

BIMM 121- Laboratory in Microbiology - *Spring 2024 edition*

Course Syllabus*

* tentative.

Instructor: Giorgia Pirino, Ph.D.

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Please include BIMM121, your full name, ID, and IA name in all emails to Dr. Pirino. Please present your questions about course material in person during lab, not by email.

Instructional Assistants: Payton Jensen (pkjensen@ucsd.edu) and Theodore Vuong (tquuong@ucsd.edu)

Course Time as in the Schedule of Classes

Lecture: Wednesdays & Fridays, 8:30 AM-9:50 AM in Tata 2501

Lab B01: Wednesdays & Fridays, 10:00 AM-12:50 AM in Tata 2101; IA: Payton

Lab B02: Wednesdays & Fridays, 10:00 AM-12:50 AM in Tata 2102; IA: Theo

Course Description

This course is designed to illustrate processes central to microbiology and familiarize students with skills required for handling, working with, and characterizing different microorganisms. Emphasis will be on microbial ecology, microbial genetics, microbial physiology, and microbial evolution. Through inquiry-based experiments, students will be able to appreciate microbes' involvement in health, industry, the environment, and everyday life. Throughout the course, students will learn how to work with live microbes at the bench as well as scientific reasoning and writing, and will analyze microbial genomes via bioinformatics.

Textbook (required)

BIMM121 Lab Manual, author Katherine Petrie, Spring 2024. Available at the UCSD Bookstore.

Course Website/Canvas

This course is in Canvas (<https://coursefinder.ucsd.edu>) and should appear in your Canvas account in week 1. We will use Canvas to post information on experiments, homework, exams, schedules, readings and practice material, experimental data, assignment guidelines, etc. This website will also be used to post any announcements that pertain to the entire class. Please check the site regularly (enable Canvas notification) and update yourself on the information provided.

Lectures & Lab

1. Attendance in lecture is not mandatory. However, you are encourage to attend. Since the lectures are held in Tata 2501, the classroom does not have podcast.
2. **Labs are mandatory**, thus, *lab attendance is required* and will contribute to your grade. You will document each lab's accomplishments in a daily lab notebook, and some of the lab assignments are based on the work done in lab throughout the quarter. The labs are set up for groups of two or more, thus, your absence will place an unnecessary burden on your partner. *There are no make up labs and you will not be allowed in the lab on non-lab days or in the other Micro lab sections*, although you may be asked to make up the work from the day you missed.
3. If you are ill on a lab day or have an emergency, e-mail instructor, IA, and lab partner before the start of the lab. If you are ill enough to miss lab, you must go to the student health center and provide documentation of your illness *within* the same day. No retroactive documentation will be accepted after 24 hours of missing a lab.
4. All absences without prior notification/permission and the appropriate paperwork will be considered unauthorized.
5. If your reason is approved by Dr. Pirino (i. e. dire emergencies, illness that prevents you to attend the lab, hospitalization), you will be given an alternative way to make up the points missed in lab. IAs cannot excuse you for missing a lab, only Dr. Pirino can.
6. Concurrent enrollment in another class, conflicting exams with other classes, or graduate school/job interviews do not constitute a reasonable excuse, and will be considered unexcused absences.
7. Students who are at least 10 minutes late to lab, leave the lab meetings before their team finishes the work for the day, or before the IA dismisses the class, will be counted absent for the day (unexcused absences). Any *unexcused* absence will result in a 40 point-penalty.
8. If illness or family emergencies force you to miss too many labs, consider taking the course in a different quarter.

Course Point Breakdown	Points	%
Professionalism & Citizenry	12	3
Lab Practicum	20	5
Lab Notebook	48	12
Concept videos	20	5
Oral Presentations	40	10
Homework assignments	100	25
Exams	160	40
Total Points for the course	400	100

Final grades are calculated on a straight scale and are not curved, unless it is necessary to normalize scores by section.

Grading scale: Please assume this class is NOT curved and use the raw score (rounded up to nearest 0.01%) that you receive to calculate your final letter grades.

For example, <60/100 is a F; <70/100 is a D; 70/100 is a 70 or C-; 73/100 is a 73 or C; 77.5/100 is a 77.5 or a C+; 80/100 is an 80 or B-; 83/100 is an 83 or a B; 87.5/100 is an 87.5 or B+; 90/100 is a 90 or A-; 93/100 is a 93 or A.

