

**Instructors:**

Dr. Lisa McDonnell (she/her/hers) [lmcdonnell@ucsd.edu](mailto:lmcdonnell@ucsd.edu), York 3080D, 858-246-0890

Dr. William McGinnis (he/him/his) [billmcginnis.ucsd@gmail.com](mailto:billmcginnis.ucsd@gmail.com), Bonner Hall 4318, 858-822-0458

We will do our best to respond within 24 hours Mon-Fri. However, if your email is regarding information that can be found on the course site or was covered in class or lab we may not reply. This is not because we do not want to help, but because it is important to be resourceful about finding available information.

*We will only send and receive correspondence via our UCSD email addresses or TritonEd.*

**Office Hours:** TBD. Lots of time in lab to talk and ask questions – take advantage of that! If I'm not in lab you can usually find me in my office.

**Instructional assistants:**

A01 Kuret, Thomas [tkuret@ucsd.edu](mailto:tkuret@ucsd.edu)

A02 Kirby, Adam [ajkirby@ucsd.edu](mailto:ajkirby@ucsd.edu)

**Lecture:** Tues/Thurs 8:00-9:20am, Tata Hall 2501

The classroom is not pod-cast capable. We will offer slides posted before/after class.

**Laboratory:** Tues/Thurs 9:30am-1:20pm York 4318 (A01) and York 4332 (A02)

**Required materials:**

- ☐ Lab protocols (recommend you print them from the course TritonEd site)
- ☐ Copy paper lab notebook or digital notebook
- ☐ Knee-length laboratory coat (available at bookstore)
- ☐ UV-blocking safety glasses or goggles (available at bookstore)
- ☐ Fine-tipped sharpie pen (dark color) for labelling tubes in the lab
- ☐ iClicker is required for lectures and should be registered on TritonEd
- ☐ All labs: Long pants and closed-toe/heel shoes are required in lab (ankles covered, bring extra socks if needed)
- ☐ Printed copy of the lab manual (available through TritonEd)

**Computers:** We will often use computers for data analysis and other exercises. We have access to *some* computers, however if you have your own laptop computer it is recommended you bring it to lab.

**Course Schedule:** Schedule is available on TritonEd. Please check TritonEd site often for updates, deadlines.

**Welcome to BIMM 101: Recombinant DNA Laboratory!** In BIMM101 we aim to develop an understanding of research in molecular biology through inquiry-based laboratory experiments. We will work in groups to design, collect, analyze, and present research data while learning molecular and biological concepts and laboratory skills.

### LEARNING GOALS

- Apply knowledge of molecular biology concepts and molecular techniques to plan experiments, explain and troubleshoot results
- Demonstrate proficiency at the basic molecular biology techniques used in the lab
- Troubleshoot results, provide possible explanations
- 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

- Class: Learn biological concepts related to the laboratory research projects, engage in discussions and review of primary literature, small weekly quizzes
- Laboratory: Engage in collaborative research projects
- Out-of-class: Reading, assignments, reports

### ACCESSIBILITY

<http://disabilities.ucsd.edu> | [osd@ucsd.edu](mailto:osd@ucsd.edu) | 858-534-4382

Any student with a disability is welcome to contact us early in the quarter to work out reasonable accommodations to support their success in this course. Students requesting accommodations for this course due to a disability must work through the Office for Students with Disabilities (OSD). Instructors will receive Authorization for Accommodations Letters from the OSD online portal. 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

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](mailto:diversity@ucsd.edu) | <https://diversity.ucsd.edu/>

