UCSD BIMM 121: Microbiology Lab Lab Schedule Fall 2021

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Quarter start: **9/23/21** Quarter end: 12/11/21

## **COURSE MEETING TIMES**

This is a **hybrid course**, meaning W is **usually** in-person and MF are **usually** remote. Please look closely at the following course meeting times and the more detailed lab schedule in this syllabus. *Note:* async = asynchronous and sync = synchronous.

Lab Lecture: MWF

Section	Monday	Wednesday	Friday
All	Remote, async	In-person, sync, CENTR 212, 9:00am – 9:50am	Remote, async

Lab: WF

Section	Wednesday	Friday	
C01	In-person, sync, Tata 2101, 10:00am – 12:50pm	Remote, sync, 10:00am – 12:50pm	
C02	In-person, sync, Tata 2102, 10:00am – 12:50pm	Remote, sync, 10:00am – 12:50pm	
C03	In-person, sync, Tata 2101, 2:00pm – 4:50pm	Remote, sync, 2:00pm – 4:50pm	
C04	In-person, sync, Tata 2102, 2:00pm – 4:50pm	Remote, sync, 2:00pm – 4:50pm	

## **COURSE DESCRIPTION**

<u>Overview</u>: learn how to use scientific literature, how to design microbial experiments, and how to analyze data, including bioinformatic analysis of microbial genomes. **This is a hybrid course, meaning students will meet in-person (usually on Wed) and remotely (usually for Mon, Fri).** Students will be held to the same expectations as previous quarters as we will still be learning fundamental and real skills required for microbiology. Please keep in mind that this is a non-traditional hybrid lab course that has just recently been developed – we all need to be patient and understanding with each other as we navigate our way through this course. **We're in this together, so if you have any issues or concerns, please let me know right away.** 

<u>Required Materials</u>: computer, internet access, zoom access with a mic, and lab notebook (any kind). You will need a computer or laptop to interact with cloud computing resources online. The operating system (mac/linux/unix/pc) does not matter, but mobile devices will not be sufficient for the bioinformatics work. If you do not have access to a computer, please see "student resources" on our CANVAS page to request a loaner.

<u>Course Structure</u>: students will 1) watch the lab lecture before coming to class (may be in-person, lecture recording, or asynchronous lab lecture recording), 2) complete the prelab portion of the lab manual, 3) then we will have a live lab session in-person or remote. Each lab lecture covers the important concepts and

background information needed to accomplish that day's lab tasks. Monday and Friday lectures will usually be asynchronous, with recordings posted to CANVAS well before lab. Wed lectures will be in-person, with lecture podcasts posted under the "My Media" tab in CANVAS (activate Kaltura if prompted). Podcast audio and screencast will be posted shortly after lecture ends, while auto-tracking camera videocasts will take about 1-2 hours to process before being posted. Students will work in small groups to complete each day's lab task. **Keep in mind that lab attendance is required** (see attendance policy below). There will be wet lab procedures on in-person days, lab quizzes, lab notebook assignments, weekly discussions, and three lab reports.

# DAILY COURSE SCHEDULE

Below is the <u>tentative</u> lab schedule; i.e. lab schedule may be a little ahead or behind track as the course progresses. There will usually be a 10min break during each in-person lab for students to leave the classroom. The in-person class days are <u>orange</u> and the remote class days are <u>blue</u>.

Week	Date	Monday (only lecture)	Wednesday	Friday
0	Sep 24			Lecture: course intro and structure
1	Sep 27, 29, Oct 1	<b>Lecture:</b> cultures, inoculation, isolation, sterile technique	Lecture: Monday continued Lab: basic lab practices, safety, micropipette, surface swabs, inoculate culture media	Lecture: biofilms, SBW25, experimental evolution Lab: discuss paper, biofilm proposal, eval proposal (as homework)
2	Oct 4, 6, 8	<b>Lecture:</b> examining cultures, announce winning proposal	Lecture: Monday cont. Lab: set up winning microcosm proposals (lots of replicates – only a few vials per group)	Lecture: measuring culture density 1 Lab: serial dilution activity
3	Oct 11, 13, 15	<b>Lecture:</b> measuring culture density 2	Lecture: Monday cont. Lab: serial dilute and plate microcosms	Lecture: two ways to identify and classify microbes (physiology vs genomic) Lab: count plates, calculate cfu/mL, inoculate broth with one colony per student (store in fridge
4	Oct 18, 20, 22	<b>Lecture:</b> Sanger sequencing	<b>Lecture:</b> Monday cont. <b>Lab:</b> extract DNA	Lecture: Illumina sequencing Lab: SBW25 library prep 1 Due: Microbes as Models Report
5	Oct 25, 27, 29	<b>Lecture:</b> fermentation, yogurt production	Lecture: Monday cont.	<b>Lecture:</b> history of CRISPR, t-tests