Lab equipment:

For this lab you will need to purchase:

- A lab coat and proper lab attire. Failure to do so will consist in subtraction of points (at least 5% per lab) and students will be sent home for the day. No exceptions!
- Eye protection (safety glasses preferred, standard prescription eye glasses are not sufficient) must be worn all the times while in the lab, unless otherwise instructed.
- A paper notebook with carbon or carbonless (see below)

Lab equipment is required starting with the first lab (no exceptions).

Lab notebook:

Complete and organized lab notebook entries are a critical part of effective work in a research lab. As such, we expect students to practice good lab notebook entry habits. A spiral bound or composition notebook with carbon (or carbonless) is OK. If you already have a notebook with carbon that you have used for another class, you may use it for this class, as long as there are enough blank pages left.

Please follow the guidelines posted in the lab manual. We will have 8 notebook checks, but only the best 7 scores will count toward the final grade. *Notebook checks will be unannounced.*

Reading for the lab

Reading ahead of the course:

I will assume that you all have a basic understanding of, and reasonably good memory of the following from lower division biology or from high school. If you don't remember, you may wish to read ahead:

- Scientific Method & experimental design: brush up on this concept – there are several online sites that do a good job of explaining dependent, independent, and controlled variables, the difference between a control experiment/group and an experimental group, how to represent data and how to draw conclusions from data.

- Definition of microbes and an understanding of the different groups of microbes (e.g. bacteria, fungi, viruses). You are not required to memorize all the names – you should, however, have at least a basic idea as to the types of organisms included in each category
- Eukaryotic vs. prokaryotic cells differences
- Metabolic pathways
- Metric system

Reading during the course:

- Read the manual before coming to lecture and lab.
- When you are in the classroom, I will go over the basics as required, any fundamental concepts that you do find or might find difficult, that are important, or that are particularly exciting or newsworthy (I will try my best to synchronize lectures with the lab whenever possible)
- Then, you will go to lab and actually see all those experiments and concepts in action.
- At home, after lab, go back and read your notes in light of the lecture and lab work and you will find that it becomes very clear, since you are already familiar with most of it.

As often as possible, I will give you questions/problems to think about that should apply the concepts you learned in class. Thinking about and attempting to answer these questions and participating in any classroom/lab discussion is the best practice you can have for exams, lab reports, and practicing science in general.

Lab Performance, Lab Participation & Lab Practicum

Your participation and professionalism will be evaluated throughout the course, which includes, but is not limited, to one-on-one interactions, team work, mastering of lab techniques, electronic communication, contributing data to class data sets according to deadlines, asking questions, answering questions, and follow-up conversations on grades, if apply.

Student evaluations will be based on a series of criteria. Some examples are listed below:

- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities and contributing to an inclusive learning environment
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Clarifying course material that facilitates deeper learning
- Reporting errors or problems in class, on assignments, or for other course material
- Arriving on-time to lab sessions and being prepared to work in lab
- Contributing equally to team work

- Asking questions when other teams present their work in the classroom
- Before asking questions, verifying that the information is already available or will eventually be known
- Being respectful of IAs, instructor, and classmates, either in person or online
- Following the directions or requests from the instructional team
- Pre-lab preparation
 - Careful management of lab procedures (e.g., sterile technique, proper waste disposal, experimental procedures, dilutions, etc.)
 - Ability to adapt to unforeseen procedural changes
 - Caliber of thinking before asking questions
 - Scientific approach (e.g., proper use of notebooks, experimental design)
 - Accuracy
 - Independence
 - Safety consciousness, including proper PPE
 - General neatness in lab
- Overall professionalism

Lab techniques will be evaluated in class. These competency tests (except the formal lab practica) will be unannounced.