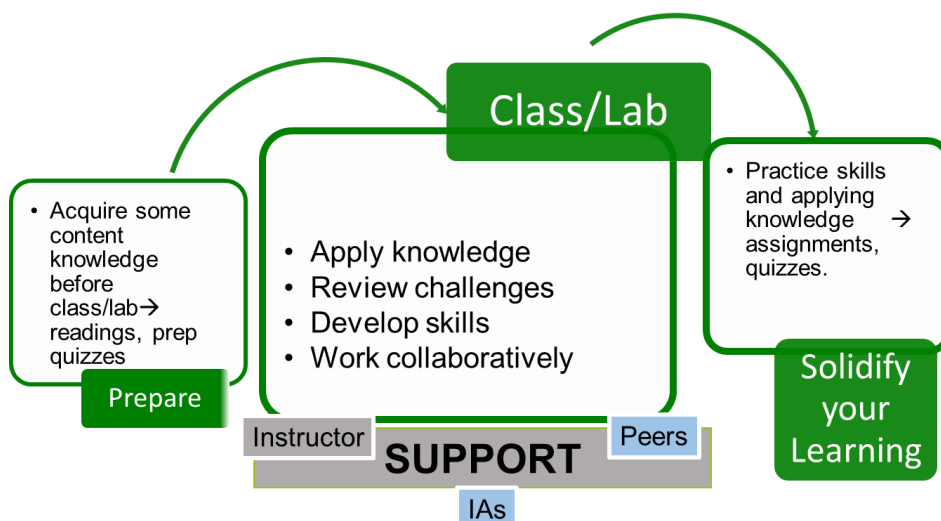
<https://students.ucsd.edu/student-life/diversity/index.html>

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

## LEARNING IN THIS COURSE

This course is designed to be a **collaborative** environment for everyone to learn together and construct a shared understanding of the material. **Active participation** both in class and in lab is expected. Being able to **communicate** understanding, and confusion, is critical to success in any discipline, and is very useful for learning<sup>1</sup>. To encourage collaboration, class activities and discussions will be done in groups, and grades will not be assigned on a curve.

We will use class time to work on applying our knowledge, troubleshooting difficult topics, and practice solving problems. There are often pre-class assignments to prepare for the material to come in class.



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.

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

## GRADING

BIMM101 has multiple grading components: participation (11%), lab notebooks (5%), professionalism (2%), quizzes and final exam (36%), laboratory reports/assignments (36%), and an extra credit opportunity of 0.5%. Because different people may excel in different aspects, the laboratory reports or quizzes, whichever is higher for each individual, will be scaled to 46% bringing the total to 100%.

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. Because course assessments are not perfectly precise, grade cutoffs may be shifted slightly (e.g. by ~1%) from those listed below, based on large gaps in between individual scores.

A+	96-100	B+	84-87	C+	72-75	D	55-63
A	92-95	B	80-83	C	68-71	F	Less than 55
A-	88-91	B-	76-79	C-	64-67		

There are no opportunities for extra credit beyond what is assigned as part of the course by the instructor.

**Participation:** Active participation in both lectures and the laboratory is expected. There will be many participation items, including pre-lecture reading assignments, and in-lecture discussions and activities. Participation will be graded for thoughtful completion. Because individual students may have different competing schedules and life events, completing 85% or more of all participation items will earn the full participation. For example, if there are 40 participation items, completing 34 items will result in 40/40, whereas completing 31 items will result in 31/34 for the participation grade.

### *Pre-class/lab reading assignments*

Before most classes you will be asked to read the protocols associated with the lab for that day or week. All materials will be posted on TritonEd. Pre-class reading assignments are designed to introduce some relevant background material, so you are prepared for class and can have productive discussions, and introduce some relevant primary literature, which could be useful later when you are writing reports. You will sometimes be asked to answer some questions and submit them either online before class, or on paper at the start of class. Quiz scores will be counted towards your participation score.

*In-class discussions and activities:* these will happen on a regular basis, and include clicker questions and sometimes completion of work in-class. It is recommended you bring your carbon notebook to class so in-class work can be completed in your book and handed in if requested.

**Lab notebooks:** 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. Lab notebook entries will be spot-checked at random during the quarter and scored for various components: pre-lab outline which includes the reasons for doing various steps, the goals for the day/experiment, predications about outcomes, descriptions of what was done that day/week including any variations from the original protocol, results and analysis (including how results compared to predictions), troubleshooting when necessary, and drawing relevant conclusions based on evidence and reasoning. Entries should be organized, clear and easy to follow.

**In-Lab quizzes and final exam:** All quizzes and the final exam will be open resources (e.g. notes, lab manual, and normal calculators but not electronic equipment that can be used to communicate with others). Quizzes will be cumulative but will focus on the most recent material. There will be 4 quizzes held in lab (week 2, 4, 6, and 8) worth 4.5% each. The lowest of these scores will be scaled down to 2%, and 2.5% bumped to highest-scoring quiz (so in the end one quiz will be worth 2%, two worth 4.5%, and one worth 7%).

