

Welcome to BICD 100 Genetics! This course aims to develop concepts of genetics, so that we can understand how information is stored, inherited, and utilized life. Fundamental concepts include gene and chromosome structure, genotype and phenotype, chromosome segregation and recombination, regulation of gene expression, random mutation, natural selection, and epigenetics. We will learn these concepts by examining their roles in biological systems and will apply our understanding to explore a wide range of biological and real-life phenomena including forensics, archeology, human health, evolution, biodiversity.

### Learning goals

- Collaborate with fellow students and the instructional team to learn concepts in genetics
- Apply knowledge of genetics concepts to analyze data, explain phenomena, and solve problems
- Learn to draw conclusions and construct scientific arguments based on evidence and reasoning
- Develop skills in reading, understanding, and analyzing primary research articles

### Learning in this course

BICD 100 is designed to be a collaborative environment for everyone to learn together and construct a shared understanding of the material. Active participation and contribution both in class and in discussion section are essential because many ideas that will be developed in these activities cannot be easily captured otherwise. Being able to communicate understanding, articulate confusion, and defend scientific arguments based on evidence and reasoning is both useful for learning<sup>1</sup> and critical to success in any discipline. To encourage collaboration and community building, class activities will be done in groups, and grades will not be assigned on a curve.

Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Exams will include questions that are based on solving problems in new contexts. We will use class time to construct and apply our knowledge, troubleshoot challenging topics, practice problem solving, and develop skills in critical thinking. There will often be pre-class assignments to prepare for the more challenging material in class.

<sup>1</sup> Smith et al (2009) Science 323: 122–124. <http://science.sciencemag.org/content/323/5910/122.short>

### Course logistics

The core learning components in this course are comprised of collaborative activities both in class and in discussion sections, in addition to independent work on studying and completing assignments. Course material, announcements, and other important details will be available on the TritonEd (<https://triton.ed.ucsd.edu>). Please check the course website and your @ucsd email regularly for updates and relevant information.

To be part of the course, you should already be enrolled in a discussion section along with the lecture section. You must attend the discussion section that you are enrolled in to receive credit. We are not able to change the maximum number of enrolled students in a section. If a section is full, you must choose another one. If you cannot find one that suits your schedule, you will unfortunately have to decide to enroll in the course another time or to forgo contribution and credit for the discussion section.

**Course materials:** Assigned readings for this course will be from online sources, relevant research articles from the primary literature posted on TritonEd, and Klug et al. *Essentials of Genetics*, 9th edition. We will not be using *Mastering Genetics* (online homework module associated with this textbook), so you do not need to purchase an access code or purchase a new book to get this access code. Instead, a substantial portion of learning will be from primary research articles, and assignments will be designed to support this more complex level of learning.

Active participation and contribution in class and in discussion section will be mainly through short writing activities and clicker questions. To participate in clicker-based discussions in class, please have an iClicker2 registered on TritonEd. Short writing activities will be done in class and in discussion sections, so please bring paper and pens or pencils.

**Podcast:** Whenever possible, classes will be recorded and made available online as a resource for learning (<http://podcast.ucsd.edu/>). However, active participation and contribution are highly encouraged, as substantial portions of class time will be interactive. Many important concepts and ideas that will be developed collaborative in these activities, which cannot be easily captured on video. Therefore, podcasts are provided as for the purpose of review and should not be used solely to substitute for active engagement in class meetings.

**Technology:** Students are welcome to bring laptop computers, tablets, or similar technology to class and to discussion section for note-taking purposes. Please see this research study, which shows that multi-tasking on computers in class is likely to decrease not only your own grade but also the grades of people around you who can see your screen!<sup>2</sup> For this reason, please be considerate to your fellow classmates, and we ask that you do not flip between relevant course material and irrelevant activities on the internet. The use of cell phones, computers, or any other electronic communication devices is not permitted during exams. Use of these devices during an exam is considered a violation of academic integrity and can result in a failing grade in the course.

<sup>2</sup> Sana et al (2013) *Computers and Education* 62: 24–31

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

**Academic integrity** (<https://academicintegrity.ucsd.edu/>)

Integrity of scholarship is essential for an academic learning community. In this course and at the university, we expect that both students and the instructional team 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 to whom it is assigned, without unauthorized aid of any kind. The instructional team will exercise care in planning and collaborating with students on academic work.

When people collaborate to work toward a common goal, shared values must be established so that everyone understands the acceptable ways for working together. In this course, we are using a statement of values<sup>4</sup> to describe the behaviors for maintaining and protecting those values. These values are open to discussions and possible alterations based on mutual agreements among all students and the instructional team. In collaborative work, each team should discuss these values and agree on mutual expectations.

