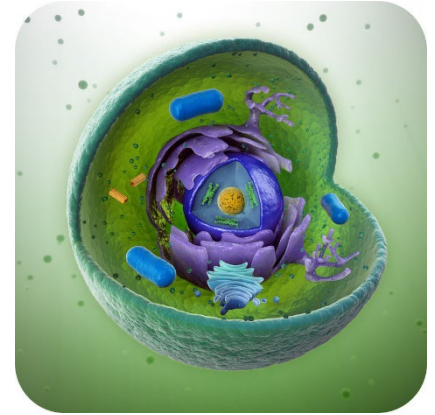


BICD 110: Cell Biology

UC San Diego – Summer 2022



Welcome to BICD 110!

BICD 110 is an upper division course on structure and function of a eukaryotic cell. Lectures will cover: methods of cell biology research, membrane structure and dynamics, protein synthesis and sorting, cytoskeleton structure and dynamics, and the cell cycle. The prerequisites are BIBC 100 or BIBC 102 or CHEM 114A or CHEM 114B. (see <http://web2.assist.org/web-assist/UCSD.html>).

This section of BICD 110 will **have remote lectures**. Lectures will be available as video recording in order for people to follow at their own pace. Lectures will cover the central topics of cellular biology in the order indicated in the schedule, although the specific order can deviate a bit from that indicated, depending on time. The lectures are divided in modules. Along the way, we will discuss key experiments and deductions that underlie the understanding of the different processes. Each week, a set of recorded lectures will be posted on Canvas. I will provide lecture slides for each lecture so you can follow the lecture better.

In addition, we know from educational research that **courses with lots of low-stakes opportunities to explore ideas and get feedback** are generally better for student learning. Therefore, in addition to lectures, we will provide many opportunities for you to think about biology in low-stakes ways. These include **post-lecture weekly quizzes**.

We will also give you many opportunities to **connect with the teaching team and your fellow students**. These include **Zoom office hours** by the professor and the IAs and **live discussion sections**.

Required and Optional Materials

Optional materials: - *Molecular Cell Biology* 9th edition (or previous). It will give you another view of the material treated in lecture. The subjects treated in lecture are the materials you will be tested on, though the particular questions may be formulated using material from the book. Reading the same topics in the book explains the selection of topics a second time, sometimes in greater depth.

Lecture slides and all suggested or required course readings will be posted on the class website.

The Basics: Where to Find Lectures, Office Hours, and the Discussion Board

Where and when are the lectures? I will post lecture the day of the lecture on Canvas.

Where are the lecture slides and podcast?

- **Slides** will be posted in the Modules on the Canvas site for BICD 110 (go to <https://canvas.ucsd.edu/>).

Where are the professor's office hours?

- In-person office hours are on Zoom on Friday 4-5 PM. Zoom link will be provided on Canvas.
- Any change in zoom office hours are going to be announced on Canvas.
- **Where are discussion sections?** Please see the table below. **You may attend any discussion section.**

The Basics: When to Find the BICD 110 Teaching Team

Section times: You may go to any section in a given week.

Section	Day	Time	IA	Location
A01	TTh	8-8:50AM	TBD	Zoom TBD
A02	TTh	9-9:50AM	TBD	Zoom TBD
A03	TTh	11-11:50AM	TBD	Zoom TBD
A04	TTh	10-10:50AM	TBD	Zoom TBD
A05	TTh	3-3:50PM	TBD	Zoom TBD

Office hours and contact information: You are encouraged to go to anyone's office hours. If these times do not work for you, you may also contact us with your availability for a different time.

Name	Role	Email	Office hours
Francesco Fazio	Instructor	ffazio@health.ucsd.edu	Friday 4-5 PM Zoom
Marlon Blanquart	Teaching Assistant	mblanqua@ucsd.edu	
Brian Pham Nguyen	Tutor	bpnguyen@ucsd.edu	

The Basics: Enrollment and the Waitlist

If you are on the waitlist, you may be concerned and frustrated about whether you can enter the class. You may need this course to graduate on time. However, in Biological Sciences, **the instructor has no control over the waitlist or who can enter the course.**

Movement off the waitlist is handled **solely** by the Registrar and is based only on whether people enrolled in **your discussion section** drop the course. If someone does drop, the next person on the waitlist is automatically enrolled. The instructor cannot add more seats or more sections. (Any information online that implies otherwise is either outdated or not applicable to Biological Sciences.) In short, **there is nothing you or the instructor can do to get you off the waitlist and into the class.**

There is usually a great deal of movement in and out of the class in the first week. If you are on the waitlist and want to get into the course, we encourage you to complete assignments as if you were enrolled, so that you won't be behind if you do get in. Waitlisted students should all have Canvas access, starting from roughly 24hr after you get on the waitlist. That means that being on Canvas does not mean you are enrolled.

