BIMM 121- Laboratory in Microbiology
Course Syllabus

Instructor: Giorgia Pirino, Ph.D. Email: gpirino@ucsd.edu
Please include BIMM121 your full name, ID, and IA name in all emails to Dr. Pirino
Office Hours: Monday, 11:00 AM-12:00 PM in Tata 3102. You are encouraged to take advantage of office hours. Office hours function as a relaxed forum to ask questions and discuss course content. Please present your questions regarding the course material in person, not by email. I cannot guarantee an answer to your email, unless it is an urgent issue. *Office Hours will start in week 2.*

Instructional Assistants: Andrew Quach (a6quach@ucsd.edu), Kevin Trieu (kptrieu@ucsd.edu), David Tran (dstran@ucsd.edu) & Noelle Ying (nying@ucsd.edu)

Course Time and Location
Lecture: Mondays & Wednesday, 5:00 PM-6:20 PM in Center Hall 113;
Lab A01: Wednesdays & Fridays, 9:00 AM-11:50 AM in Tata 2101;
Lab A02: Wednesdays & Fridays, 9:00 AM-11:50 AM in Tata 2102;
Lab A03: Wednesdays & Fridays, 12:30 PM-3:20 PM in Tata 2101;
Lab A04: Wednesdays & Fridays, 12:30 PM-3:20 PM in Tata 2102.

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 receive training in working with live microbes at the bench as well as scientific reasoning, scientific writing, and analyzing their genomes via bioinformatics.

Textbook

Lab manual is available at the UCSD Bookstore for purchase ($28).

Course Website/Canvas & Podcast

This course is on Canvas (https://coursefinder.ucsd.edu) and should automatically appear on your Canvas account as soon as you register for the class. We will use Canvas to post information on experiments, exams, schedules, readings and practice material, experimental data, report guidelines, etc. This website will also be used to post any announcements that pertain to the entire class. Please check the site regularly and update yourself on the information provided. The lectures are podcast (https://podcast.ucsd.edu).

Course Point Breakdown	**Points**	**%**
Lab Competency	50	7.1
Lab Practicum	10	1.5
Lab Notebook	60	8.6
Class Participation	50	7.1
Class discussion/in class activities (25 points)		
iClickers (25 points)		
Homework	280	40
Oral Presentations	50	7.1
Midterms	200	28.6
Total Points for the course	**700**	**100**

Extra credit will be available (TBA).

Grading Scale

Letter Grade	**%**	**Letter Grade**	**%**
A	**(93.0-100%)**		
A-	**(90.0 - 92.99%)**	**B+**	**(88.5 - 89.99%)**
B	**(83.0 - 88.4%)**	**B-**	**(80.0 - 82.99%)**
C+	**(78.5 - 79.99%)**	**C**	**(73.0 - 78.4%)**
C-	**(70.0 - 72.99%)**	**D**	**(60.0 - 69.99%)**
F	**(X < 60%)**		

Final grades are calculated on a straight scale and they are not curved. IAs will alternate grading of homework among the lab sections. If a midterm exam is graded by IAs, each IA will grade the same questions consistently for all the exams. This grading system allows fairness among the lab sections and usually excludes the need of normalizing final grades among lab sections.

Regrade Requests:

All regrade requests should be submitted in writing *within 5 days* of receiving the graded material. Please check the regrade policy on Canvas for more information.

Equipment:

For this lab you will need to purchase:

- ➢ A lab notebook (bound notebook, regular or spiral bound with carbon). Carbon notebook are necessary. Loose-leaf binders not allowed. You may use an old one as long as you have enough empty space for this course
- ➢ A lab coat and proper lab attire. Failure to do so will consist in subtraction of points (at least 2 points 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 Sharpie permanent marker pen, preferably fine point (not extra fine or regular; avoid red)

Attendance and Absences:

1. Your attendance is required at EVERY lab and through the entire lab period, until all the experimental work for the day is completed.
2. Absences will NOT be treated lightly. Attendance in the lab is **mandatory**. The labs are set up for groups of two or more and 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. Documentation will be required for all unavoidable absences.
4. If you are likely to have interviews for job/graduate school, presentations/conferences etc., please schedule them on non-lab days or take the lab in a different quarter or section. These absences will be considered unexcused.
5. All absences without prior notification/permission and the appropriate paperwork will be considered unauthorized.
6. 5**0-point penalty** for the first unauthorized, unexplained absence from the lab. If there is a second such absence, you will be asked to drop the course or will be given an F.
7. 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.
8. You need to inform both the IA and the instructor of any proposed absence as well as your team members. Only the instructor can decide whether or not the reason for an absence is sufficient to call it an authorized absence.
9. Tardiness in lab will impact your grade. You will miss important announcements and instructions. This puts an undue burden on your partner. If you are late more than once, you may be asked to drop the course.

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 bio or form high school. If you don't remember, you may wish to read ahead:

- Scientific Method: brush up on this concept – there are several online sites, including Wikipedia, that do a good job of explaining dependent, independent, and controlled variables as well as the difference between a control experiment and a regular experiment.
- 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.
- 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)
- Then you will go to lab and actually see all those experiments and concepts in action.
- Then 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 midterms, lab reports, and practicing science in general.

Lab Performance, Lab Participation & Lab Practicum

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

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. Safety consciousness, including proper PPE
9. General neatness in lab

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

Lab Practicum

Lab practicum will be held during regular lab (date to be announced). All students will participate in a hands-on exercise requiring skills obtained while performing various experimental procedure throughout the quarter.