All course materials are the property of the instructor, the course, and 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.

<sup>4</sup> This class statement of values is adapted from Tricia Bertram Gallant Ph.D.

	As students, we will ...	As the instructional team, we will ...
Honesty	<ul style="list-style-type: none"> <li>Honestly demonstrate knowledge and abilities according to expectations</li> <li>Communicate without using deception, e.g. citing appropriate sources</li> </ul>	<ul style="list-style-type: none"> <li>Give honest feedback</li> <li>Communicate honestly about expectations and standards through the syllabus and course materials</li> </ul>
Responsibility	<ul style="list-style-type: none"> <li>Complete assignments on time</li> <li>Be on time and fully contribute to team learning and activities</li> </ul>	<ul style="list-style-type: none"> <li>Give timely feedback</li> <li>Be on time and mentally present</li> <li>Create relevant activities for learning</li> </ul>
Respect	<ul style="list-style-type: none"> <li>Speak openly with one another while respecting diverse perspectives</li> <li>Provide sufficient space for others</li> </ul>	<ul style="list-style-type: none"> <li>Respect different perspectives</li> <li>Help facilitate respectful exchanges</li> </ul>
Fairness	<ul style="list-style-type: none"> <li>Contribute fully and equally to collaborative work</li> <li>Not seek unfair advantage</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 teams equally</li> </ul>
Trustworthiness	<ul style="list-style-type: none"> <li>Focus on relevant work while 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> </ul>
Courage	<ul style="list-style-type: none"> <li>Say or do something when we see actions that undermine these values</li> <li>Accept a lower or failing grade or other 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 these values</li> <li>Accept the consequences (e.g. lower teaching evaluations) of upholding and protecting the above values</li> </ul>

### Accessibility and inclusion

<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 academic success. Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). Students are required to present their AFA letters to faculty and to the OSD Liaison in the Division of Biological Sciences in advance so that accommodations may be arranged.

Whenever possible, we will use universal designs that are inclusive. For example, colors used in this syllabus are distinguishable by most colorblind and non-colorblind people, and this font is designed to be dyslexic friendly. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

### Discrimination and harassment

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](mailto:ophd@ucsd.edu), or <http://ophd.ucsd.edu>. Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at 858-534-5793, [sarc@ucsd.edu](mailto:sarc@ucsd.edu), or <http://care.ucsd.edu>, or Counseling and Psychological Services (CAPS) at 858-534-3755 or <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 faculty member, a department chair, or other university official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed.

If you find yourself in an uncomfortable situation, ask for help. The University is committed to upholding policies regarding nondiscrimination, sexual violence, and sexual harassment.

### Grading

Our course has the following grading components: contribution (16%), writing assignments (25%), midterm exams (25%), final exam (25%), professionalism (2%), and extra credit (0.5%). Because different people may excel in different aspects of the course, the higher component between writing assignments and the final exam for each individual will be scaled from 25% to 32%, bringing the total to 100%. There are no opportunities for extra credit beyond what is assigned.

The general grading scheme is as follows, although it may be adjusted to improve everyone's grades if necessary. Exact boundaries will be determined based on final grade distributions: Because course assessments are not perfectly precise, grade cutoffs will be identified by large gaps in between individual scores. For example, grade cutoffs may vary based on different relative percentages: 93.25 (A), 93.21 (A), (big relative difference), 92.91 (A-), 92.89 (A-) vs. 93.25 (A), 93.00 (A), 92.99 (A), (big relative difference), 92.78 (A-). However, our course is not graded on a curved distribution, 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+	97–100%	B+	87–90%	C+	77–80%	D	60–70%
A	93–97%	B	83–87%	C	73–77%	F	0–60%
A-	90–93%	B-	80–83%	C-	70–73%		

**Contribution:** Active contribution both in class and in discussion section are essential to learning in this course. Contribution is different from attendance or participation. Attendance means that you are physically present. Participation means that you have completed the required activities. Contribution involves attendance, participation, and active mental engagement that ultimately results in learning for yourself and your classmates, e.g. thinking through (and not just memorizing) the material on your own, collaborating meaningfully with your classmates, asking questions, etc.

There will be many contribution items, including pre-class assignments, clicker questions and writing activities in class, and writing activities in discussion section. Contributions will be graded for thoughtful completion on a scale 0, 0.5, and 1. Because individual students may have different competing schedules and life events, completing 85% or more of all contribution items will earn the full contribution grade. For example, if there are 40 contribution items, completing 34 items will result in 34/40, whereas completing 33 items will result in 33/40 for the contribution grade.

