Course Information

Course Description: Welcome! In BIMM101 we aim to develop an understanding of research in molecular biology through inquiry-based sessions. We will work in groups to design, collect, analyze, and critique data while learning molecular and biological concepts and critical thinking skills. These skills are fundamental for scientists, and will be useful to you in your career at UCSD and beyond!

Lectures: Tu/Th 11:00 AM-12:20 PM

- **Tuesday March 30th is a live Zoom lecture (link on Canvas).** All others are video recordings (Canvas), and each week's videos will be released by Sunday of the corresponding week at noon PST. Class time will be used as optional student hours for questions.

Labs: Tu/Th 12:30 PM- 3:20 PM

- Connect using Zoom web conferencing (Zoom link on Canvas site). Not all labs will require the full three hours, but you should make yourself available for this time window to engage with your group and complete tasks. Please get in touch if you anticipate this being a problem.

Prerequisites: BILD 1 **UC Course Credits:** 4

Instructional Team

Instructor: Dr. Claire Meaders (she/her)

Email: cmeaders@ucsd.edu

Student hours: Tu/Th: 11:00 AM – 12:20 PM

- Zoom links are on Canvas. Student hours are a time when you can come ask clarifying questions about the course material, chat about research, or about any other topics!
- Additionally, throughout the quarter I will be holding 30-minute small group (up to 3 people) or one-on-one meetings by appointment on canvas between 3:30-4:30 PM on Tuesdays and Thursdays. These spaces are to ensure that time is available for one-on-on conversations and Q&A.

My role is to help you in this course, and I encourage you to stop by student hours! Please stop by so that we can chat - with virtual instruction this is a great opportunity to get individual "face to face" time - especially if you have any confusion about a concept from lecture or lab. If you prefer email, I'll try my best to reply within 24 hours - but please write to me from your USCD email account or through canvas. Thanks!

Pronouns: She/her/hers
From: Arlington, VA

Instructional assistants:

Gabriel Mullin-Manzanarez gmullinm@ucsd.edu
May Thwe Tun mttun@ucsd.edu

Course Schedule

The full course schedule is available at:
https://docs.google.com/spreadsheets/d/16oNYe6fWMa1ZnE2_hD-nR9t5BgLoMZPq/edit#gid=265283264

Course Structure

Course materials: Digital lab manual on canvas

Major Components:

Class: Learn biological concepts and about the techniques related to the research projects

Laboratory: Engage in collaboration to learn and analyze data

Out-of-class: Reading, planning, online quizzes, assignments, reports

Class

- Video lectures: introduce important concepts and procedures relevant to lab and course tasks
- Lecture quizzes: on Canvas to reinforce some key concepts/skills, due before relevant lab session

Lectures are recorded. I encourage you to go to student hours to review material and ask questions.

Lab

Digital lab notebooks will be assigned to you, this is where your work will go before and during each lab session.

- **Before:** Draw protocol for the day to visualize lab tasks and goals. Insert this drawing into lab notebook, and summarize goals.
- **During:** Engage with peers, IA, and Instructor in small group discussions via Zoom to analyze data, design experiments, discuss results.
- Ask IA and instructor questions.
- **By end of lab day**: Complete Lab Tasks in lab notebook. This typically includes questions about the results/data analyzed, drawing conclusions, troubleshooting unexpected results.