The final exam is held during the las lab period, and is worth 18% (cumulative).

To facilitate reflection and learning from quizzes they will be completed in two phases: The first phase will be done individually, and the second phase will be the same quiz done again in groups. The individual score will count for 80% and the group will count for 20%. Examples:

#### **Example 1:**

Individually you get 8/10  
Your group gets 9/10  
Your final quiz score = 80% of 8/10 + 20% of 9/10  
= 8.2/10

#### **Example 2:**

Individually you get 8/10  
Your group gets 7/10  
Your final quiz score = 80% of 8/10 + 20% of 7/10  
= 7.8/10

It is important to practice effective group work and communication in order to achieve the maximum possible as a group, and thus as an individual.

The final exam *will not* have a group component.

**Why use this collaborative testing method?** People tend to learn more from collaborative work compared to doing work alone<sup>2, 3</sup>. These collaborative testing opportunities allow us to deepen our understanding because we are receiving feedback on our thinking in a very timely fashion (and feedback is critical for learning). Also, it is an opportunity to practice communicating effectively and collaborating to solve problems. Teaching one another is also one of the most powerful ways to learn.

2 Heller et al., 1992. [http://www.physics.emory.edu/faculty/weeks/journal/Heller\\_AJP\\_91a.pdf](http://www.physics.emory.edu/faculty/weeks/journal/Heller_AJP_91a.pdf)

3 Gilley and Clarkston, 2014. [http://www.cwsei.ubc.ca/SEI\\_research/files/Gilley-Clarkston\\_2-Stage\\_Exam\\_Learning\\_JCST2014.pdf](http://www.cwsei.ubc.ca/SEI_research/files/Gilley-Clarkston_2-Stage_Exam_Learning_JCST2014.pdf)

### Write-ups & Assignments

Guidelines, rubrics, and due dates for each of the write-ups and assignments will be posted on TritonEd. The goal of the write-ups 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). Typically for the write-ups you will submit a complete draft and then engage in peer-review to give and receive feedback. You will then have a chance to revise your work and submit a final version.

<b>1. Scientific argument &amp; proper citation methods – 4%</b> Due Fri Oct 4, 11:59pm	<b>4. CRISPR-Cas9 results write-up – 12%</b> Due Mon Nov 25, 11:59pm; Final version due Tues, Dec 3, 11:59pm
<b>2. PCR Write-up – 6%</b> Due Wed Oct 16, 11:59pm; Final version due Sunday Oct 20, 11:59pm	<b>5. PTC data analysis – 4%</b> Due Wed Nov 27, 11:59pm
<b>3. Sequencing analysis write-up – 7%</b> Due Thurs Oct 31, 11:59pm; Final version due Wed Nov 6, 11:59pm	<b>6. C. elegans RNAi data analysis – 3%</b> Due Tues, Dec 3, end of lab (1:30pm)

**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 individual (2% described here) and community efforts (0.5% extra credit described below). The individual component is to account for demonstrating maturity and professionalism. 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 in steps of 0.5%.

#### 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 and being prepared to work in lab

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

- Contributing inequitably to team work in class, in discussion section, or on exams
- 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
- Being disruptive to fellow students in class, in lab, or during exams
- Shirking responsibilities in lab such as completing exercises and maintaining a clean and fully-stocked bench

**Extra Credit:** The 0.5% extra credit can be earned by completing course evaluations and 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.

## LABORATORY SAFETY

Safety precautions are crucial in the laboratory setting. Biology lab safety training and assessment (<https://biology.ucsd.edu/education/undergrad/course/ug-labs.html>) must be completed by the **beginning of the second lab** in week 1.

From the beginning of the first lab, appropriate laboratory attire and personal protective equipment (PPE) are required, including laboratory coats that cover to the knees, UV-blocking safety glasses or goggles, long pants or equivalent, long socks or equivalent, and closed-toe and closed-heel shoes. No skin should be exposed from the waist down at all times, including ankles. If you choose to wear attire that exposes ankles please bring a pair of socks to wear in the lab.

## LABORATORY ATTENDANCE

Attendance in laboratory is required. Missing the first lab will result in being dropped from the course. Missing one laboratory session without a documented excuse (documented illness, serious family emergency, etc.), will automatically result in a 5% deduction in your final course grade. If you miss two labs for undocumented reasons, you will be asked to drop the course.