			Lab: SBW25 library prep 2	Lab: yogurt CRISPR 1: spacer
			and quantification	stats (get from CANVAS)
		Lecture: CRISPR in	Lecture: Monday cont.	Lecture: gut microbiome,
		lactic acid bacteria,		possible consequence of
		microscope video		CRISPR consumption
6	Nov 1, 3,			
	5		Lab: pool library, streak out	Lab: CRISPR 2, 3: determine
			yogurt, basic microscopy	strain ID of <i>Streptococcus</i>
				<i>thermophilus,</i> search for
		T ( 1' 1		evidence of HGI
		Lecture: making and	Lecture: Monday cont.	Lecture: no lecture
	Nov 8 10	staming your own	Labe heat fix/gram stain	<b>Lab:</b> optional catch up day
7	17	fixation gram staining	vogurt help process	Lab. Optional catch-up day
	12	invation, grain stanting	microbes@home (TBD)	
		Lecture: making your	Lecture: Monday cont.	Lecture: Unix intro
		own slides (wet		
		mount), cloud	<b>Lab:</b> more microscopy – it's	Lab: Unix tutorial (prelab),
8	Nov 15,	computing	alive! – wet mounts and	copy your sequences into
0	17, 19		tardigrades	working folder and inspect
			Due: Microbes as Food	
		Lastura recording	Report	
Q	Nov 22,	Lecture: resequencing	Lecture: Monday cont.	Vacation
9	24, 26		Lab. Bresea	vacation
		Lecture: common	Lecture: Monday cont.	Lecture: review
		biofilm mutations		
10	Nov 29,		Lab: clean-up, finish	Lab: presentations from 10A
	Dec 1, 3		breseq	-
				Due: Bioinformatics Report
Finals	Dec 4-11			
Week				

## **GRADING CRITERIA AND SCALE**

The grading scale for the course is standard (see second table below). The course will not be curved and the <u>final grades will not be rounded</u>. For example, this means a grade of 89.9% will not be rounded up to a 90%.

Assessment	Points
Quizzes (10, 15pts)	140
Lab Reports (3, 40pts)	120
Lab Notebook (~17, 10pts)	160
Discussion (9, 5pts)	45
Extra Credit	5
Total for Course	485

Letter	Percent	GPA
A+	96-100	4.0
А	94-95	4.0
A-	90-93	3.7
B+	86-89	3.3
В	84-85	3.0
B-	80-83	2.7
C+	76-79	2.3
C	74-75	2.0
C-	70-73	1.7
D	60-69	1.0
F	<60	0

#### LAB QUIZZES

Quizzes will be given every week and cover material from the week's lectures and labs. Quizzes are available from <u>Friday 5pm – Monday 5pm</u> and can be taken any time within that window. Quizzes are open-note, contain 15 questions, and must be completed within 30 min of opening. At the end of the quarter, <u>your lowest quiz grade will be dropped</u>. There are no make-up quizzes (unless you have a doctor's note).

#### LAB REPORTS

Every student is expected to have a lab notebook (can be any kind of notebook) to record lab lecture notes, lab activities, and background information. This notebook will be essential in writing your lab reports throughout the semester. Specific directions for each report will be announced in class and posted on CANVAS under the "Lab Reports" module. There will be three lab reports, <u>none of the lab report grades will be</u> <u>dropped</u>. The third lab report will be a group report – if a group member does not complete their allotted work as per the confidential group evaluation sheets, that group member will receive a <u>point penalty of 20%</u> on their report 3 grade.

#### LAB NOTEBOOK

Students will complete a Googledoc lab notebook entry for every lab session (so 2 per week). Lab notebook assignments will be started the day before lab by completing the prelab section of the lab manual. Each assignment will be worth 10pts, with 2pts attributed to participation. Students must be present in lab in order to receive any notebook assignment points for that day. The rest of the notebook assignment will be completed during lab. Lab notebook entries should be completed by the end of the day on lab days (you should be able to complete them by the end of lab, but we wanted to give you some wiggle room). Notebooks will be checked once a week by the IA, at a time of their choosing, which means notebooks must be kept up to date. The lowest lab notebook score will be dropped at the end of the quarter.