Other tasks

- Practice applying knowledge and skills via take-home tests, writing, and presenting

Learning Goals: By the end of this course, you will be able to:

- Apply knowledge of molecular biology concepts & molecular techniques to plan experiments, explain & troubleshoot results
- Explain the importance of proper controls in designing experiments & interpreting results
- Perform basic lab math skills, statistical analysis, and graphing
- Draw conclusions based on evidence & reasoning
- Use basic bioinformatics databases & applications
- Find, read, and evaluate primary literature
- Critically evaluate scientific writing (your own, & that of peers)
- Collaborate with each other to learn biological concepts & laboratory skills

Course Expectations

What I expect of you	What you can expect of me
Be informed. Read this syllabus carefully and completely so you understand the course structure and expectations.	**Enthusiasm**. To be prepared for each class and to bring my enthusiasm for teaching to each lecture, lab, and office hour meeting.
Be attuned. Keep up with the lecture videos and lab assignments, as each one builds on the previous one.	**Responsiveness.** To respond to emails within 24 hours. For those that know me already, you know that I usually respond faster than this. Emails received on weekends may take longer.
Ethical. A good attitude and maintenance of honest and ethical principles towards me, your classmates, and the execution of the course. Please read UC San Diego's Principles of Community and Conduct Code.	**Timely feedback.** To make every effort to return graded assignments within one week of the submission date and to post solutions or code as soon as is reasonably possible after the submission date.
Integrity. An honest, fair, responsible, respectful, trustworthy, and courageous effort on all academic work and collaboration. Please read UC San Diego's Policy on Integrity of Scholarship. Then, take the integrity pledge!	**Integrity.** To uphold integrity standards and create an atmosphere that fosters active learning, creativity, critical thinking, and honest collaboration.
Be flexible. Sometimes my schedule gets affected by unavoidable events, necessitating some office hour rescheduling at the last minute.	**Reasonable** accommodation and understanding for student situations that arise; however, I will not make exceptions for one person that are not available to every other person in the course.

Learning in this course

This course is designed to be an environment for everyone to learn and construct a shared understanding of the material. **Active participation** by engaging with the lecture material, asking and answering questions (e.g. on the discussion board), and contributing to breakout sessions during lab time is expected. Being able to communicate understanding, and confusion, is critical to success in any discipline, and is very useful for learning[1]. To encourage collaboration, lab discussions will be done in groups, and grades will not be assigned on a curve. Being proactive to ask questions during student hours and on the discussion board will be critical for success, especially given the online nature of the course.

Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Therefore, quizzes will include questions that are based on solving problems in new contexts.

Grading Information

BIMM101 has multiple grading components:

Assignment	Weight
Post-lecture practice application questions	10%
Lab discussion	5%
Lab notebooks + at-home experiment (optional)	21%
Molecular Biology Review	2%
Take-home quizzes	20%
Mini write-up	6%
CRISPR write-up	18%
Technique report and presentation	15%
Professionalism	2%
Discussion board posts	1%
Total	100%
Extra credit (e.g. surveys, supplemental student hours)	1%

The following grading scheme will be used. The course is <u>not</u> graded on a curve (i.e. 20% of students getting A, B, C, and such). Thus, the ability to do well in this course is not dependent on others doing poorly.

A+ = 100-97%	A = 97-94%	A- = 94-90%
B+ = 90-87%	B = 87-84%	B- = 84-80%
C+ = 80-77%	C = 77-74%	C- = 74-70%
D = 70-60%	F = < 60%	

Post-lecture practice application questions

The quizzes posted on Canvas are meant to reinforce important concepts covered in the video lectures. Quizzes are to be completed *prior* to the start of lab (deadlines will be posted on Canvas). Because mastery is not necessarily expected after watching the video lecture, we will drop your four lowest scores. **It is very important to follow-up in student hours or via discussion boards on concepts you were unclear on.**

Lab discussions

Links to join the video lab sessions will be provided on Canvas. Discussions will be facilitated by the instructional assistants and instructor and are meant to be a time to work collaboratively to analyze data, design experiments, and engage in troubleshooting of results. Participation in at least 85% of the lab sessions will result in full points. **It is highly recommended that you participate in as many as possible because this is an opportunity to ask questions and get feedback**. *If circumstances beyond your control interfere with your ability to participate, please get in touch with me so we can devise a plan for you to succeed in the course.*

Lab notebooks

Each student will be assigned an individual digital lab notebook (Google Doc) that you will use for the quarter. These will be made available through the Canvas Site. Compete 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. Please consult the lab manual for what we expect in the lab notebooks, and use the template provided in the Google Doc. **Lab notebook entries will be regularly checked** and scored for various components: pre-lab work which often includes a summaries and predictions, in-lab work such as data analysis and discussion of data, and drawing conclusions in the form of an argument: claims, data to support claims, and explanations in the form of a biological or procedural mechanism, troubleshooting results when necessary. A grading rubric will be provided on Canvas.