Good luck! If it looks like you may not be able to get into the course but you really need to take it, please contact the Virtual Advising Center (vac.ucsd.edu) or another advisor to discuss your options.

What will we learn in BICD 110?

Overall Philosophy

Our aim in this course is not just a surface-level understanding of cellular biology. Instead, we aspire to have students be able to **solve problems** and **ask good scientific questions** about how cellular biology work so that you can **apply what you learn about biology in whatever context you find yourself in your future.** That requires **going beyond memorization of facts** to acquire an understanding of how cellular biology works and what happens when the components of cellular biology processes do not function properly. Therefore, 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.

High-level learning goals

We anticipate that you will learn many different things in BICD 110! We anticipate that what you will be able to do by the end of the quarter includes, but is not limited to, the following:

- **Demonstrate an understanding of key concepts of cells** and how insights into their components have been gained through experimental observations.
- **Predict how a perturbation** of a molecule or chemical (like through a disease or experimental manipulation) **will affect the function of the cellular biology processes.**
- **Develop critical thinking skills** to be able to think like a scientist and **solve biologically-relevant problems.**
- **Increase your understanding of your own learning (metacognition)**, including recognizing what topics are easy or difficult for you to learn, learning what study strategies work best for you, and seeking help from instructors and colleagues at appropriate times.

At the beginning of each unit, we will also provide you with specific learning outcomes to guide your learning of that material. The exam problems will be tied to those specific learning outcomes. All questions on exams, as well as nearly all questions on homework and in-class and in-section activities, will be tied to at least one of these learning outcomes.

Grading

The activities, requirements, and assignments that comprise this course are designed to **promote your learning** and facilitate your understanding of cellular biology using many different teaching methods. In addition, these assignments give us valuable information that allows us to adjust the course to meet your educational needs.

How Your Letter Grade will be Assigned

Grade assignments will be based on the percentage of total points earned. We do not decide your grade, but rather **you as a student do the work to earn your grade.**

%	Grade	%	Grade	%	Grade	%	Grade
>98	A+	87-89	B+	77-79	C+	60-69	D
93-97	A	83-86	B	73-76	C	0-59	F
90-92	A-	80-82	B-	70-72	C-		

How Your Grade will be Calculated

Grading components	Percentage
Midterm 1	40%
Final	40%
Weekly quizzes	20%
Total	100%

Grades will be posted regularly on Canvas.

A note on re-grading

We are always happy to communicate with you **to discuss your learning**. If you believe that a grading error has been made, please contact your IA with an explanation of the error. If your IA agrees that an error has occurred, email me with an explanation of the error. **If you think your work deserves more points**, please include in your explanation a concise description of how your answer compares to the rubric and why you think it should have earned more points.

Explanation of Course Components

The course may seem like a lot of work with all these assignments, but we believe that each of the course components is important for **supporting your learning** and structuring your studying. If it becomes apparent that this is not the case, we reserve the right to alter the course structure to support you and your learning.

Weekly Quizzes

There will be 4 online weekly quizzes. These 'quizzes' are designed to check your understanding from the previous week material. They will be a mix of multiple choice and short answer format. It should not take longer than 1 hour each. They will be posted at the beginning of the week and you will have until Sunday at midnight to complete the weekly quiz.

Discussion Sections

Weekly discussion sections are on Zoom. All discussion sections will provide an opportunity to review the previous week's lectures and readings. This review may take the form of answering your specific and general questions, clarifying something important presented quickly in lectures, expanding on something important described in the textbook, or working through a numerical problem of the type found on the exams. You may also discuss questions you have from the weekly quiz but you IAs will not just simply give away the answers.

If you miss a discussion section, you need to contact your IAs with acceptable reason and set up a make-up **WITHIN** that week. You will not receive any credit if you submitted your work later than Friday of that week.

Exams

To facilitate developing useful knowledge and skills for the long term, tests in this course will focus on **applying knowledge to assess and solve novel problems**. Questions will be largely be short answer, including graphing. Any material covered in or closely related to each lesson's learning objectives may be tested.

There will be 2 exams in this course: 1 midterm and 1 Final exam.

Questions on the Midterms and Final will be in multiple choice and short answer format. The tests in this course will focus on application of knowledge so it will NOT be heavily relied on memorization. I will not ask you to memorize unimportant detailed information. I will be very clear during lectures of what are important to memorize. Midterms will be held during the regular class time, but you will be taking them ONLINE. The final will be held online on Friday September XXth 2022 (time to be determined).

The dates for the exams are given on the Course Schedule at the end of this syllabus. More details will be given closer to the date of the exams. **If you need to have alternate timing, please let us know as soon as possible** so we can make alternate arrangements.

Professionalism

This portion of the course grade is intended to motivate you to **consider the impact of your actions on your 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 (described here) and community efforts (described below). The individual component is to account for you personally demonstrating maturity and professionalism.

