Instructor:
Dr. Cindy Gustafson-Brown   cgb@ucsd.edu

Office Hours: Tuesday and Thursday, 1-2 PM. Dr. Gus will also visit the online lab sessions. Office hours are by Zoom. See link on Canvas. Also please use discussion board on Canvas to ask and respond to questions.

Instructional assistants:

D01 Rhea-Comfort Addo	raddo@ucsd.edu	D03 Kevin Sun	k2sun@ucsd.edu
D02 Zoey Wang	jiw643@ucsd.edu	D04 Marianne Thio	mthio@ucsd.edu

Course site: https://canvas.ucsd.edu/

Course structure:

Class

Complete *before* lab session
- **Pre-Lecture videos: introduce important concepts, goals for lab session**
- *Post-lecture quiz on Canvas to reinforce some key concepts/skills, due before lab session*

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.
- **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**: Summarize analysis or design for that day in your lab notebook. If data has been analyzed, this should be a summary of the data, what claims (conclusions) you can make, and an explanation of the molecular biology/procedural reasons that led to these results. If results were unexpected, including troubleshooting ideas. See guiding questions in the lab manual.

Other tasks

- Three take-home tests during the quarter to apply knowledge and skills learned
- Scientific report of CRISPR-Cas9 editing results (mini journal article, also includes submitting a draft and peer-review)
- Summarize and present another recombinant DNA technique (end of quarter)

Running the lab online is a new adventure! We will be sticking to the outlined plan as much as possible, but there may be times when the plan needs an adjustment as we learn what works and does not work. Any and all changes will be clearly communicated to the class. Thank you for your patience and participation in the course.

Pre-recorded video Lectures: Will be available on Canvas site

Laboratory sessions: D01/02 Tuesdays & Thursdays, 2:30-4:20 PM (PST)
                        D03/04 Wednesdays & Fridays, 1:00-2:50 PM (PST)
                        connect using Zoom (link on Canvas site)

Course Schedule: Link here. Updates will be posted on Canvas.

COVID-19-related impacts on courses

This syllabus is subject to change, particularly because of campus efforts to contain Covid-19. Any schedule changes will be posted on the course website. Make sure to frequently check the website to keep updated. Also, adjust your settings in Canvas to ensure you receive notifications (announcements).

Please make sure that you check out this website for resources on how to learn remotely:
https://digitallearning.ucsd.edu/learners/learning-remote.html

All post-lecture quizzes in this course will be administered online. Three additional (longer) quizzes will be take-home quizzes. All lectures will be pre-recorded and posted on Canvas. Labs will be live by Zoom.

Note that the university has temporarily modified policies on grading options and enrollment deadlines for Spring quarter. You may see these new policies here:
https://senate.ucsd.edu/COVID-19-Academic-Senate-Updates

We understand this is a stressful time and that you may have challenges with accessing the course material, adapting to online-only learning, and taking online quizzes. Our goals are to teach you the course material, fairly test your knowledge of this material, and grade you accordingly, while keeping these challenges in mind.

Welcome to BIMM 101: Recombinant DNA Laboratory!
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.

LEARNING GOALS

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

MAJOR COMPONENTS

- **Lectures**: Learn biological concepts and learn about the techniques related to the research projects
- **Laboratory**: Engage in collaboration to learn and analyze data (live, via Zoom)
- **Out-of-class**: Reading, planning, online quizzes, assignments, reports

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 promotes 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 office hours and on the discussion board will be essential 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 scenarios. Therefore, quizzes will include questions that are based on solving problems in new contexts.