#### DISCUSSION

The CANVAS discussion forum is a key learning tool for this course. It is driven by your curiosity and will help you make connections between what we learn in class and the real world. Every week you are required to make two posts, at least one of which must be a response (the other can be a question or a response). Your questions should be insightful and curious in order to earn points, asking a simple "googleable" question like "what is agar?" or questions regarding class assignments will not earn points. Your questions should relate (loose connections are fine) to something we covered in the course that week. Posts must be made by 11:59 PM on Fridays.

#### CHECKLIST

Below is a helpful checklist that students can follow each week to make sure they are up to date on all tasks:

- □ Attend the in-person lab lecture or watch the lab lecture recording before each lab
- Do prelab assignment before each lab
- □ Answer Googledoc notebook questions during each lab
- □ Make two discussion posts each week by Friday at midnight
- □ Answer quiz questions by every Monday at 5pm
- □ Check if any lab reports are due

### **COURSE POLICIES**

Below you will find the class policies regarding attendance, late assignments, extra credit, accommodations, and cheating.

#### ATTENDANCE

<u>Lecture attendance</u>: although not required, lecture attendance for MWF is necessary in order to understand the labs and assignments. Students who are not comfortable attending the W in-person lab lecture, who are feeling sick, or who are COVID-positive, can watch the W lab lecture podcast (via the "My Media" tab in CANVAS).

Lab attendance: both W and F lab attendance are required. In-person W lab work will include wet lab procedures and therefore cannot be completed remotely. Students who are not comfortable attending the W in-person lab, who are feeling sick, or who are COVID-positive, can complete a make-up assignment after notifying their professor/IA that they will not be attending a W lab in-person. The make-up assignment must be completed on time, or the lab will be counted as a missed lab. The following guidelines apply to both W and F labs:

*Unexcused lab absences:* will result in no lab notebook points for that day. Unexcused absences include: 1) not completing a makeup assignment on time if W in-person lab is not attended, 2) missing F lab, 3) arriving to lab 15min late or more, 4) leaving lab with 15min or more remaining, 5) not participating during lab, 6) lab absences due to scheduling conflicts (other coursework, vacations, planned meetings, etc.), or 7) attending a lab section the student is not registered for. **If a student is marked as absent for 3 lab sessions and/or misses four lab quizzes, they must drop the course** as too much information has been missed. If a student refuses to drop the course, they will receive an automatic grade of "F" in the course after the drop deadline has passed.

*Excused lab absences:* will result in the student being able to make up lab notebook points for that day (if applicable) and checking in with their group to get the information they'll need for the notebook assignment. Excused absences include feeling sick, being COVID-positive, having COVID symptoms, unexpected occurrences, or events out of the student's control. Students must let Dr. Pickett and their IA know of any excused absences **ahead of time** (this excludes medical emergencies).

<u>Attendance and COVID</u>: **DO NOT** attend the in-person W lecture/lab if you are feeling sick, have been in contact with a COVID-positive person, or are COVID-positive – please **protect** your fellow students, IAs, and professors. As stated above, W lecture can be completed remotely, and W lab can be substituted with a make-up assignment without any penalties.

<u>Attendance and Lab Fees</u>: Because we are offering in-person lab activities and must plan them in advance, everyone enrolled in BIMM121 (regardless of whether they miss any in-person labs) will be charged a lab fee, and this is unfortunately non-refundable.

<u>Add/drop deadlines</u>: Deadlines are different for lab courses than lecture courses. Students who drop a biology lab class after the end of the **second class meeting** will be assigned a "W" – so please make sure to drop the class by the end of the first day if you are planning to drop. Additional details: <u>http://biology.ucsd.edu/go/ug-labs</u>.

#### LAB GROUPS

All students will work in groups of 3-5 people during each lab session. During the remote labs (usually Friday), we will all meet remotely via the lab Zoom link. For the in-person labs (usually Wed), we will all meet in the lab room. For groups in which a member must be remote for an in-person lab, your workload may be altered to accommodate for the lower group member count.

#### LATE ASSIGNMENTS

Late assignments/quizzes/reports are **not accepted** unless there is a doctor's note, a <u>prior request</u> for accommodations, or <u>existing</u> accommodations.

#### **EXTRA CREDIT**

Extra credit are points given out for doing something above and beyond what is required. There are five points of possible extra credit in this course. Asking for extra credit points beyond this or asking for added points to boost your grade is inappropriate and not in line with the ethics of academia; any requests of this nature will be dismissed.

