

## Microbiology for Science Majors – Laboratory (BIOL 2121) — Spring 2021

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

Lab Location: WSB 203

Lab TA: Celina Gonzalez | Office: WSB 203 |

E-mail: [cag17fw@sulross.edu](mailto:cag17fw@sulross.edu) | Office Hours: Wed 11-2pm; Thur 12-2pm

**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:** Lab attendance is mandatory. There will be no makeup 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. This being said, due to COVID19, **anyone feeling ill should not come to lab**. In the event that you miss class due to illness or other university-approved absences (SRSU athletic events, death in the family, illness, etc; see

<https://www.sulross.edu/sites/default/files//sites/default/files/users/docs/stulife/academic.pdf> for further details) do contact your instructor via email to request missed material.

**Students cannot miss exams** unless they have a documented, university-approved excuse; in these cases, the instructor needs to be informed **more than 24 hours in advance** of the exam. Any missed exams must be taken within one week of the original exam.

**Lab behavior:**

Please:

- \* *do* wear a mask
- \* *do* wear gloves when asked to do so (if you can wear a Small glove, please do as we are low on other sizes)
- \* *do* disinfect things that you touch
- \* *do* wear closed-toes shoes and tie your hair back
- \* *do* keep 6ft of distance between you and your classmates and instructor
- \* *do* be on time
- \* *do* turn off your phone and put it away; phone use is distracting to your peers and the instructor
- \* *do* feel free to take notes on a laptop but don't use your laptop for anything else, it's distracting to others
- \* *do* ask relevant questions and discuss topics in a civil and respectful manner
- \* *do not* talk to your classmates while your instructor is lecturing unless asked to discuss a topic with your peers
- \* *do not* sleep, eat or drink in lab

**Academic dishonesty and late or missed work:** All assessments should be your own work, unless it is a pair/group assignment. Any evidence that the work is copied from a peer or the internet or any other source will result in a zero for the assessment and you will be reported to the university for Academic Dishonesty. I do not accept late work.

**Students cannot miss exams** unless they have a documented, university-approved excuse; in these cases, the instructor needs to be informed in writing **>24 hours in advance** of the exam to allow time for the instructor to prepare a make-up exam. The make-up exam must be taken within 6 days of the original exam.

**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.

**Tentative Schedule** (subject to change)

<b>Date</b>	<b>Lab</b>	<b>Lab Manual Chapter</b>	<b>Lab Topic</b>
<b>Jan 14</b>			No Lab
<b>Jan 21</b>	1	1	Introduction to the microscope - ONLINE
<b>Jan 28</b>	2	1, 5	Lab Safety, Koehler Illumination, Microbiology of pond water, Morphology of chloroplasts & cyanobacteria
<b>Feb 4</b>	3	6, 8	Ubiquity of bacteria, aseptic technique, SEM lab
<b>Feb 11</b>	4	9-12	Pure culture techniques, smear preparation, simple staining (methylene blue), negative staining
<b>Feb 18</b>	5	13, 14	Finish previous lab, gram staining, capsular staining
<b>Feb 25</b>			<b>Midterm Exam</b>
<b>Mar 4</b>	6	15-17	Spore staining, acid-fast staining, motility determination
<b>Mar 11</b>			<b>No Lab - Spring break</b>
<b>Mar 18</b>	7	24, 34-39	Finish previous lab, effects of oxygen on growth, morphological study of unknown bacterium, cultural characteristics
<b>Mar 25</b>	8	32, 34-39	Oxidation and fermentation tests, use of Bergey's manual, pouring plates, efficacy of disinfectants
<b>Apr 1</b>	9	7, 34-39	Fungi, Unknown Project
<b>Apr 8</b>	10	7, 34-39	Fungi cont'd, Unknown Project
<b>Apr 15</b>	11	34-39	Finish Unknown Project - Lab Cleanup
<b>Apr 22</b>			<b>Final Exam</b>