety Rules

The purpose of these rules is to keep you and your fellow students safe and healthy. Remember that in a microbiology lab, any microorganism is considered a potential pathogen. Observance of safety rules will be a factor in your lab grade.

Know the location of the fire extinguisher, emergency shower and first aid kit.

Remember to assume that any microbe is a potential pathogen. **Eating, drinking and chewing gum are not allowed in the lab.**

Read the day's procedure for the lab exercise and the appropriate report pages before you come to class. Before the lab period begins, check the lab blackboard for any modification of your procedure. Wait for the instructor to arrive before beginning work.

Protect your microscope. Always carry with both hands; grasp the arm with one hand, and support the base with the other hand. Keep your microscope covered when not in use. Never remove or exchange eyepieces with other microscopes.

Avoid excess immersion oil. Always clean oil off lenses and slides when you are finished. Use only lens paper with 70% ethanol to clean lenses; **blot, not rub.**

Do not pour liquefied agar medium down the sink drain, as it will cool and gel in the pipes. Do not pour any contaminated media down the drain; instead, leave it in the prep room for autoclaving and safe disposal.

Your lab area must be left clear and disinfected with ethanol before you leave the lab. Hang up your lab coat before you leave the lab.