

Instructor: Lisa McDonnell lmcdonnell@ucsd.edu *I try to respond within 24 hours M-F.*
Office: York Hall 3080D, office phone: 858-246-0890

Office Hours: Wed 2-3pm, Wed 6-7pm beginning October 5*, Thurs 4-5pm*, York 2300
*these office hours are BICD100 specific, the others may be attended by students in the other course I teach (mol bio lab)

Lecture: Monday, Wednesday, Friday, 4-4:50pm, Galbraith Hall 242.
Final Exam Dec 6, 3-6pm.

Discussion sections: Thursdays and Fridays, see schedule below.

Instructional assistants: See below

Materials: iClicker is required for lectures and should be [registered on TritonEd](#). Essentials of Genetics, Klug, 9th edition is recommended but the 8th edition may also be suitable. We are **not** using mastering genetics. People comfortable using/searching for resources on the internet may not need a textbook.

Course Schedule: Condensed schedule at the end of the syllabus. More detailed schedule on TritonEd site. Please check TritonEd site often for updates, deadlines.

Course website: <https://ted.ucsd.edu>

Discussion section schedule:

Section	Day	Time	Location		IA:	Email
B01	Th	8:00a-8:50a	CENTR	218	Christopher Song	cisong@ucsd.edu
B02	Th	9:00a-9:50a	CENTR	218	Theodore Chin	t5chin@ucsd.edu
B03	Th	10:00a-10:50a	CENTR	218	Dana Conlisk	dconlisk@ucsd.edu
B04	Th	5:00p-5:50p	CENTR	218	Lynley Fernandez	lafernan@ucsd.edu
B05	Th	6:00p-6:50p	CENTR	218	Michael Lee	mhl006@ucsd.edu
B06	Th	7:00p-7:50p	CENTR	218	Kevin Ross	kdross@ucsd.edu
B07	Th	8:00p-8:50p	CENTR	218	Kevin Ross	kdross@ucsd.edu
B08	F	8:00a-8:50a	CENTR	218	Sowon Kim	sok067@ucsd.edu
B09	F	9:00a-9:50a	CENTR	218	Katherine Tian	katian@ucsd.edu
B10	F	10:00a-10:50a	CENTR	218	Megan Orr	meorr@ucsd.edu
B11	F	11:00a-11:50a	CENTR	218	Katherine Niklason	kniklaso@ucsd.edu
B12	F	12:00p-12:50p	CENTR	218	Daanish Unwalla	dunwalla@ucsd.edu
B13	F	1:00p-1:50p	CENTR	218	Eti Sinha	etsinha@ucsd.edu

Welcome to BICD 100: Genetics! This course aims to develop concepts of genetics as they apply to how information is stored, utilized, and inherited in life. Fundamental concepts include gene and chromosome structure, phenotype, chromosome segregation and recombination, regulation of gene expression, random mutation, and natural selection. We will learn these concepts by studying their roles in biological systems and will apply our understanding of these concepts to explain and predict a wide range of biological and real-life phenomena including human health, biodiversity, and agriculture.

LEARNING GOALS

- **Collaborate** with fellow students and the teaching team to learn concepts in genetics
- **Apply knowledge** of genetics concepts to analyze data, explain data, and solve problems
- Learn to draw conclusions and **construct scientific arguments** based on evidence and reasoning

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. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

LEARNING IN THIS COURSE

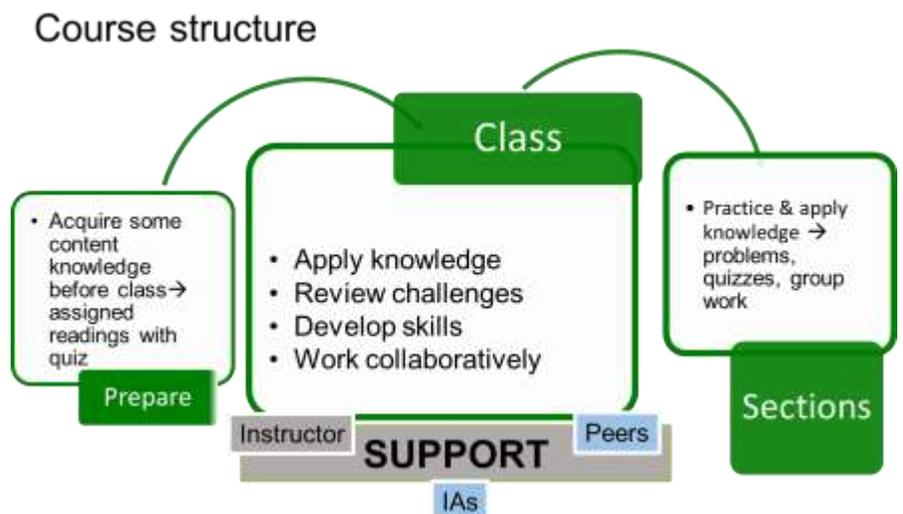
This course is designed to be a **collaborative** environment for everyone to learn together and construct a shared understanding of the material. **Active participation** both in class and in discussion section is expected. Being able to **communicate** understanding, and confusion, is critical to success in any discipline, and is very useful for learning¹. To encourage collaboration, class and section activities and discussions will be done in groups, and grades will not be assigned on a curve.