Please [be on time for laboratory sessions](#). Two late attendances will be counted as one absence. Additional policies are available online (<https://biology.ucsd.edu/education/undergrad/course/waitlist.html>).

## LATE ASSIGNMENTS AND QUIZZES

Assignments must be submitted on time to be eligible for full credit. Except in the case of documented medical or family emergencies, late assignments will be subjected to a 25% 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. There are no make-up quizzes offered, except in the case of a documented medical or family emergency (in which case the instructor will decide how to go about the make-up testing). No late participation items will be accepted (see the 85% rule).



### 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 serve as the foundation for academic integrity.

	As students we will.....	As the teaching team we will.....
<b>Honesty</b>	<ul style="list-style-type: none"><li>• Honestly demonstrate your knowledge and abilities according to expectations listed in the syllabus or in relation to specific assignments and exams</li><li>• Communicate openly without using deception, including citing appropriate sources</li></ul>	<ul style="list-style-type: none"><li>• Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams</li><li>• Communicate openly and honestly about the expectations and standards of the course through the syllabus and in relation to assignments and exams</li></ul>
<b>Responsibility</b>	<ul style="list-style-type: none"><li>• Complete assignments on time and in full preparation for class</li><li>• Show up to class on time and be mentally and physically present</li><li>• Participate fully and contribute to team learning and activities</li></ul>	<ul style="list-style-type: none"><li>• Give you timely feedback on your assignments and exams</li><li>• Show up to class on time and be mentally and physically present</li><li>• Create relevant assessments and class activities</li></ul>
<b>Respect</b>	<ul style="list-style-type: none"><li>• Speak openly with one another while respecting diverse viewpoints and perspectives</li><li>• Provide sufficient space for others to voice their ideas</li></ul>	<ul style="list-style-type: none"><li>• Respect your perspectives even while we challenge you to think more deeply and critically</li><li>• Help facilitate respectful exchange of ideas</li></ul>
<b>Fairness</b>	<ul style="list-style-type: none"><li>• Contribute fully and equally to collaborative work, so that we are not freeloading off of others on our teams</li><li>• Not seek unfair advantage over fellow students in the course</li></ul>	<ul style="list-style-type: none"><li>• Create fair assignments and exams and grade them in a fair and timely manner</li><li>• Treat all students and collaborative teams equally</li></ul>
<b>Trustworthiness</b>	<ul style="list-style-type: none"><li>• Not engage in personal affairs while on class time</li><li>• Be open and transparent about what we are doing in class</li><li>• Not distribute course materials to others in an unauthorized fashion</li></ul>	<ul style="list-style-type: none"><li>• Be available to all students when we say we will be</li><li>• Follow through on our promises</li><li>• Not modify the expectations or standards without communicating with everyone in the course</li></ul>
<b>Courage</b>	<ul style="list-style-type: none"><li>• Say or do something when we see actions that undermine any of the above values</li><li>• Accept the consequences of upholding and protecting the above values</li></ul>	<ul style="list-style-type: none"><li>• Say or do something when we see actions that undermine any of the above values</li><li>• Accept the consequences of upholding and protecting the above values</li></ul>

\* 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.

### WRITING CENTER

<https://writingcenter.ucsd.edu/>

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.

### REGRADES

If a grading error has been made, you should submit a re-grade request to your Instructional Assistant or Dr. McDonnell at the end of a lecture within two days of return of the item. No re-grades are possible for exams written in pencil or non-permanent ink. Students who submit items for re-grading understand that we may re-grade the entire item and the score may go up or down.

### TECHNOLOGY POLICY:

Laptop computer 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 screen<sup>4</sup>! 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:

[foodpantry@ucsd.edu](mailto:foodpantry@ucsd.edu) | [basicneeds@ucsd.edu](mailto:basicneeds@ucsd.edu) | (858)246-2632

### 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/>

### 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](mailto: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 observed* in class, lab, and office hours. Be sure to actively participate in the in-class 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.