For most classes, there will be reading assignments and associated writing assignments to be completed before class. Check TritonEd regularly for details and due dates. These pre-class assignments are designed to: (1) engage students in exploring new concepts and ideas, so we are prepared for class and can have productive discussions, and (2) help the instructional team know prior to class what material students are struggling with, so we can adjust accordingly to use our class time as efficiently as possible. In class, there will be clicker questions and writing activities on a regular basis. Be sure to bring paper and pens or pencil for the writing activities. Please also note that it is a violation of academic integrity policies to use someone else's clicker in class.

In discussion section, we will engage in collaborative work, analyze research data from primary literature, construct scientific arguments based on data and reasoning, and practice solving problems in preparation for exams. The discussion sections also provide opportunities to build relationships with fellow students and your instructional assistant. Writing activities in discussion sections are structured so that we will get practice for the graded writing assignments.

The problems in discussion section will focus on drawing conclusions and constructing scientific arguments based on evidence and reasoning from primary research articles. These section activities will mimic the collaborative phase of exams that we will use in midterms (more on that below), and they will give you an opportunity to test your knowledge, practice working at the level that is expected on the exam, and practice working on a complex problem collaboratively in teams. Contributions to the group effort will be noted by the instructional assistant, and this will be part of your contribution and professionalism grades. Thus, it is very important that you arrive at discussion sections prepared.

The best way for you to learn how to solve problems and deepen your understanding of the course material is to work through the section activities and discuss them with your fellow classmates and the instructional assistant. The instructional assistant is there to facilitate students discovering and constructing an understanding for themselves but to give you the answers to the problems.

**Writing assignments:** The writing assignments will focus on understanding and analyzing research data from primary literature articles, as well as drawing conclusions and constructing scientific arguments based on evidence and reasoning. Details of these assignments will be made available in class and on TritonEd.

The graded writing assignments will complement writing activities in class and in discussion section. The skills developed in these writing assignments will also be tested on midterm and final exams, where you will be challenged to analyze data and construct scientific arguments that answer specific research questions.

**Midterm and final exams:** Questions in exams will challenge us to apply our understanding in new contexts by solving problems and constructing scientific arguments with evidence and reasoning. Therefore, one letter-size paper (both sides) with notes is allowed. Exams will be cumulative but will focus on the most recent material. There will be two midterm exams in class (80 minutes each; 10% and 15%) and one final exam in exam week (179 minutes, 25%).

To facilitate reflection and learning in the quarter, midterm exams (but not the final exam) will be in conducted two phases: The first phase will be done individually, and the second phase will be the same or analogous exam questions done again in groups. The individual portion will count for 80% of the exam grade, and the group portion will count for 20%. Note that the group portion is still an exam, and an individual's final grade is not automatically improved by the group portion of the exam. However, in previous iterations of the course, over 95% of groups improve their groups by the group portion.

We are using this two-phase testing method for midterm exams as people learn more from collaborative work compared to individual work.<sup>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, which is critical for learning. It is also an opportunity to practice communicating effectively and collaborating to solve problems.

<sup>3</sup> Gilley et al (2014) Journal of College Science Teaching 43: 83–91 <https://jstor.org/stable/43632038>

**Professionalism:** This portion of the course grade is intended to engage everyone in considering 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. Analogously in the workplace, being unprofessional to your colleagues or supervisors will only discount you.

Professionalism can be demonstrated through individual (2% described in this section) and community efforts (extra credit described in the section below). The individual component is to account for demonstrating maturity and professionalism. By default, everyone is assumed to be professionally mature. Hence, this component is awarded at the beginning of the quarter. During the quarter, based on observations by the instructional team, which includes but is not limited to one-on-one interactions, electronic communication, and follow-up conversations on different correspondence, professionalism credit may be deducted.

Example interactions with meaningful benefits that:

- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Clarifying course material that facilitates deeper learning

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 other students or the instructional team, either in person or online
- Ignoring the directions or requests from the instructional team, especially in relation to safety
- Being disruptive to fellow students in class, in discussion section, or on exams

**Extra credit:** The 0.5% extra credit is based on community professionalism, which can be earned by completing course evaluations and related surveys that are aimed to improve the course and the educational experiences of your future peers. If 90% or more of all students complete CAPEs, instructional assistant evaluations, and other course-based evaluation surveys in a mature and professional fashion (i.e. taking them seriously and providing timely and constructive feedback), 0.5% will be added to everyone in the course. Other than the community professionalism component, there are no other opportunities for extra credit beyond what is already assigned as part of the course by the instructor.

