

Fall 2020 BIMM 101—Recombinant DNA Techniques

Instructor: Andrew Cooper (he/him/his)

Office: HSS 1145B (not super applicable now)

E-mail: a5cooper@ucsd.edu (Include BIMM 101 in the subject line)

Scheduled Lecture Time: TuTh 8:00-9:20 am

Scheduled Lab Time: TuTh 9:30-1:20 pm or 2:00-5:50 pm

Office Hours: Monday 1:00 pm and Wednesday 10:00 am

<https://ucsd.zoom.us/j/93726063468>

Course Learning Objectives:

By the end of this course, you should be able to:

1. Demonstrate understanding of basic molecular biology techniques.
2. Apply knowledge of molecular biology concepts and techniques to plan and troubleshoot experiments.
3. Interpret results in a biological context and report them in a coherent and accurate written form.
4. Explain the importance of proper controls in designing experiments and interpreting results.
5. Perform basic lab math skills, statistical analysis, and generate graphs.

Contacting Me: Please ensure that all e-mails include BIMM 101 in the subject line and if the matter requires immediate attention include URGENT in the subject line as well. If I do not respond to an e-mail within 24 hours please send it again.

Lecture Structure: For every lecture a video will be posted approximately 24 hours before the scheduled lecture time (ex. For a lecture scheduled on Tuesday at 9:00 am the video will be live around 9:00 am on Monday). You are welcome to watch the lecture video anywhere within that 24-hour time period. You will be required to complete some activity/reflection after watching the lecture for participation credit (see below).

Lab Structure: Labs will be done through a combination of asynchronous work done on your time and synchronous discussions/activities done on Zoom and led by the IAs and myself. Synchronous lab components will not take place during the full four-hour lab period. Instead students will be assigned to a two-hour window during the scheduled lab period and you will participate in lab during that time. When you join the Zoom meeting room to participate in lab your real name (as it appears on Canvas) must be set as your screenname so that you receive credit for attendance/participation. You are expected to have your camera on and be able to turn on your microphone to engage in discussions. If synchronous participation will not be possible you must contact me as soon as possible to discuss the situation.

Required Materials: Lab Manual, this will be available on Canvas through the Campus Bookstore. You will be automatically granted access and charge by the Bookstore unless you opt out. (Optional): Calculator

Computers: We will often use computers for data analysis and other exercises. While much of this can be done on tablets, some things will not work on them. If you predict that access to a functioning computer will be an issue during the quarter please contact me as soon as possible.

Canvas: All course related information will be posted on our Canvas site. The lecture slides will usually be posted along with the lecture videos. Please check the Canvas site and your UCSD e-mail regularly for any announcements.

Podcast: Lectures will not be posted through the traditional podcast site. Instead you will find videos of the lectures posted on Canvas along with the slides.

iClickers: Since this course will be online only, we will not be using clickers, however there will be other mechanisms for participation and engagement with the lectures.

Instructional Assistants (IAs):

| | |
|-----------------|-------------------|
| Hartman, Titus | tnhartma@ucsd.edu |
| Swink, Kelsey | kswink@ucsd.edu |
| Sun, Kevin | k2sun@ucsd.edu |
| Wang, Li | liw120@ucsd.edu |
| Newhide, Joseph | jnewhide@ucsd.edu |
| Gallant, Robert | rgallant@ucsd.edu |

Quizzes: Throughout the quarter there will be 5 quizzes (lowest score dropped) that will be based on material from previous lectures & labs, or papers assigned for reading. These quizzes will be done asynchronously over a set period of time. More information will be given for each quiz.

Lab Notebook: Maintaining an organized and detailed lab notebook is an essential component of scientific research, therefore you will be required to maintain a lab notebook for this course. Since the class is being done online you will each be provided with the link to a google doc that you will use for your lab notebook. For each lab there should be a dated entry containing an outline of the experiments/protocols being done that day, the goals of the experiments, predictions about the outcomes, as well as observations made throughout the experiments and clearly labeled results and analysis. Throughout the quarter the lab notebooks will be graded at random, with no advance warning.

Writing in Your Own Voice: This assignment contains two components. The first portion will review the basics of plagiarism and citations, since that is an essential component of the scientific process. The second portion will have you practice creating a scientific argument and explaining data from a provided figure. This assignment will be due on Thursday, October 15th at 8:00 pm.

Digest & AGE Analysis Write-up: In order to practice analyzing data and presenting results in a written form we will have a short write-up of the plasmid digestion and agarose gel electrophoresis that is done as part of our larger CRISPR project. The write-up will be due by 8:00 pm on Thursday, November 5th.

CRISPR Project Write-up: This quarter will be largely taken up by a project using CRISPR editing in yeast. Once the project is finished, we will do a write-up analyzing the final outcome of that project. This write-up will have a peer review component. Your draft for peer review must be submitted by 8:00 pm on Wednesday, November 25th. Each student will be assigned a couple of other write-ups to evaluate and provide feedback by 8:00 pm on Monday, November 30th. The final version of your CRISPR write-up will be submitted on Wednesday, December 2nd.

Molecular Technique Presentation & Write-up: You will be doing a five minute, five-slide presentation on a molecular biology technique that we did not cover in this course. These presentations will be done on Zoom during week 10. Time will be given in lab during week 9 to brainstorm and begin your research. You will individually write a one to two-page write-up of this same technique due before the presentations.