Specifically, subjective student evaluations will be based on the following criteria:

1. Pre-lab preparation
2. Careful management of lab procedures (e.g., sterile technique, proper waste disposal, experimental procedures, dilutions, etc.)
3. Ability to adapt to unforeseen procedural changes
4. Caliber of thinking before asking questions
5. Scientific approach (e.g., proper use of notebooks, experimental design)
6. Accuracy
7. Independence
8. Team work
9. Safety consciousness, including proper PPE
10. General neatness in lab
11. Arrive to lab on time
12. Overall professionalism

Please note: **You will be expected to get into the habit of methodical, well-planned and organized work by mid-term. This will help you with the experiments in the second half of the course.**

Concept Videos

Students enrolled in BIMM121 may make 2 videos as a group on specific topics assigned by the instructor one week in advance (see lab schedule). After the deadline, the entire class will have access to the videos and related questions on the topics will be asked during exams. Students who make the videos will receive 40 points (20 points per video). No credit will be given to students who do not make concept videos (no points for watching only). Groups will be the same as the lab groups.

Lab Practicum

Lab practicum will be held during regular lab (date to be announced). All students will participate in hands-on exercises (aseptic techniques and T-streaks) requiring skills obtained while performing various experimental procedures throughout the quarter.

Exams

There will be 2 exams throughout the course (see below). Exams will consist in true/false and fill in the blank, and mostly short answer-questions with an emphasis on lab topics. Students may use the lecture slides, learning outcomes posted for each lecture, videos, and lab manual as a guide to see what topics to focus for the exams. *Exams require understanding of a topic and ability to apply them, not just memorization (lecture slides alone are not sufficient to do well in the exams).*

There are no make up exams. If a student misses an exam for unforeseen circumstances, such as a dire emergency (illness, hospitalization, flooding), an *oral exam* may be granted. No other accommodations will be granted. No exceptions!

Exams

Exam 1: Fri May 3 (Week 5) @8:30-9:50AM

Exam 2: Wed May 29 (Week 9) @8:30-9:50AM

Oral Presentations

Presenting ideas and results in an oral format to an audience of peers is a valuable skill to have. Each team of four students will be responsible for providing one 15-minute presentation (June 5; specific details will be provided in class). Each member of the team will receive the same grade for the oral presentation, assuming that all of the team members contributed equally. The oral presentations will be evaluated by the instructor and IAs.

Homework/writing assignments - Deadlines and Submission:

1. All homework/writing assignments will be submitted as electronic copies to Canvas in a Word format (no other format will be accepted, unless otherwise stated). All homework assignments must be submitted on time to be eligible for full credit. See lab schedule for specific dates.
2. **All assignments submitted after the deadline will receive a penalty. Any submission within the first hour past the deadline is automatically late and loses 20% of the points. Any homework submitted after the first hour past the deadline and within 24 hours from the deadline will lose 50% of the points. No homework will be accepted after the second calendar day. Sudden internet/computer issues do not constitute a reason for receiving an exception, since assignments are open for many days before the deadline.**This policy applies to any assignment in the course.
3. It is your responsibility to verify that the submission has been successful. Do not procrastinate, since unforeseen circumstances may occur (computer problems, illness, Canvas not working, etc.). Check the deadline of the assignment submission and make sure you adhere to it. *Students agree that by taking this course all required assignments would be reviewed for textual similarity by Turnitin.com for the detection of plagiarism as well as AI detector sites. All submitted assignments will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers; student names will never be stored in the Turnitin database. Use of the Turnitin.com service is subject to the terms of use agreement posted on the Turnitin.com site.*

Homework# (HW)	Description	Points (100 total)
HW 1	Scientific Method	15
HW 2	Microbes as Models	35
HW 3	Microbes & Food	50

Regrade Requests:

All regrade requests should be submitted in writing to Dr. Pirino within 5 days of receiving the graded material. Please follow the regrade policy in Canvas.

Lectures

All the lectures will be held in Tata 2501. The classroom does not have podcast. I will try to record them, but I cannot guarantee their quality. Thus, I strongly encourage you to attend.

Statement on Academic Integrity: Integrity of scholarship is essential for an academic community. The University expects that both faculty and students will honor this principle and in so doing protect the validity of University intellectual work. For students, this means that all academic work will be done by the individual to whom it is assigned, without unauthorized aid of any kind. The consequences of being caught cheating can be severe. Information can be found here: <http://www.ucsd.edu/current-students/academics/academic-integrity/index.html>

Students are expected to do their own work, as outlined in the UCSD Policy on Integrity of Scholarship: <http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>

Academic misconduct will NOT be tolerated. Students suspected of Academic Integrity (AI) violations on exams and/or homework will be reported for AI violations. Cheaters will receive a failing grade on the assignment, and/or in the course. They may also be suspended from UCSD pursuant to University guidelines.