**Late or missing assignments:** In general, we are unable to accept late or missing assignments because of the large size of the course. This means that no late contribution items will be accepted; completing 85% of contribution items will earn the full contribution grade. However, we acknowledge that emergencies do occur. For missed exams or writing assignments due to documented short-term illness or serious family emergency,

please contact the course instructor as soon as possible or reasonable to do so. We are here to help you be successful in the course!

**Regrades:** If a grading error has been made, please submit a regrade request to the course instructor within one week of the assignments being returned. Attach a separate piece of paper to the assignment as a cover sheet, with a concise description or explanation for the regrade request. Regrades are submitted with the understanding that the instructional team may: (1) regrade the entire exam or assignment, and (2) compare the submitted paper to a copy of the original exam or assignment. As a result, the overall grade may go up or down or remain the same after the regrade.

**Team work:** A major goal of the course is to learn to collaborate with others. Unfortunately, despite best efforts and intentions, teams do not always function optimally. Dealing with these challenges is a natural part of the learning experience. Everyone is expected to contribute fully and equitably to team work as part of the university learning community.

If significant disputes occur over the relative contribution of individual members of the team, students can submit an appeal. In such cases, the team grade will be multiplied by the number of members in the team, and the points can be divided among individuals based on what each team member agrees that they deserve from their individual efforts. To submit an appeal, all members of the team need to get together and provide the following information in a document: clear and detailed descriptions of each member's contribution, calculations and explanations for how the points should be divided among the members, and signatures from each member with a statement attesting to the fact that everyone in the team has agreed to all information in the appeal document. Please submit the appeal to the course instructor within one week of the assignments being returned.

**Meeting times**

Please note that dates are listed in **US** format of month/day. For example, 1/2 means January 2<sup>nd</sup>.

Class	Day	Time	Location	Instructor	Email
A00	Mon, Wed	6:30p–7:50p	PCYNH 122	Lo, Stanley	<a href="mailto:smlo@ucsd.edu">smlo@ucsd.edu</a>

Section	Day	Time	Location	Instructional assistant	Email
A01	Friday	9:00a–9:50a	WLH 2110	Mandap, Josh	<a href="mailto:jmandap@ucsd.edu">jmandap@ucsd.edu</a>
A02	Friday	1:00p–1:50p	YORK 4050A	Lopez, Bryn	<a href="mailto:bnl009@ucsd.edu">bnl009@ucsd.edu</a>
A03	Friday	2:00p–2:50p	YORK 4050A	Tummala, Vineet	<a href="mailto:v1tummal@ucsd.edu">v1tummal@ucsd.edu</a>
A04	Friday	3:00p–3:50p	YORK 4050A	Usmani, Ahsan	<a href="mailto:ausmani@ucsd.edu">ausmani@ucsd.edu</a>

Exam	Day	Time	Location
3/20	Wednesday	7:00p–9:59p	TBA

Midterm exams will be in class. The midterm exam time listed on WebReg (02/08/2019; F; 8:00p–9:20p) will not be used.

Office hours

Consider office hours to be more like study sessions or free-formed fireside chats, where we can talk about anything related to your academic and general experiences on campus. Dr. Lo's office hours are on a rotating schedule, so that more people can have an opportunity to come to office hours without scheduling conflicts. Please feel free to email and set up a separate appointment if the following times do not work for you.

The location for Dr. Lo's office hours is the Mandeville coffee cart (The Art of Espresso), and it is chosen to be a relatively central location for easy access from all over campus. Dr. Lo's office is in York 4070B (Revelle College) and may be far away for students coming from the other ends of campus.

Please note that dates are listed in US format of month/day. For example, 1/2 means January 2nd.

Week	Day	Date	Time	Location
1	Wednesday	1/9	9:00a–9:50a	Mandeville coffee cart (Art of Espresso)
2	Wednesday	1/16	10:00a–10:50a	Mandeville coffee cart (Art of Espresso)
3	Wednesday	1/23	2:00p–2:50p	Mandeville coffee cart (Art of Espresso)
4	Monday	1/28	1:00p–1:50p	Mandeville coffee cart (Art of Espresso)
5	Tuesday	2/5	10:00a–10:50a	Mandeville coffee cart (Art of Espresso)
6	Tuesday	2/12	11:00a–11:50a	Mandeville coffee cart (Art of Espresso)
7	Tuesday	2/19	12:00p–12:50p	Mandeville coffee cart (Art of Espresso)
8	Monday	2/25	4:00p–4:50p	Mandeville coffee cart (Art of Espresso)
9	Tuesday	3/5	4:00p–4:50p	Mandeville coffee cart (Art of Espresso)
10	Wednesday	3/13	12:00p–12:50p	Mandeville coffee cart (Art of Espresso)
Exam	Tuesday	3/19	1:00p–1:50p	Mandeville coffee cart (Art of Espresso)

Grab lunch or coffee with us!

