Welcome to BICD 100 Genetics! This course aims to develop concepts of genetics to understand how information is stored, utilized, and inherited in life. Fundamental concepts include chromosome segregation and recombination, regulation of gene expression, random mutation, and natural selection. 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 relevant real-life phenomena including human health, biodiversity, archeology, and agriculture.

Learning goals

- Collaborate with fellow students and the teaching team to learn concepts in genetics
- 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 in classes, discussion sections, and study sessions 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[1] 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 spend class time to construct and apply our knowledge, troubleshoot challenging topics, practice problem solving, and develop skills in critical thinking.

[1] 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 in class meetings, discussion sections, and study sessions, in addition to independent work on studying and completing assignments. Course materials, announcements, and other important details will be available on the TritonEd (https://tritoned.ucsd.edu). Please check the course website and your @ucsd email regularly for updates and relevant information.

Class meetings	Location	Time
A00	HSS 1330	Monday to Thursday 9:30-10:50 am

Discussion sections	Location	Time
A01	HSS 1305	Friday 9:00-10:50 am
A02	HSS 1315	Friday 9:00-10:50 am

Study sessions	Location	Time
A00	Geisel 2nd floor east	Sunday to Thursday 7:00–9:00 pm

Instructor	Email	Office	Phone	Office hours
Stanley Lo	smlo@ucsd.edu	York 4070B	858-246-1087	Monday at study sessions

Instructional assistant	Email	Instructional assistant	Email
Calah Cozine	cacozine@ucsd.edu	Laura Millard	lmillard@ucsd.edu
Clifford Liu	czliu@ucsd.edu	Liza Brusman	lbrusman@ucsd.edu
David Lenh	dlenh@ucsd.edu	Megan Orr	meorr@ucsd.edu
Jonathan Mendez	jimendez@ucsd.edu	Nick Afanasiev	nafanasi@ucsd.edu
Kendall Higgins	kthiggin@ucsd.edu	Ryan Spence	rspence@ucsd.edu

Course materials: Assigned readings for this course will be from Klug et al. Essentials of Genetics, 9th edition, and other relevant research articles from the primary literature posted on TritonEd. 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.

A substantial portion of learning will be from primary research articles. Assignments will be designed to support this more complex level of learning. Each student will have a carbonless notebook that will be used this purpose and will serve as a personal textbook that is constructed from these assignments and in-class activities.

Participation and contribution in class meetings will be mainly through clicker questions and short writing activities. To participate in clicker-based discussions, please have an iClicker2 registered on TritonEd. Short in-class writing activities will be done in the "personal textbooks", so please be sure to bring the carbonless notebooks to class meetings and discussion sections.

Podcast: Whenever possible, class meetings will be recorded and made available online as a resource for learning (http://podcast.ucsd.edu/). However, participation and contribution are highly encouraged, as substantial portions of class meetings 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 meetings and discussion sections 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![2] For this reason, we ask that you do not flip between relevant course materials 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.

[2] Sana et al (2013) Computers and Education 62: 24-31
http://www.sciencedirect.com/science/article/pii/S0360131512002254

Grading

Our course has four grading components: contribution (10%), exams (40%), papers (40%), and professionalism (2%). Because different people may excel in different aspects, the higher component between exams and papers for each individual will be scaled from 40% to 48%, making the total percentage of the course 100%.

The general grading scheme is as follows, but 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. However, BICD 100 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.

A+	97-100%	B+	87-90%	C+	77-80%	D+	67-70%	F	0-60%
A	93-97%	B	83-87%	C	73-77%	D	63-67%		
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%		

Contribution: Active participation and contribution in classes, discussion sections, and study sessions are essential to learning in this course. There will be many contribution items, including pre-class assignments, in-class discussions and clicker questions, and activities in discussion sections. Contributions will be graded for thoughtful completion and not for accuracy. Because individual students may have different competing schedules and life events, completing 80% or more of all contribution items will earn the full contribution grade. For example, if there are 40 contribution items, completing 32 items will result in 40/40, whereas completing 31 items will result in 31/40 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 you are prepared for class and can have productive discussions, and (2) help the teaching 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.