Optional at-home experiment:

A very brief write-up about your experience with the kit, and analysis of the results, can be submitted for 5 course points (5 out of 100). If you choose not to submit this assignment (or couldn't do it b/c you were unable to receive a kit) these 5 points will be added to the weight of the Lab Notebooks (16+5 = 21 course points)

Molecular Biology Review

A quiz about some background molecular biology and experimental design concepts will be due before the Tuesday lab of Week 2. Quizzes will be scored for 1 point for completion, and 1 point for correctness (85% correct gets full correctness points). Instructions to take and submit the quiz will be posted on Canvas.

Take-home quizzes

Quizzes will be released on Thursday evenings and due the following Sunday at 11:59pm (see calendar on Canvas). Quizzes will be uploaded to GradeScope by the student (instructions provided on Canvas). Quizzes will be cumulative but will focus on the most recent material. There will be 3 quizzes, and we will drop your lowest score.

CRISPR Write-Up

Guidelines, rubrics, and due dates for the write-up and assignments will be posted on Canvas. The goal of the write-up is to practice presenting and summarizing results, as well as constructing scientific arguments (what you can conclude, evidence to support, and providing reasoning biological/molecular/experimental explanations or hypotheses) in the form of a short journal article. A draft will be submitted for peer-review, and then a final version. Check Canvas schedule for due-dates.

Technique report and presentation

Toward the end of the course everyone will choose a recombinant DNA/molecular biology technique to research, summarize, and present. The purpose is to explore other techniques that are typically used in molecular biology research, understand how the technique works and can be used, and communicate your understanding in the form of a short-written report and an oral presentation (delivered by video conferencing). Rubrics and guidelines will be posted on the course site.

Discussion board posts

Throughout the semester you will complete 3 discussion board posts: these are short, 350 word introductions, reflections about scientists who have pioneered CRISPR techniques, and about current research. The purpose is to learn more about the people behind the science, their pathways, and how their work has impacted the field as well as to learn about the state of the field. These are graded complete/incomplete.

Professionalism

This portion of the course grade is intended to motivate students to consider the impact of their actions on their own learning and the learning of others in the course. Unprofessional interactions consume time yet have no meaningful benefits to you, your fellow students, and/or the teaching team. Analogously in the workplace, being unprofessional to your colleagues or supervisors will only discount you. When you are discounted, you will not be invited for new opportunities that you may or may not be aware of. Professionalism can be demonstrated through individually demonstrating maturity and professionalism, as well as contributing meaningfully to our lab community (1 point described here). By default, every student is assumed to be professionally mature. Hence, this component is awarded to every student at the beginning of the quarter. During the quarter, based on observations by the teaching team, which includes but is not limited to one-on-one interactions, electronic communication, contributing data to class data sets according to deadlines, and follow-up conversations on grades, your professionalism credit may be deducted.

Example interactions with meaningful benefits:

- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- 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 video sessions and being prepared to work in lab

Example interactions that have no meaningful benefits and thus should be avoided:

- Contributing inequitably to team work
- Harassing and/or bullying the instructional team or other students, either in person or online
- Asking questions when the information is already available or will eventually be known
- Ignoring the directions or requests from the instructional team

Extra credit

The 1% extra credit can be earned by attending one 30-minute supplemental student hour session; completing course evaluations and/or completing related surveys which aim to improve the course and the educational experiences of your future peers. There are no other opportunities for extra credit beyond what is assigned by the course instructor.