We also encourage you to take advantage of the Dine-With-a-Prof or the Coffee-With-a-Prof program in the colleges (<https://students.ucsd.edu/academics/advising/academic-success/dine-with-a-prof.html>).

Undergraduate students may participate in the Dine-With-a-Prof program once per quarter during the academic year and the Coffee-With-a-Prof program twice per quarter during the academic year. These can be used with any professor or graduate instructional assistant on campus.



**Calendar**

A general outline for the course is provide below. More specific details for each week will be provided on TritonEd and in class. We may also adjust the schedule as necessary, while still focusing on learning the important concepts and laboratory skills intended for this course.

Please note that dates are listed in **US** format of month/day. For example, 1/2 means January 2nd.

Week	Topics	Writing assignments and exams Note: Assignments for contribution items are posted on TritonEd. Please check TritonEd for details.
1-2	<b>DNA forensics: How can we use genetics to reconstruct the family tree of King Tutankhamun?</b> Topics: Molecular markers, alleles, meiosis, biotechnology, Hardy-Weinberg equilibrium	Monday 1/21 at 11:59 pm: writing #1
3-4	<b>Human diseases: Why do deleterious genetic diseases continue to persist in populations?</b> Topics: Mutations, non-Mendelian inheritance, chi-square, population and evolutionary genetics	Monday 1/28 in class: midterm exam #1
5-6	<b>Biodiversity: How do new forms and functions evolve in coat colors in mice?</b> Topics: Gene interactions, linkage, chromosome mapping, quantitative trait loci	Sunday 2/10 at 11:59 pm: writing #2
7-8	<b>Biodiversity: How do new forms and functions evolve in skeletal structures in fish?</b> Topics: Gene structure, gene regulation, quantitative trait loci	Monday 2/25 in class: midterm exam #2
9-10	<b>Human genetics: How are complex traits such as human skin color determined by genetics?</b> Topics: Quantitative genetics, genome-wide association studies	Sunday 3/3 at 11:59 pm: writing #3
Exam	---	Wednesday 3/20 at 7:00p-9:59p: final exam

Library guide (<https://ucsd.libguides.com/biology>)

A specific library guide has been designed for courses in Biological Sciences. This website serves as the starting point for navigating campus library resources that support our needs in completing major assignments. Please feel free to schedule a consultation with our biomedical librarian for further assistance.

Writing and Critical Expression Hub (<http://commons.ucsd.edu/students/writing/index.html>)

The Writing and Critical Expression Hub provides support for undergraduates working in courses. Writing mentors can help at any stage of the writing process. The Writing and Critical Expression Hub offers: one-on-one writing tutoring; supportive and in-depth conversations about writing, the writing process, and writing skills; help with every stage in the writing process; and workshops on writing.

Teaching + Learning Commons (<https://commons.ucsd.edu/>)

Undergraduate student success at UC San Diego is defined as maintaining or exceeding good academic standing; making steady progress toward degree completion; actively engaging in research, co-curricular opportunities and the campus and local community; and utilizing resources to intentionally develop the competencies to lead in a global society. The Teaching + Learning Commons addresses the first two components of this definition through our student academic support services.

With the Teaching + Learning Commons, students can get support for challenging courses, subjects, and projects. Whether in a group setting or through one-on-one assistance, these support services and resources will help students develop effective learning and problem-solving strategies to be successful at UC San Diego and beyond.

Research Experience & Applied Learning Portal (<http://real.ucsd.edu/>)

The REAL Portal helps students discover internships and other hands-on experiential learning opportunities. UC San Diego is committed to educational experiences that develop students who are capable of solving problems, leading, and innovating in a diverse and interconnected world. Strengthening the connection between academic and high-impact, co-curricular experiences is one way to achieve this goal.

The REAL Portal is part of the suite of Engaged Learning Tools (ELTs), a suite of tools that helps students discover, capture, review and share your experiences. To learn more about the suite of tools, including the Enhanced Electronic Transcript and Co-Curricular Record, visit: <https://elt.ucsd.edu>

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, 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.

[ ] I am not 18 years or older or I do not consent to anonymized research use of my data from the course specified below.

Course name: \_\_\_\_\_ Course section number: \_\_\_\_\_ Term:  
\_\_\_\_\_

Name: \_\_\_\_\_

PID: \_\_\_\_\_