I 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.

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

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GRADING

BIMM101 has four grading components: participation (20%) professionalism (2%), in-class quizzes and final exam (45%), writing assignments (25%). Because different people may excel in different aspects, the writing assignments and exams, whichever is higher for each individual, will be scaled to 53% or 33, 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.

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%		

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

Participation: Active participation both in lectures and sections is important achieving the course goals. There will be many participation items, including **pre-class reading assignments, in-class participation (discussions and activities), discussion section problem sets and group work**. 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 31/40 for the participation grade.

Pre-class reading assignments

Before most classes there will be a reading assignment and associated quiz on TritonEd to be completed before class. Reading will be assigned from sources online, the textbook, and primary literature. Check the weekly content folders on the TritonEd site for reading and quiz details and due dates. Pre-class reading assignments and quizzes are designed to 1) introduce some relevant background material, so you are prepared for class and can have productive discussions; 2) introduce some relevant primary literature; 3) your quiz responses help the instructor know what material students are struggling with.

In-class discussions: these will happen on a regular basis, and include clicker questions and the occasional group-work activity. **Please note** that it is a violation of academic integrity policies to use someone else's iClicker in class.

Discussion sections:

Sections will meet for the first time the week of Sept 26. Weekly discussion sections are designed to engage in collaborative problem solving, practice data analysis, practice problems in preparation for quizzes and exams, and give opportunities to build relationships with fellow students and your Instructional Assistant.

You should already be enrolled in section, and you must attend the section which you are enrolled in to receive credit. I am not able to change the number of 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 have to decide to either not receive credit for the discussion section or enroll in the course another time. The mandatory nature of discussion sections is non-negotiable.

Before the discussion sections some homework problems will be assigned on the TritonEd site to prepare you for the discussion section. It is critical that you genuinely attempt the homework problems before coming to tutorial in order to get the most out of these discussion meetings: this will prepare you for the discussion. You will have to show your IA your completed work at the start of section.

In section you will then work on a problem in groups. This will mimic the collaborative phase of tests that we will use in-class (more on that below). The mock quiz gives you an opportunity to test your knowledge, practice working at the level that is expected on the exam, and practice working on a test in groups. Contributions to the group effort will be noted by the IAs, and this will contribute to your participation grade. Thus, it is very important that you arrive at section prepared.

A note about the role of the IA in discussion sections: the best way for you to learn how to solve problems and correct misconceptions is to work through the problem, and discuss the problem with your peers and the IA. The IA is not there to give you the answers, but to facilitate students discovering the answer for themselves.

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.

Quizzes & Final Exam: Tests in this course will focus on application of knowledge to assess and solve novel problems (**not** memorization of facts). Hence, tests will be open resources (e.g. notes and 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.

To facilitate reflection and learning from quizzes, tests will be in two phases: The first phase will be done individually, and the second phase will be collaborative (group). The group score will be compared to the average of the group's individual quiz scores. If the group score is higher than that average, the difference between the group score and the average will be added to each person's individual score (to a max of 100%)

Example: Group consists of student A, B, C, and D.

Student A: 90% on individual Student B: 80% on individual

Student C: 70% on individual Student D: 60% on individual

Average of individual scores: 75%.

That same group gets 80% on the group quiz. Difference between avg individual and group = 5%.

Therefore, each individual gets an additional 5% on their scores, so the final quiz scores look like:

Student A: 95% Student B: 85%

Student C: 75% Student D: 65%

Why use this collaborative testing method? People tend to learn more from collaborative work compared to doing work alone^{2, 3}. 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.

2 Heller et al., 1992. 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

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 (10%), there will be three pre-assignments/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.