Late assignments and quizzes

Assignments must be submitted on time to be eligible for full credit. Except in the case of medical or family emergencies, late assignments will be subjected to a 10% deduction per day if submitted within 48 hours after the posted due date. Assignments not submitted within 48 hours of the due date will receive a score of 0.

Regrades

If a grading error has been made, you should submit a re-grade request via email to your Instructional Assistant or Dr. Meaders. Students who submit items for re-grading understand that we may re-grade the entire item and the score may go up or down

Academic Integrity https://students.ucsd.edu/academics/academic-integrity/index.html

Integrity of scholarship is essential for an academic community. The University expects that both students and faculty 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(s) to whom it is assigned, without unauthorized aid of any kind. In this course, we need to establish a set of shared values. Following are values* adopted from the International Center for Academic Integrity, which serves as the foundation for academic integrity.

	As students we will…	As the teaching team we will…
Honesty	• Honestly demonstrate your knowledge and abilities according to expectations listed in the syllabus or in relation to specific assignments and exams • Communicate openly without using deception, including citing appropriate sources	• Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams • Communicate openly and honestly about the expectations and standards of the course through the syllabus and in relation to assignments and exams
Responsibility	• Complete assignments on time and in full preparation for class • Show up to class on time and be mentally and physically present • Participate fully and contribute to team learning and activities	• Give you timely feedback on your assignments and exams • Show up to class on time and be mentally and physically present • Create relevant assessments and class activities
Respect	• Speak openly with one another while respecting diverse viewpoints and perspectives • Provide sufficient space for others to voice their ideas	• Respect your perspectives even while we challenge you to think more deeply and critically • Help facilitate respectful exchange of ideas
Fairness	• Contribute fully and equally to collaborative work, so that we are not freeloading off of others on our teams • Not seek unfair advantage over fellow students in the course	• Create fair assignments and exams and grade them in a fair and timely manner • Treat all students and collaborative teams equally
Trustworthiness	• Not engage in personal affairs while on class time • Be open and transparent about what we are doing in class Not distribute course materials to others in an unauthorized fashion	• Be available to all students when we say we will be • Follow through on our promises • Not modify the expectations or standards without communicating with everyone in the course
Courage	• Say or do something when we see actions that undermine any of the above values • Accept the consequences of upholding and protecting the above values	• Say or do something when we see actions that undermine any of the above values • Accept the consequences of upholding and protecting the above values

** This class statement of values is adapted with permission from Tricia Bertram Gallant Ph.D.*

All course materials are the property of the instructor, the course, and the University of California, San Diego and **may not** be posted online, submitted to private or public repositories, or distributed to unauthorized people outside of the course. Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review and possibly given a score of 0.

Student Resources for Support and Learning

Academic support

Geisel Library	Research tools and eReserves
Content Tutoring with the Teaching + Learning Commons	Drop-in and online tutoring through the Academic Achievement Hub
Supplemental Instruction with the Teaching + Learning Commons	Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses
Writing Hub Services in the Teaching + Learning Commons	Improve writing skills and connect with a peer writing mentor
Learning Strategies Tutoring	Address learning challenges with a metacognitive approach
OASIS	Intellectual and personal development support
Student Success Coaching Program	Peer mentor program that provides incoming and continuing first-generation students with information, resources, and support in meeting their goals
Academic Integrity	Policy on Academic Integrity of Scholarship and strategies to excel with integrity
Technical Support	Assistance with accounts, network, and technical issues

Student resources

Basic Needs	Provides access to food (including the Triton food pantry), housing, and financial resources
Counseling and Psychological Services (CAPS)	Provides services like confidential counseling and consultations for psychiatric services and mental health programming
Community Centers	As part of the Office of Equity, Diversity, and Inclusion the campus community centers provide programs and resources for students and contribute toward the evolution of a socially just campus
Counseling and Psychological Services	Individual, group, couples, and family psychotherapy services for registered undergraduate and graduate students
Office for Students with Disabilities	Documents students' disabilities, provides accessibility resources, and reasonable accommodations
Triton Concern Line	Report students of concern at (858) 246-1111

