

Microbiology for Science Majors – Laboratory (BIOL 2121) — Spring 2020

Lab 1: Thursday 2:00-3:50 | Lab 2: Thursday 4:00-5:50

Lab Location: WSB 203

Lab TA: Stephen Shipp
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Office Hours: MW 3-5 ; T 1-2

Lecture Instructor: Dr. Crystal Kelehear Graham
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Required Text: Benson's Microbiological Applications: Laboratory Manual in General Microbiology. Concise Edition. Fourteenth Edition By; Alfred Brown and Heidi Smith.

Course Description: This laboratory will focus on hands on learning of microscopy, aseptic technique, isolating and culturing bacteria, and identifying microorganisms.

Marketable Skills (MS):

The biology student graduating with a BS in Biology should have the following MS:

- 1) Ability to organize, analyze, and interpret data.
- 2) Proficiency in using presentation software.
- 3) Experience in managing time and meeting deadlines.
- 4) Ability to speak effectively and write concisely about scientific topics.
- 5) Experience in the development of professional email correspondence.

Student Learning Outcomes (SLO):

The biology student graduating with a BS in Biology should be able to:

SLO1 demonstrate an understanding of basic biological concepts, including but not limited to evolution via natural selection, cell theory, and the role and function of DNA.

SLO2 demonstrate utilization of various field techniques toward addressing scientific questions in the specific discipline. These field techniques can include, but are not limited to, plant collection and processing, various animal collection techniques, ecological surveying and sampling, and biodiversity indexing.

SLO3 use biological instrumentation to solve biological problems using standard observational strategies.

SLO4 develop writing skills by summarizing and critiquing recent relevant biological literature.

Lab attendance is mandatory. There will be no make up labs. If you have a university approved excuse to be absent, you must make arrangements with the TA **before** missing lab. More than three (3) missed labs will result in a failing grade and possible withdrawal from the course.

Grading Scale:

Lab Quizzes.....	50 pts
Homework.....	50 pts
I.D. of an Unknown Report.....	200 pts
Midterm.....	100 pts
Final Exam.....	100 pts
Total:	500 pts

Grading Policy:

Quizzes will cover the lab exercise(s) of that week. You must read the lab exercise **before** coming to lab.

Homework is due the week after the lab is completed. **No late work will be accepted.**

Details for the Identification of an Unknown Bacterium Project will be announced.

Ethical Conduct: Cheating and/or plagiarism will not be tolerated and will be dealt with according to university policy. Failure to abide by all safety protocols may result in a failing grade and ejection from the lab.

Tentative Schedule (subject to change)

Date	Lab Manual Chapter	Lab Topic
Jan 23	1	Safety and microscope
Jan 30	6	Microbiology of pond water, Visit SEM Lab
Feb 6	7,9	Ubiquity of bacteria, aseptic technique
Feb 13	10, 11, 12	Pure culture techniques, smear preparation, simple staining
Feb 20	15, 13, 14	Finish previous lab, gram staining, negative & capsular staining
Feb 27		Midterm Exam
Mar 5	16, 17, 18	Spore staining, acid-fast staining, motility determination
Mar 9-13		Spring break
Mar 19	27, 37, 38	Finish previous lab, effects of oxygen on growth, morphological study of unknown bacterium, cultural characteristics
Mar 26	39, 42 Finish 27, 37, & 38	Oxidation and fermentation tests, use of Bergey's manual
Apr 2	8	Fungi, Unknown Project
Apr 9	8	Fungi cont'd, Unknown Project
Apr 16		Finish Unknown Project - Lab Cleanup
Apr 23		Final Exam