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 (<http://www.academicintegrity.org/icaei/home.php>), which serve as the foundation for academic integrity. These values include:

	As students we will.....	As the teaching team we will.....
Honest	<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Complete assignments on time and in full preparation for class Show up to class on time and be mentally and physically present Participate fully and contribute to team learning and activities 	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> Speak openly with one another while respecting diverse viewpoints and perspectives Provide sufficient space for others to voice their ideas 	<ul style="list-style-type: none"> Respect your perspectives even while we challenge you to think more deeply and critically Help facilitate respectful exchange of ideas

Fairness	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • Create fair assignments and exams and grade them in a fair and timely manner • Treat all students and collaborative teams equally
Trustworthiness	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Say or do something when we see actions that undermine any of the above values • Accept the consequences of upholding and protecting the above values 	<ul style="list-style-type: none"> • Say or do something when we see actions that undermine any of the above values • Accept the consequences of upholding and protecting the above values

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. This includes writing papers, taking tests, use of iClickers, completing homework problems, etc.

* This class statement of values is adapted from Tricia Bertram Gallant Ph.D.

LATE ASSIGNMENTS AND QUIZZES

No late participation items will be accepted, as completing 85% of all the participation item will earn the full participation 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. McDonnell as soon as possible or reasonable to do so.

LECTURE PODCAST

<http://podcast.ucsd.edu/>

Whenever possible, lectures will be recorded and available online as videos as a resource for review. However, attendance and participation are highly encouraged, as substantial portions of lectures will be interactive. Please see participation in the grading section for more details.

WRITING CENTER

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

The Writing Center provides support for undergraduates working on course papers. 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 Dr. McDonnell at the end of a lecture within two days of return of the exam. The time and date of closing down the appeal process will be announced in class. Simply write “please re-grade Q #” or “arithmetic error on p. #” on the cover of your paper. If you think your answer deserves more points (e.g. 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 received more points, on a separate but attached piece of paper. Regrades will not be done if these instructions are not followed. No re-grades are possible for exams written in pencil or non-permanent ink. Students who submit exams for re-grading understand that we may (1) re-grade the entire exam, and (2) compare the submitted paper to a scanned copy of the original exam.

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 screen⁴! For this reason, we ask that you do not flip between lectures notes and the internet. The use of cell phones, computers, or any other electronic devices is not permitted during exams. 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>

CALENDAR

More specific details for each week, including reading and assignments, will be provided on TritonEd and in class. We may also adjust the schedule as necessary, while still focusing on the foundational concepts.

Week	Date	Lecture	Readings & Assignments due *check TritonEd for details and times/dates due	Discussion Section *quizzes are typically on the material from the week prior
0	Friday Sept 23	Genetics problems & expectations	Conceptions about genetics survey due Sunday 11:59pm	None
1	Mon Sept 26 Wed Sept 28 Friday Sept 30	Chromosomes, genes, mutation	Syllabus quiz & reading quiz due by 12pm 9/26	Problem set + group activity
2	Mon Oct 3 Wed Oct 5 Friday Oct 7	Mutation & phenotype & dominance	reading quiz due by 12pm 10/3 paper assignment 1 due Sunday 11:59pm	Problem set + group activity
3	Mon Oct 10 Wed Oct 12 Friday Oct 14	Replicating cells, making gametes, inheritance	reading quiz by 12pm 10/10	Problem set + group activity
4	Mon Oct 17 Wed Oct 19 Friday Oct 21	Quiz 1, week 1-3 Gene interaction and complementation	reading quiz by 10/19 paper assignment 2 due Sunday 11:59pm	Problem set + group activity
5	Mon Oct 24 Wed Oct 26 Friday Oct 28	Molecular Markers, Linkage	reading quiz by 10/24	Problem set + group activity

BICD 100 FALL 2016

UNIVERSITY OF CALIFORNIA
SAN DIEGO

Week	Date	Lecture	Readings & Assignments due *check TritonEd for details and times/dates due	Discussion Section *quizzes are typically on the material from the week prior
6	Mon Oct 31	Quantitative traits, SNPs, GWAS	reading quiz by 10/31	Problem set + group activity
	Wed Nov 2			
	Friday Nov 4			
7	Mon Nov 7	Quiz 2 week 4-6	reading quiz 11/9	No discussion sections this week: online practice problems
	Wed Nov 9	Somatic mutations		
	Friday Nov 11 - Veterans Day Holiday. Thurs and Friday labs cancelled.			
8	Mon Nov 14	Cancer	reading due 11/14	Problem set + group activity
	Wed Nov 16	Changes to chromosome #	Paper assignment 3 due Sunday 11:59pm	
	Fri Nov 18			
9	Mon Nov 21	genome editing	reading due 11/21	No discussion sections this week: online practice problems
	Wed Nov 23	special topic		
	Fri Nov 25 Thanksgiving - no class			
10	Mon Nov 28	Personal genomics	reading due 11/28	Problem set + group activity
	Wed Nov 30	Guest speaker	Final paper due Sunday 11:59pm	
	Fri Dec 2	special topic		
	Tues Dec 6, 3-6pm	Final Exam		