Final: There will not be a cumulative final for this course.

Professionalism: While we will not be working in an actual lab setting where safety becomes a major concern, we will all be working together in a community throughout this course. The assumption is that all students will act with appropriate maturity throughout and are automatically given 50 points at the start of the semester. However, deductions can be made by the instructor or IAs for unprofessional actions or communications with other students, through one-on-one conversations, or electronic interactions.

Lecture Participation Points: Lectures will be delivered through pre-recorded videos that will be posted to canvas before the appointed lecture time. For each lecture there will be associated activities that must be completed for participation points. These activities will need to be completed and submitted by the end the scheduled lecture time (9:20 am).

Grading: Grading in this course is on a straight point scale so in theory, every person could earn an A! You are not competing with each other for grades, so work together!

| | Points | |
|--------------------------------------|------------|--|
| Lecture Participation | 100 | |
| Quizzes (40 pts each) | 160 | Letter grades are assigned as follows: 675-750: A 600-674: B 525-599: C 450-524: D Below 450: F No +/- will be given |
| Lab Notebook | 100 | |
| Professionalism | 50 | |
| Writing in Your Own Voice Assignment | 50 | |
| Digests & AGE Analysis Write-up | 75 | |
| CRISPR Project Write-up | 115 | |
| Technique Presentation & Write-up | 100 | |
| Total | 750 | |

Late Work Policy: Post-Lecture activities for participation will close after the scheduled lecture time. Late submissions will not be accepted. Assignments and quizzes turned in within 24 hours of the due date will have a 20% deduction. After 24 hours, late assignments will not be accepted.

If you experience extenuating circumstances (e.g., you are hospitalized) that prohibit you from submitting your assignments on time, please let me know as soon as possible. I will evaluate these instances on a case-by-case basis.

Lab Attendance: Attendance in lab is required. Missing one lab without documentation/approval will result in a 5% deduction in your final course grade. If you miss two labs without documentation/approval, you will be asked to drop the class. If you experience extenuating circumstances that prohibit you from attending lab, please let me know as soon as possible. I will evaluate these instances on a case-by-case basis. If you predict an ongoing inability to attend scheduled lab times, such as internet issues or time-zone challenges please speak with me during week 1 so we can develop alternatives.

Disability Access: Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter (paper or electronic) issued by the Office for Students with Disabilities (link to OSD website.) Students are required to discuss accommodation arrangements with instructors and OSD liaisons in the department in advance of any exams or assignments.

Contact the OSD for further information:

858.534.4382

osd@ucsd.edu

<http://disabilities.ucsd.edu>

Inclusion: It is our goal to create a learning environment that supports diversity of thought, perspective, experience, and identities. We encourage all of you to participate in discussion and contribute to the field from your perspective. 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>

<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

Title IX Compliance: The University recognizes the inherent dignity of all individuals and promotes respect for all people. Sexual misconduct, physical and/or psychological abuse will NOT be tolerated. If you have been the victim of sexual misconduct, physical and/or psychological abuse, we encourage you to report this matter promptly. As a member of this community, I am interested in promoting a safe and healthy environment, and should I learn of any sexual misconduct, physical and/or psychological abuse, I must report the matter to the Title IX Coordinator. If you want to speak confidentially you may contact the Counseling Center.

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 the right to an educational environment that is free from harassment and discrimination.

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 <http://ophd.ucsd.edu>

Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at: 858.534.5793 sarc@ucsd.edu <http://care.ucsd.edu>

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

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a student affairs staff member, a department Chair, a faculty member 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.

Academic Integrity: Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Cheating and plagiarism will not be tolerated, and I will fail any student caught engaging in academic dishonesty. All exams will be closed-book and closed-notes, so all personal materials must be stowed under your seat. Any student caught cheating on an exam will receive a failing grade for the course. Lab assignments must be written in your own words and will be submitted through Turnitin. Plagiarism of any kind will not be tolerated and will result in a failing grade. If you are unsure of what constitutes plagiarism it is your responsibility to seek out clarifying information. The UCSD library website has a series of modules around plagiarism that can be found [here](#).

Writing Center: The Writing Center provides support for undergraduates working on course papers (i.e. laboratory reports and the research proposal) and independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing.

The Writing Center offers: one-on-one appointments for undergraduates with peer writing mentors; group workshops addressing a variety of writing projects, genres, and issues; and Drop-In Zone for quick questions, targeted assistance, and a comfortable writing space. <https://writingcenter.ucsd.edu/>

Technology Policy: Students are welcome to bring laptops to lecture for note-taking purposes. Please see this research study that shows “multi-tasking” on computers is likely to decrease your grade, but it also decreases the grades of people around you

who can see your screen⁴! For this reason, we ask that you be considerate about flipping between lectures notes and other platforms. The use of cell phones, computers, or any other electronic devices is not permitted during quizzes. Use of a cell phone or other similar electronic devices during an exam or quiz is grounds for receiving a failing grade.

⁴ Sana et al. 2013.

<http://www.sciencedirect.com/science/article/pii/S0360131512002254>

Basic Needs: Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in this course, is encouraged to contact:

858.246.2632 foodpantry@ucsd.edu basicneeds@ucsd.edu

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/>