

## MBIO 3032 Bacteriology Laboratory

N331, Spring 2020

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<b>Office hours</b>	W/F 1:00 PM - 2:00 PM or by appointment <a href="mailto:ckang1@csustan.edu">ckang1@csustan.edu</a> <ul style="list-style-type: none"><li>- Best method to contact instructor</li><li>- Please include your name and the course number in the subject line.</li></ul>
<b>Webpage</b>	<a href="https://blackboard.csustan.edu/">https://blackboard.csustan.edu/</a> (lecture notes, announcement, etc.)

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### Course description

An introduction to the principles and basic laboratory methods employed in working with bacteria.

### Course objectives

1. Gain hands on experience with basic methods of culturing, identifying, and handling of bacteria (aseptic techniques, streak plating, staining methods, microscopy, etc.)
2. Apply laboratory skills acquired to isolate, culture and identify an unknown mixture of bacteria.
3. Gain skills in working with others as a team

### Course Requirement

*Prerequisite:* MBIO 3010, or concurrent enrollment.

### Required Text

"Laboratory Experiments in Microbiology" by Johnson and Case, custom edition. You must purchase the lab manual and always bring it to lab. No photocopy will be accepted. Any student who does not have the lab manual at the beginning of the second lab period will be dropped from the course.

\*Do NOT use any lab notebook that has already been written in!

### ADD/DROP Policy

The add/drop policy for this course is the same as the university add/drop policies. **Feb 21** is the census date.

### Grading policies

1. **Academic Dishonesty and Misconduct:** Exams and reports are indicators of individual performance. Discussion of lab results with lab partners is encouraged but lab reports must in your own words. Copying another student's exam, quiz, or lab report (even if you are members of the same lab group), using a notebook that is written in or handing in lab reports for lab exercises you missed all constitute cheating. There is zero tolerance for cheating. Cheating in any capacity in this class will result in penalties ranging from a minimum of a zero on the assignment or exam to a maximum of expulsion from California State University, Stanislaus as indicated by the official University Policy regarding dishonesty and misconduct. Taking out a cell phone during a quiz/exam is considered cheating, your quiz/exam will be confiscated, and you will receive a grade of F.

2. **Lab attendance is mandatory:** Laboratory consists of hands-on activities and therefore requires your presence. Attendance will be recorded during each lab period. There will be no make-up labs! If you missed a lab, you are still responsible for the information, but you may not submit a lab report for that lab experiment for a grade (handing in a lab report for exercises you missed constitutes cheating because you copied the information from someone else's report). By enrolling in this class, you are committing to being in the class during the hours when it is in session so do not make appointments during class time. Excessive tardiness or leaving early will be marked as absences. More than 2 absences will result in **an F grade**, so please save your absences for when you need it. Please read all lab exercises before lab time and arrive on time for all labs.

**NOTE:** If you are immunocompromised for any reason or are pregnant, you need to check with your physician before continuing in the class. If either of these cases applies to you, you need to provide a note from your doctor stating that it is ok for you to participate/be in a microbiology lab. I will be glad to provide a list of organisms and reagents used if you would like one.

3. **Make-up exams given only under extenuating circumstances and with proper documentation:** Make-up exams may be different than exam given to the rest of the class. Exams must be made up within one week of the missed exam. It is the responsibility of the student to make the necessary arrangements with the instructor.

4. **Total possible points for course = 400.**

a. Two Exams on lab activities = 200 points

- Mid-term: practical exam (100 pts)

- Final on lab activities (100 pts)

b. Five quizzes (50 points/5 quiz)

- Will be given throughout the semester (dates may change from schedule below)

- No make-up for quizzes you missed during your excused/unexcused absence, or tardiness.

c. Lab notebook (50 pts)

- Grading Deductions:

- Pages are not stapled.

- Incomplete, i.e. does not include all data, relevant information, etc.

- Excessive incorrect/incomplete answers indicating lack of thought and effort.

- Lack of detail in drawings.

- Failure to follow guidelines and instructions

- Sloppiness.

d. Bean Beetle Microbiome project (100 points)

- Preliminary reports (60 pts)

- background and hypothesis (20 pts)

- experimental design (20 pts)

- data analysis and new questions (20 pts)

- Final report (40 pts)

**\*Absolutely no late assignments will be accepted.**

## 5. Grading will be based on a percent scale:

93-100 = A, 90-92 = A-, 87-89 = B+, 83-86 = B, 80-82 = B-, 77-79 = C+, 73-76 = C, 70-72 = C-, 67-69 = D+, 60-66 = D, < 60 = F