#### COVID-SPECIFIC ACCOMODATIONS

In light of the stressful environment in which this class is taking place, there are a few accommodations added to this course: 1) lab quizzes are open notes and taken at home, 2) the lowest quiz and notebook grade will be dropped, and 3) 5pts of extra credit are available. Students should not expect or ask for COVID-Specific accommodations in addition to these. This course, despite the added hurtles, must be equivalent in rigor and scope as those given in previous semesters.

#### SAFETY TRAINING

Enrolled and waitlisted students must successfully complete the Biology Lab Safety Training and Assessment before the first lab session: <u>https://biolabclass-safetyquiz.ucsd.edu/introduction</u>. Please note that courses offered by other departments (Chemistry, for example) may have additional safety training requirements. Students are not allowed into the lab for the second lab session unless they have successfully passed the safety assessment. Instructors need to enforce this policy *without exception*. Please make sure to always follow the waste disposal guidelines posted on CANVAS.

### FAQs

1. Why are there not more remote options for this course?

Students who have a documented need for accommodation either because of travel restrictions or because of health restrictions have already been identified and this data has been shared with the appropriate academic programs. To the extent that we have capacity, programs and faculty have tried to accommodate students needing remote instruction for Fall. *To operate programs in both in-person and remote modalities increases demands on university infrastructure, and our ability to do so is* 

*limited.* While individual students may express a preference for additional remote offerings, *we do not have the instructional or operational capacity to simultaneously deliver all or most courses in both <i>in-person and remote formats.* Students who have an accommodation need must work with the Office for Students with Disabilities (OSD) to have their accommodation reviewed and documented.

- 2. What accommodations are there for students who are sick/unable to join an in-person class? As stated under the "Attendance Policy" students can choose to watch the lab lecture recording rather than attend the lecture in-person. If a student needs to attend an in-person lab remotely, there will be a makeup assignment. Please see the "Attendance Policy" portion of the syllabus.
- 3. What happens if another student in the class tests positive for COVID?

When a student tests positive for COVID, the contact tracing team immediately takes over. The student will need to quarantine for up to 10 days. The contact tracing team will determine if others were exposed through contact with the infected individual, and if so, they will be contacted and advised to be tested. If all protocols are followed (including vaccine mandates and masking), being in a room with an infected individual does not automatically qualify as exposure. To date, no exposure events have been traced back to in-class activities at UCSD.

#### 4. What should I do if I feel sick?

Complete the symptom screener and if needed, get tested for COVID. Do not come to campus unless given the all-clear.

#### 5. What happens if the professor/IA tests positive for COVID?

The professor/IA will quarantine for 10 days and the contact tracing team will determine if others were exposed. If the professor were to quarantine, instruction would be remote for the quarantine period and a substitute professor may be provided.

#### 6. What rules do the professor/IA/students have to follow in the classroom?

Wearing **two masks** is required at all times, regardless of vaccination status. No eating or drinking is allowed in class, regardless of whether the class is indoor or outdoor. The only exception from this rule are short hydration breaks for instructors while lecturing. Social distancing restrictions have been lifted, but physical contact should be limited where possible. The full masking policy is posted on the UCSD website: <u>https://adminrecords.ucsd.edu/PPM/docs/516-</u>

30.html? ga=2.168746281.923449004.1631056456-1539867882.1625773689.

7. Can we eat/drink in the classrooms?

No, but instructors may take hydration breaks while lecturing. Students should step outside to hydrate, if needed, during class and break times.

8. How have classrooms been prepared for a safe return, and what safeguards are in place? Facilities Management has provided extensive information on their activities preparing classrooms and other facilities for individuals to return to the campus in Fall 2021. More information about the specifics related to air filtration in classrooms and campus buildings, as well as cleaning protocols and more can be found on their COVID-19 information page (Facilities Management Response to the <u>COVID-19 Pandemic (ucsd.edu)</u>).