Exams: Questions in exams will challenge us to apply our understanding in new contexts by solving problems and constructing arguments with evidence and reasoning. Therefore, exams will be open resources, e.g. notes and calculators but not electronic equipment that can be used to communicate

with others. Exams will be cumulative but will focus on the most recent material. There will be two short exams (80 minutes and 10% each) and 1 long exam (180 minutes and 20%). The exam with the lowest score for each individual will be weighted: For short exams, half the grade will be counted, and for the long exam, three quarters of the grade will be counted.

To facilitate reflection and learning from exams, each exam (short or long) will be in two phases: The first phase will be completed individually, and the second phase will be an analogous exam completed again in groups. The individual portion will count for 80% of the exam grade, and the group portion will count for 20%. We are using this two-phase testing method as people learn more from collaborative work compared to individual work.[3] 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. Also, it is an opportunity to practice communicating effectively and collaborating to solve problems.

[3] Gilley et al (2014) Journal of College Science Teaching 43: 83-91 https://jstor.org/stable/43632038

Papers: Each student will identify a primary research article of their choice and write a paper that deconstructs and explains the significance, relevance, and findings of the research article. To facilitate the writing of the final paper (20%), there will be four assignments and drafts (5% each). Details of the paper and related assignments will be made available in class and on TritonEd. Please check the course website for more information.

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 and community efforts (1% each). 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, and follow-up conversations on grades, your professionalism credit may be deducted in steps of 0.5%.

For the community professionalism component, the 1% can be earned by completing course evaluations and related surveys that can 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), 1% will be awarded to everyone in the course.

Late or missing assignments: No late contribution items will be accepted, as completing 80% of all the contribution item will earn the full 10% of contribution grade. No late assignments will be accepted for the papers and drafts, and no make-up exams will be offered, except in the case of a documented short-term illness or serious family emergency. In this case, please contact Dr. Lo as soon as possible or reasonable to do so.

Regrades: If a grading error has been made, please submit a regrade request to Dr. Lo at the end of a class meeting within two days of the exam being returned. The time and date of closing down the appeal process will be announced on TritonEd. On a cover sheet (a separate piece of paper attached to your exam), write "please re-grade question #" or "arithmetic error on p. #". If you think your answer deserves more points (i.e. it is not an arithmetic error), please write a concise description of how your answer compares to the key and why you think it should have earned more points on the cover sheet. No regrades are possible for exams written in pencil or non-permanent ink. Students who submit exams for regrading understand that we may: (1) regrade the entire exam, and (2) compare the submitted paper to a scanned copy of the original exam. As a result, the overall grade of the exam may go up or down or remain the same after the regrade. There are no opportunities for extra credit beyond what is assigned as part of the course by the instructor.

Academic integrity
https://students.ucsd.edu/academics/academic-integrity/index.html
Integrity of scholarship is essential for an academic learning community. In this course and at the university, we expect that both students and the teaching 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. Instructors, for their part, will exercise care in planning and collaborating with students on academic work, so that academic integrity is upheld.

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 organizations, these are commonly called codes of conduct or ethics. In this course, we are using a statement of values[4] in support of codes of ethics, like the Policy on Integrity of Scholarship, to state explicitly our values and describe the behaviors for maintaining and protecting those values.

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity. In our course, these values are open to discussions and possible alterations based on mutual agreements among all students and the teaching team. In collaborative work, each group should discuss these values and must articulate the expectations for how they are made manifest within the group's work together.

	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 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 a lower or failing grade or other 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 (e.g. lower teaching evaluations) of upholding and protecting the above values

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.

[4] This class statement of values is adapted from Tricia Bertram Gallant Ph.D.

Accessibility and inclusion

http://disabilities.ucsd.edu | 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 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!