Lab **Notebook**

A spiral bound or composition notebook with carbon is OK. **Please follow the guidelines posted on Canvas, under Files, in the folder "Lab Notebook"**, NOT the guidelines found in the lab manual. We will have 7 notebook checks, but only the best 6 scores will count toward the final grade. *Notebook checks will be unannounced.*

Midterms

There will be 2 midterm exams throughout the course (see schedule). Midterm 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. Midterm exams require understanding of a topic and ability to apply them, not just memorization. T*here are no make up exams.*

Homework / Lab report Deadlines and Submission:

1. **A**ll homework will be submitted as electronic copies to Canvas, which will automatically submit them to Turnitin.com. **All homework 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.** This policy apply to any assignment in the course

2. It is your responsibility to verify that the submission has been successful. Do not procrastinate, since unforeseen circumstances may occur (computer problems, illness, etc.). Check the deadline of the homework submission and make sure you adhere to it. *Students agree that by taking this course all required papers would be subject to review for textual similarity by Turnitin.com for the detection of plagiarism. All submitted papers 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.*

Assignments

Homework# (HM)	Description	Due date		Points
HM 0	Dilutions	Fri Jan 17	@ 9AM	20
HM 1 - Part 1	Microbes & Health	Sat Feb 1	@11:59PM	35
HM 2	Microbial Zoo	Sat Feb 8	@11:59PM	35
HM 3 - Worksheet	Microbes & Industry	Sat Feb 15	@11:59PM	30
HM 3	Microbes & Industry	Thu Mar 5	@11:59PM	70
HM 1 - Part 2	Microbes & Health	Tue Mar 17	@11:59PM	90
Total				**280**

Midterm Exams
Midterm 1 (in lecture): Mon Jan 27 100 points
Midterm 2 (in lecture): Mon Mar 9 100 points

Oral Presentations

Presenting ideas and results in an oral format to an audience of peers is a valuable skill to have. As a follow-up component for the microbes & environment project, each team of students will be responsible for providing a 15 minute presentation in the last week of lab (specific details will be provided in class). Each member of the team will receive the same grade for the oral presentation. The oral presentations will be evaluated by the instructor, IAs, and peer reviewed by fellow students.

Class Participation
Participation in class is very important. The classroom should be active all week, not just during class hours. Student class participation should incorporate responses of their peers, their opinions, pertinent information regarding subjects covered in class, from microbiology topics that students have read, and examples from their experience. The distinguishing feature of a well done class discussion might include an objective and critical analysis of lecture notes, reading assignments and what you have experienced. *Students should seat next to their team members*

during lecture to facilitate discussion. Class participation points will be assigned via 2 ways: iClickers and class discussion (see below).

Class Discussion
Students will receive points for participating, which implies discussion within their team and other classmates, NOT for giving a correct answer. In the spirit of scholarly discussion, the instructor expects responses and viewpoints that agree and disagree with others as long as they apply to the topic and are respectful. In our learning model, the heart of active learning occurs through discussions that help students test their ideas, reinforce what they have learned, and share resources with others in the class. Students **who participate in discussion** (see above), **in class activities**, **and are present for 85%** of the lectures will receive full credit. Participation in discussion will be evaluated by IAs and instructor.

iClickers
To facilitate class discussion, we will use iClickers during lecture (frequency AA). Students will receive points for clicking, NOT for giving a correct answer. Students who participate in iClickers and are present (by clicking) for at least 85% of the lectures will receive full credit.
We will start recording iClickers participation in week 1. iClickers are available for purchase at the UCSD bookstore. I strongly recommend the i>Clicker 2 as it is very convenient. Older versions of i>Clicker are acceptable if you already have one, but you may need to reset your clicker every time it goes into sleep mode. **Do NOT count on sharing a clicker with another student in the same quarter as the software only records scores for one student, even if both of you are in different classes. After registration, your iClicker is linked to your name on the class roster. Therefore, *sharing iClickers is illegal.***

Regrade Requests:
All regrade requests should be submitted in writing within 5 days of receiving the graded material. Please check the regrade policy on Canvas for more information. The final paper won't have a regrade, since it won't be given back to students.

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. Any student who engages in suspicious conduct will be confronted and subjected to the disciplinary process. Cheaters will receive a failing grade on the exam or 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 exam, or forge 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. Plagiarism is stealing someone else's ideas and presenting them as your own.
3. **Collusion**, such as engaging in 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.

Electronic Devices: Textbooks, notes, cell phones, pagers, laptop computers, smartwatches, and all other electronic devices must be off and stored out of sight during exams. The use of these devices during an exam is considered an act of academic dishonesty and will be dealt with accordingly. Also, during class and lab students cannot surf the web, use their cell phones, or do anything not related to the class, unless otherwise instructed.

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 his or her own work.
- **If any work is plagiarized from that of 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/forge graded class assignments or examinations and then resubmit them for regrading.
- No student shall submit substantially the same material in more than one course without prior authorization.

Please sign the online pledge to UCSD academic integrity through the following link by Monday of week 1: https://academicintegrity.ucsd.edu/forms/form-pledge.html

The link is also available through Canvas, under the academic integrity on the Canvas menu (on the left of your screen). Click on "Academic integrity", open the URL, from the menu on the home page (across the top) click on "Form", scroll down, then click on "Take the Pledge". After completing the pledge, you will receive a confirmation email. Please forward it to your IA**.**

Accommodations/Special needs

Anyone who has any special needs associated with health or other issues that affect your ability to take this class or that require any special accommodation should tell me on or before the first day of lab. Such special needs include allergies, immune challenges, pregnancy, or any other situations that might affect your safe functioning in this lab. Please do not hesitate to bring any questions or issues to our notice. Our primary concern is your safety in this lab. If you have any questions or doubts, please feel free to contact me or to ask the Student Informational Services.

Final Notes

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.*