It is also helpful to find support and resources for your specific needs. Some of the resources here at UCSD include: APIMEDA programs and services (apimeda.ucsd.edu), the Black Resource Center (brc.ucsd.edu), the Cross-Cultural Center (ccc.ucsd.edu), the LGBT Resource Center (lgbt.ucsd.edu), the Raza Resource Centro(raza.ucsd.edu), the Student-Parents Resource page (students.ucsd.edu/well-being/wellness-resources/student-parents), the Student Veterans Resource Center (students.ucsd.edu/sponsor/veterans), the Undocumented Student Services Center (uss.ucsd.edu), the Women's Center (women.ucsd.edu), and the Triton Transfer Hub (transferstudents.ucsd.edu/transfer-hub/index.html)

Accessibility

http://disabilities.ucsd.edu | osd@ucsd.edu | 858-534-4382
Any student with a disability is welcome to contact me early in the quarter to work out accommodations to support their success in this course. Students requesting accommodations for this course due to a disability should work through the Office for Students with Disabilities (OSD). Instructors will receive Authorization for Accommodations Letters from the OSD online portal. Students are required to discuss accommodation arrangements with instructors and OSD liaisons in the department in advance of any exams or assignments. Whenever possible, we will use universal designs that are inclusive. If you have feedback on how to make the class more accessible, please get in touch!

Inclusion

https://diversity.ucsd.edu/ | diversity@ucsd.edu | 858.822.3542
https://students.ucsd.edu/student-life/diversity/index.html
https://regents.universityofcalifornia.edu/governance/policies/4400.html
It is our goal to create a learning environment that supports diversity of thought, perspective, experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.). To help accomplish this:

- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to come and talk with me during office hours or by appointment. I want to be a resource for you.
- You can also submit anonymous feedback at https://forms.gle/1Ub1KxELNaNAPtLc8 (which will lead to me making a general announcement to the class, if necessary to address your concerns). If you prefer to speak with someone outside of the course, the Office of Equity, Diversity and Inclusion (diversity@ucsd.edu) is an excellent resource.

I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in class (by anyone) that made you feel uncomfortable, please talk to me about it. (Again, anonymous feedback is always an option.)

We encourage all of you to participate in discussion and contribute from your perspectives. As a participant in course discussions and as part of a lab team, you should also strive to honor the diversity of your classmates. If you have feedback on how to make the class more inclusive, please get in touch!

Nondiscrimination 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

Letters of recommendation

If you think you may want me to write you a letter of recommendation (or any other instructor), please consider what a good letter would contain and how your actions in the course demonstrate the qualities you will want highlighted in a good letter. When students ask me for a letter of recommendation, I ask them to write to me about how they demonstrated critical thinking, leadership, collaboration, and professionalism. I will be specifically looking for examples of these qualities that I could have noticed during lab and office hours. Be sure to actively participate in the discussions, talk to me during the lab and my office hours: ask questions, offer your own ideas and interpretations of your results, bring interesting facts/papers that are connected to the material we are studying. If you don't actively show the qualities that are needed to write a good letter, it will be hard for me to write a letter that is meaningful and useful.

If you would like to request a letter, please fill out the letter request survey at this link: https://forms.gle/JfiutS9CcuQA1rBf7.

Subject to change policy

The information contained in the course syllabus, other than the grade and absence policies, may be – under certain circumstances (e.g. to enhance student learning) – subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Technical support

For help with accounts, network, and technical issues: https://acms.ucsd.edu/contact/index.html
For help connecting to electronic library resources such as eReserves and e-journals:
https://library.ucsd.edu/computing-and-technology/connect-from-off-campus/