### 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.

## Consent to Participate in Educational Research

University of California, San Diego

Consent to Act as a Research Subject

Investigating the Impact of Pedagogical Choices on University Student Learning and Engagement

### ***Who is conducting the study, why you have been asked to participate, how you were selected, and what is the approximate number of participants in the study?***

Gabriele Wienhausen, Director of the Teaching and Learning Commons, together with her education research colleagues is conducting a research study to find out more about how pedagogical choices affect student learning and experience in the classroom. You have been asked to participate in this study because you are a student in a class that is being studied or used as a control. There will be approximately 500,000 participants in this study.

### ***Why is this study being done?***

The purpose of this study is to create knowledge that has the potential to improve the learning and educational experience of students at UC San Diego and beyond.

### ***What will happen to you in this study and which procedures are standard of care and which are experimental?***

If you agree to be in this study, the following will happen:

- Your data from this class including grades, homework and exam submissions, and survey responses will be included in the analysis to determine the effectiveness of the pedagogical techniques used in this course compared to other similar courses.

### ***How much time will each study procedure take, what is your total time commitment, and how long will the study last?***

Your participation involves only agreeing to let us use your data in our analysis. It will require no time on your part above the time you put into this course without agreeing to the study.

### ***What risks are associated with this study?***

Participation in this study may involve some added risks or discomforts. These include the following:

1. A potential for the loss of confidentiality. We will not share your personally identifying data with people outside our research team. Data will only be kept in anonymized form for research purposes. Course data will not be used for this research study until after final grades have been posted and will be rendered confidential by removing any identifiers before analysis. Your instructor will not know whether or not you are participating in this study until after final grades have been posted. Data from students who opt out of the study will be removed prior to data analysis. Research records will be kept confidential to the extent allowed by law. Research records may be reviewed by the UCSD Institutional Review Board.

Since this is an investigational study, there may be some unknown risks that are currently unforeseeable. You will be informed of any significant new findings.

### ***What are the alternatives to participating in this study?***

The alternatives to participation in this study are not to participate. If you choose to opt-out of participating in this research study, we will exclude your data from analysis. Whether you participate will have no impact on your experience or grade in the associated class as the professor will not know who is or is not participating in the study until after final grades are assigned.

***What benefits can be reasonably expected?***

There is no direct benefit to you for participating in the study. The investigator, however, may learn more about how to improve student learning, and society may benefit from this knowledge.

***Can you choose to not participate or withdraw from the study without penalty or loss of benefits?***

Participation in research is entirely voluntary. You may refuse to participate or withdraw or refuse to answer specific questions in an interview or on a questionnaire at any time without penalty or loss of benefits to which you are entitled. If you decide that you no longer wish to continue in this study before the end of the quarter, simply respond to the online opt-out form here:

<https://goo.gl/forms/JSBRjEmkES6W6xYc2>. If you decide to opt out after the quarter has ended, you must contact Ying Xiong ([yix184@ucsd.edu](mailto:yix184@ucsd.edu)) and give the quarter and the course from which you would like your data withdrawn.

You will be told if any important new information is found during the course of this study that may affect your wanting to continue.

***Can you be withdrawn from the study without your consent?***

The PI may remove you from the study without your consent if the PI feels it is in your best interest or the best interest of the study. You may also be withdrawn from the study if you do not follow the instructions given you by the study personnel.

***Will you be compensated for participating in this study?***

You will not be compensated for participating in this study.

***Are there any costs associated with participating in this study?***

There will be no cost to you for participating in this study.

***Who can you call if you have questions?***

Gabriele Wienhausen and/or her colleague has explained this study to you and answered your questions. If you have other questions or research-related problems, you may reach Gabriele Wienhausen at [gwienhausen@ucsd.edu](mailto:gwienhausen@ucsd.edu) or (858) 534-3958.

You may call the Human Research Protections Program Office at 858-246-HRPP (858-246-4777) to inquire about your rights as a research subject or to report research-related problems.

***Your Consent***

If you consent to participate in this study and are at least 18 years old, no action is needed. If you DO NOT consent to participate in this study, or you choose to opt-out at any time during the quarter, please submit this form online at <https://goo.gl/forms/JSBRjEmkES6W6xYc2>. Your instructor will not have access to the list of students who opted out until after grades are posted. Note that you must separately opt-out of the study for each course involved in this study.

## CALENDAR

Additional details for each week will be provided on TritonEd and in class/lab.