1 Smith et al., 2009. http://www.sciencemag.org/content/323/5910/122.short

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/

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 reasonable accommodations to support their success in this course. Students requesting accommodations should provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. Instructors will receive Authorization for Accommodations Letters from the OSD online portal. Instructors are unable to provide accommodations unless they are first authorized by OSD. For more information, contact the OSD at (858) 534-4382 (voice), **osd@ucsd.edu**, or visit **osd.ucsd.edu**

INCLUSION

If you have feedback on how to make the class more inclusive, please get in touch!
Office of Equity, Diversity, and Inclusion:
858.822.3542 | diversity@ucsd.edu | https://diversity.ucsd.edu/
https://students.ucsd.edu/student-life/diversity/index.html

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 online labs and discussion groups, and talk to me 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.

GRADING

The following grading scheme will be used. The course is **not** 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.

95-100	A+
91-94	A
87-90	A-
83-86	B+
79-82	B
75-78	B-
71-74	C+
67-80	C
63-66	C-
55-62	D
0-54	F

BIMM101 has multiple grading components:

Post-lecture quizzes	10%
Online lab sessions	5%
Lab notebooks	25%
Molecular Biology Review Quiz	2%
Take-home quizzes	16%
CRISPR write-up	16%
Technique Report & Presentation	15%
Professionalism	1%

Because different people may excel in different aspects, the take-home quizzes or the CRISPR write-up will be scaled to 26%, depending on what benefits each individual student, bringing the total to 100 percent.

Post-lecture quizzes: The quizzes posted on Canvas are meant to reinforce importance concepts covered in the video lectures. Quizzes are to be completed *prior* to the start of lab (deadlines will be posted on Canvas). Students are expected to complete these quizzes on their own without collaboration. Because mastery is not necessarily expected after watching the video lecture, scoring 85% or higher will result in full points. **It is important to follow-up in office hours or via discussion boards on concepts you were unclear on.**

Online lab sessions: 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. Attendance is not required for lab sessions #1 and #17. Students are expected to participate in at least 17 of the remaining 18 lab sessions. **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. 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. 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.

Molecular Biology Review Quiz: A quiz about some background molecular biology and experimental design concepts will be due before the Thursday lab of Week 2. Just completing the quiz earns you half the credit. The other half comes from accuracy, although you only need to get 85% correct to get full credit for accuracy. Instructions to take and submit the quiz will be posted on Canvas.

Take-home quizzes: There will be 3 quizzes. They will be released on Thursday mornings and due the following Saturday at 11:59 pm (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. Students are expected to complete these quizzes on their own without collaboration.

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. Due dates will be announced on the course schedule.

Technique Report & 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.

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 as individual maturity, as well as by contributing meaningfully to our lab community. During the quarter, the teaching team will make observations which will contribute to the professionalism component of your grade, including but not limited to one-on-one interactions, electronic communication, contributions to class data sets according to deadlines, and follow-up conversations on grades. Being prepared in advance of lab will be paramount.

Example interactions with meaningful benefits:
- Arriving on-time to lab video sessions and being **PREPARED** to work in lab
- 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

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

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 15% 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 zero.

REGRADES

If a grading error has been made, you should submit a re-grade request to your Instructional Assistant or Dr. Gus. 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

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.

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. **Academic misconduct** is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade. Academic misconduct misrepresents your knowledge and abilities, which undermines the instructor's ability to determine how well you're doing in the course.

Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review. Depending on the severity of the case, penalties will be imposed that may include a failing grade in the course. Please do not risk your future by cheating.

In this course, we need to establish a set of shared values. Following are values* adopted from the International Center for Academic Integrity, which serve 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.

Student Resources for Support and Learning

<u>CHILDREN AND VIDEO SESSIONS</u>

You are welcome to have children with you during video sessions as I fully understand that childcare situations may be complicated for many of us at this time. If there is distracting noise in your home, you may mute/unmute your microphone as you need. Do your best to participate and engage, but also please get in touch with me if you have any questions or concerns.

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 students with information, resources, and support in meeting their goals
Technical Support	Assistance with accounts, network, and technical issues

STUDENT RESOURCES

Basic Needs	Provides access to food, housing, and financial resources
Counseling and Psychological Services (CAPS)	Provides 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
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

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

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.