### **RESOURCES FOR STUDENTS**

If a student is struggling, it is **their responsibility to seek out help and let the professor know of their circumstances before assignments/quizzes are to take place.** <u>Students cannot ask for accommodations</u> <u>retroactively</u>. A complete list of student resources can be found on the CANVAS homepage. <u>Office for Students with Disabilities (OSD)</u>: Assists students with documented disabilities (psychological, psychiatric, learning, attention, chronic health, physical, vision, hearing, brain injury) to provide accommodations in classrooms and labs. OSD is a great resource if you think you may have test anxiety due to an underlying condition that interferes with the ability to learn, focus, or concentrate. In many cases, students are entitled to assistance with test taking, such as extra time to complete a test, testing in a less distracting room or having questions read aloud. Their mission is to offer quality programs and services that empower students with disabilities to access and engage in educational activities at the College. Please notify your instructor immediately if you require special health or disability accommodations. Website: <a href="https://osd.ucsd.edu/">https://osd.ucsd.edu/</a>

<u>Counseling and Psychological Services (CAPS)</u>: UCSD counseling services are still open during quarantine. This is an amazing resource for coping with anxiety and stress issues. For first-time appointments, you can now go directly to MyStudentChart.ucsd.edu and book an appointment online. Website: <u>https://wellness.ucsd.edu/CAPS/services/Pages/Appointments.aspx</u>.

<u>Teaching + Learning Commons</u>: Made up of six unique, but integrated hubs, The Teaching + Learning Commons provides comprehensive academic support for students. Includes tutoring, writing help, learning strategy workshops, and study groups. Website:

https://commons.ucsd.edu/students/academic%20support.html

The Office for the Prevention of Harassment & Discrimination (OPHD): Provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. Students have options for reporting incidents of sexual violence and sexual harassment. Sexual violence includes sexual assault, dating violence, domestic violence, and stalking. Information about reporting options may be obtained at OPHD at (858) 534-8298, ophd@ucsd.edu or http://ophd.ucsd.edu. Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at (858) 534-5793, sarc@ucsd.edu or http://care.ucsd.edu or Counseling and Psychological Services (CAPS) at (858) 534-3755 or <a href="http://caps.ucsd.edu">http://caps.ucsd.edu</a>. Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a faculty member, department Chair, or other University official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed. If you find yourself in an uncomfortable situation, ask for help. OPHD website: <a href="https://caps.ucsd.edu">ophd@ucsd.edu</a>.

#### **OTHER TIPS**

#### College Survival Skills:

- Keep a calendar of all exam/assignment due dates and appointments
- Plan on spending two to three hours of studying for every hour of class
- Be on time to class, ask questions when needed, and participate
- Take notes in class and review them often
- Complete all assignments on time
- Take advantage of services on campus to help you succeed such as tutoring or special classes
- Arrange for needed accommodations early in the term
- Visit the ACCESS office for assistance, questions, counseling, and class selection they are here to help

- Plan time to eat, sleep and have some fun
- If trouble arises, seek assistance as soon as possible

#### Coping Skills for Test Anxiety:

- Breathing techniques or holding something small to fidget with (like a hair band)
- Reframing thoughts: believing in yourself and remembering this is just one exam
- Doing the hardest questions (like short answer) first so you can relax a little bit
- Studying as I go, instead of all at once and studying in a place that is relaxing or familiar
- Making a routine for me that was adding a few questions to my study guide right after each lecture. Routine tends to decrease stress.
- Having breakfast and water (no coffee) right before the test

#### Self-Advocacy Tips:

- Understand my disability and learn ways to compensate
- Learn how to explain my disability and needs to others
- Learn how to ask for appropriate accommodations
- Learn that it is OK to use appropriate accommodations
- Identify my strengths and weaknesses
- Learn that it is OK to ask for help
- Express my needs clearly to all college employees, especially the ACCESS staff and my instructors, early in the term
- Take responsibility and develop independence in coordinating your services
- Meet with instructors when needed

#### **CHEATING POLICY**

Honesty is primarily the responsibility of each student. The College considers cheating to be a voluntary act for which there may be a reason, but for which there is no acceptable excuse. It is important to understand that collaborative learning is considered cheating unless specifically allowed for by the professor. The term cheating includes but is not limited to plagiarism, receiving or knowingly supplying unauthorized information, using unauthorized material or sources, changing an answer after work has been graded and presenting it as improperly graded, illegally accessing confidential information through a computer, taking an examination for another student or having another student take an examination for you, and forging or altering grade documents. In any act of academic dishonesty, the student will automatically receive a zero on that test or assignment (the grade received as a result of an academic integrity violation stays calculated into the student's GPA even if the student retakes the class). There will also be an AI Administrative Fee of \$50 (posted to student account), mandatory AI Training, at least one Disciplinary Action, and possibly other actions per the professional judgement of the Appropriate Administrative Authority (AAA). Discipline may include probation, suspension (from a Quarter to Two Years), or dismissal. <u>Please don't risk your GPA and/or future career by cheating.</u>

\*\*\* This syllabus is subject to change. Any changes will be announced in class and on CANVAS. Students will be responsible for all changes.