**Note: The instructor reserves the right to reduce your grade due to excessive absences and/or tardiness.**

### Expectations of students for MBIO 3032 Bacteriology Laboratory:

1. Come to lab prepared: We do a lot of different stuff in these labs and sometimes you will have many experiments going on at the same time but the lab experiments can be finished in the allotted time if you read the laboratory exercises and have a reasonably good idea of the game plan for a particular lab before coming to class.
2. You are responsible for all lab reports for the experiments unless otherwise notified. On the occasion that the entire experiment is not performed, or changes have been made in the technique or organisms used from those listed in your lab manual, you are responsible for the part that is performed and noting the changes in your lab manual.
3. Copy the board or overheads. This is a synopsis of what's going on in lab including changes that were made to lab protocols. The lab exercises may seem self-explanatory while you're in lab but when you're at home trying to work on your lab notebook you may find it useful to have all the material in your lab book. Also some experiments may take several days to complete, so you need to keep organized, accurate notes of what you have done.
4. Stay on top of the assignments – organizing and completing your lab notebooks as you go. If you wait too long you may forget what you did or what the results were.
5. Work with and communicate with me – do not hesitate to ask any question. If you are unsure about something, ask before you do.
6. Work with and communicate with your lab partner – when working as a group, it's easy to fall into the "I thought you were doing that" syndrome, so be clear about who is doing what. Furthermore, even when you are working with others on an experiment you must also be familiar with all parts of the exercises.
7. Arrive on time – You may miss quizzes and/or important instructions for the lab exercises, and it is also disruptive to the class. Partners will arrive together and leave together, especially important for the exercises for which you will be working in groups.
8. No use of cell phones, computers, cameras, iPods, or MP3 players during lab – All should be put away in backpack; turn all cell phones and pagers off before coming to lab. If you have an emergency situation and are waiting for a call, please let me know at the beginning of lab. If you need a calculator, bring one. You will not be allowed to use your phone as a calculator or for taking photos.
9. Obey all laboratory safety rules!
  - a. No food or drink in lab. Water bottles are to be inside of backpacks only.
  - b. Closed toed shoes must be worn in the lab, students without closed toe shoes will be asked to leave and this will constitute an absence.
10. Have fun, have a good attitude and put in your best effort!

### **IMPORTANT!**

**You have to take the Safety Quiz available on Blackboard and report back to me (more about this in the first class). Blackboard: [BioLabSafety-2019-2020-SP: BioLabSafety](#)**

## Bacteriology Lab schedule

Date		Subject	Lab exercise(s)
Jan	28	Introduction, Supply drawer check in General Lab rules and instructions Microscope assignment and review (Carrie)	
	30	Use and Care of the Microscope Examination of Living Microorganisms	2, 3
Feb	4	Microbes in the environment Transfer of bacteria	4, 5
	6	Microbes in the environment (Cont'd) Transfer of bacteria (Cont'd) <b>Introduction to BB project (Develop questions - students must start culture before 2/27)</b>	
	11	Staining Methods: simple and negative stains <b>Quiz #1</b> (intro-ex. 5);	6, 7
	13	Gram stain	8
	18	Staining Methods: Special stains (endospore)	9
	20	Isolation of Bacteria Special Media for Isolation	10, 11
	25	Microbial Metabolism I and II, <b>Quiz #2</b> (ex. 6-11)	12, 13, 14, 15, 16
	27	Microbial metabolism I and II (cont'd)	
Mar	3	Microbial Growth	17 + supplement
	5	<b>Quiz #3</b> (ex. 12-16) Microbial Growth (cont'd), review for mid-term	
	10	<b>Mid-term Exam (100 points) – up through Microbial Growth</b>	
	12	Control of Microbial Growth I (physical methods)	18, 19
	17	Control of Microbial Growth I (cont'd), Control of Microbial Growth II	20, 21, 22
	19	Microbiology of Water	23, 24
	24	<b>Spring break</b>	
	26	<b>Spring break</b>	
	31	<b>Cesar Chavez Day</b>	
Apr	2	<b>Quiz #4</b> (ex. 17-19), <b>Lab Notebook (50 pts) is due.</b> <b>Start Microbiome of Bean Beetle Project</b> Introduction to insect microbiomes, bean beetles, experimental design, & culturing microbes	
	7	DNA extraction, phenotypic assessment of microbes, & culture-based PCR of selected colonies	
	9	<b>Quiz #5</b> (ex. 20-24), DNA extraction, phenotypic assessment of microbes, & culture-based PCR of selected colonies	
	14	Electrophoresis and Iteration Day for failed culture-based PCR	
	16	Electrophoresis and Iteration Day for failed culture-based PCR	
	21	Introduction to bioinformatics & analysis of colony sequencing data	
	23	Introduction to bioinformatics & analysis of colony sequencing data	
	28	Introduction to community analysis, phenotype and colony sequence analysis	
	30	Introduction to community analysis, phenotype and colony sequence analysis	
May	5	Community analysis of sequencing data	
	7	Community analysis of sequencing data	
	12	<b>Extra day for finishing up Bean Beetle project</b>	
	14	<b>Final Lab Exam (100 points)</b>	

Note: The schedule and procedures in this course are tentative and subject to change in the event of extenuating circumstances.