All class material, such as syllabus, readings, homework, scientific articles, lecture slides, etc. are copyrighted and cannot be posted to websites and/or distributed without instructor's approval for any reason. Students that sell and distribute course materials not only violates the student code of conduct, but also violates UC's 2005 policy on the Use of Recordings of Course Presentations: <http://copyright.universityofcalifornia.edu/resources/recorded-presentations.html> .

Academic misconduct includes but is not limited to:

1. **Cheating**, such as using "crib notes", copying answers from another student during the assignments, or forging assignments.
2. **Plagiarism**, such as using the writings or ideas of another person, either in whole or in part, without proper attribution to the author or the source. Copying anything from any source is plagiarism if the source is not clearly cited. Quotations should not be used. Plagiarism is stealing someone else's ideas and presenting them as your own.
3. **Collusion**, such as engaging in any unauthorized collaboration on exams or assignments, completing for another student any part or the whole of an exam or assignment, or procuring, providing or accepting materials that contain questions or answers to an exam or assignment to be given at a subsequent time.

Student Responsibility:

Students are expected to complete the course in compliance with the instructor's standards. No student shall engage in any activity that involves attempting to receive a grade by means other than honest effort; for example:

- No student shall knowingly procure, provide, or accept any unauthorized material that contains questions or answers to any examination or assignment to be given at a subsequent time.
- No student shall complete, in part or in total, any examination, or assignment for another person.

- No student shall knowingly allow any examination or assignment to be completed, in part or in total, for himself or herself by another person.
- No student shall plagiarize or copy the work of another person or internet sources and submit it as their own work.
- If any work is plagiarized from another student, both students will be reported to the Office of Academic Integrity, even if one of the students has graduated already. Remember that most graduate schools check the undergraduate records for any indications of dishonesty before awarding a degree.
- No student shall alter/forged graded class assignments or examinations and then resubmit them for regrading.
- No student shall submit the same material in more than one course without prior authorization.
- No student shall post class material on online websites without instructor's approval

Note: for any assignments completed at home, "open books/notes" does not mean that you can get other people - whether those people are friends, family or some "tutor" or "freelancer" on a website - or artificial intelligence to complete the assignment for you . Stay away from sites and tools (e.g., Chegg, Coursehero, ChatGPT, CoPilot, etc.) that will do your work for you - such actions will undermine honesty and fairness, violate the trust of me and your peers, and result in an academic integrity violation and a report to the Academic Integrity Office. Remember - I care about what you know and can do, if you're learning; I don't care what someone else or something knows or can do. If you're not sure about which tools are appropriate for you to use, ask!

Statement on Office for Students with Disabilities (OSD): To receive accommodation, students must present or email their "Authorization for Accommodation" (AFA) form provided by the Office for Students with Disabilities (OSD) to the instructor.

Considering that students will complete homework writing assignments from home, and guidelines and needed data will be available for several weeks, no extra time will be given.

For the 2 exams, exams must be held around the same time as the rest of the class, must end at the same time as the rest of the class (9:50AM), and must be taken in person. No exceptions!

Discrimination and Harassment: The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating

violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, <https://ophd.ucsd.edu/> , or <http://ophd.ucsd.edu/report-bias/index.html>

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

CARE at the Sexual Assault Resource Center: 858.534.5793 | sarc@ucsd.edu | <https://care.ucsd.edu>

Counseling and Psychological Services (CAPS): 858.534.3755 | <https://caps.ucsd.edu>

Final Notes (courtesy of Dr. Gus)

Every technician/researcher who works in a lab is expected to come to the lab prepared, with a thorough understanding of the experiments they are about to conduct. This is basic lab competence, and to do otherwise would be negligence. It requires advance study, before arriving in the lab. Nearly all the students in this class are graduating in June. Think of this as “on the job training!”.

Note: *Just coming to lab does not ensure that you will get a passing grade in the class. You must hand in or submit all assignments and get a passing score (70%, cumulative) on those assignments to get a C- in the class.*

Letters of Recommendation

I write letters of recommendation only to students who have taken at least two courses with me and have earned an A in both classes.