By default, everyone is assumed to be professionally mature, so this component is automatically awarded to you at the beginning of the quarter. During the quarter, based on observations by the teaching team, including but not limited to one-on-one interactions, electronic communication, and follow-up conversations on grades, **your professionalism credit may be deducted** in steps of 5pts.

Examples of interactions with meaningful benefits:

- Working collaboratively to improve in building knowledge and skills
- Asking questions about course policies or course material to clarify it and facilitate learning
- Clarifying how a response was incomplete or incorrect in order to learn how to correct one's own ideas
 - Reporting errors or issues in class, on assignments, or in other course material
 - Respectfully giving feedback about the course
- Treating everyone in the class community, including the instructional team and other students, with respect

Examples of 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
 - Ignoring the directions or requests from the instructional team
- Asking for course credit when such credit would conflict with stated course policies (such as the policy on late assignments), when it would be applied inequitably (such as just for you), or when the instructor has already explained that the answer did not earn such credit
 - Being disruptive to fellow students online, in discussion section, or on exams

Cheating

I will not tolerate any form of cheating. It is difficult to detect any forms of online cheating and I will not spend time inventing tools to catch you. Honesty is a valuable characteristic you should have. You are encouraged to study with other but cannot collaborate during exams.

Late Policy

Because of the size of this class and to prepare you for hard deadlines later in your career, **we cannot award full points for assignments, quizzes, exams, or anything else submitted late** without our prior agreement. Late assignments will be given half-credit after the due date.

To mitigate the impact of this policy, remember that in nearly all cases, you can drop one or two assignments without any impact on your score. That means if you happen to miss one or turn it in late, or your life is too busy a certain week, it will not negatively impact your score. Even if you miss the deadline for an assignment, we still highly recommend doing the work to prepare for class and exams.

Exception: **if you have a situation that would require you to miss two or more weeks of assignments, please reach out to us as soon as possible** so we can discuss accommodations.

BICD 110 Class Culture

BICD 110 is a **community of scientists** trying to increase their understanding of the biological world. The classroom culture is designed to engage you in collaborating and thinking like a scientist.

When people collaborate to work towards a common goal, in this case building our learning, we must **establish shared values** so that everyone understands acceptable ways of working together. In organizations, these are commonly called codes of conduct or ethics. In this course, we use the following statement, adapted from the International Center for Academic Integrity (<https://academicintegrity.org/>) and Dr. Tricia Bertram Gallant, to explicitly state our values and describe the behaviors that maintain and protect these values.

	As students we will...	As the teaching team we will...
Honesty	<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 Participate fully and contribute to team learning and activities Take ownership of your own learning by using course and outside resources, including the teaching team, to clarify confusions and extend your knowledge 	<ul style="list-style-type: none"> Give you timely feedback on your assignments and exams Show up to office hours and class on time and be mentally and physically present Create relevant assessments and class activities

		<ul style="list-style-type: none"> • Providing selected resources and a helpful environment to help you address your confusions and extend your knowledge
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 equitably
Trustworthiness	<ul style="list-style-type: none"> • 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

Course Policies

Students with Disabilities

If you have a disability, **including mental health issues**, that might affect your attendance or performance in this course, please contact us early in the quarter to work out reasonable accommodations to support your success. To ensure fairness and proper support, anyone who requests accommodations because of a disability must get a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). To contact OSD, use the student portal: <https://academicaffairs.ucsd.edu/sso/osdsp/home>, email the Biology OSD liaison at bioosd@ucsd.edu, or call 858-534-4382.

Whenever possible, we strive to use universal designs that are inclusive. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

Academic Integrity and Originality

Integrity of scholarship and learning is fundamental to creating our classroom community and the academic community at large. The University expects that both students and faculty will honor this principle and in so doing protect the validity of University intellectual work.

For you, this means that all academic work you submit for this course should be **your own new original work**. We emphasize this for several reasons. First, **using your own thoughts and putting things in your own words helps you learn**. There is no better way to discover quickly what you understand and what you don't than to explain a concept to someone else. Second, in professional settings, trying to hide dishonest behavior or pass someone else's words off as your own can lead to trouble. To encourage original thought and writing in this class, we take precautions. For example, Canvas uses Turnitin to scan Journals for plagiarized material. **Our goal is not to catch anyone** (although we can't give credit for dishonest work or plagiarized material), **but to help everyone make a habit of using their own thoughts and voice**.

In addition, part of being a good member of a community **is not facilitating dishonest behavior by others**. No course materials, particularly homework and exams, may be posted online, submitted to private or public repositories, or distributed to unauthorized people outside of the course.

To hold everyone accountable for their actions, any serious suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review. For more information on academic integrity, please visit <https://students.ucsd.edu/academics/academic-integrity/index.html>.

Helpful Resources at UCSD

If you are experiencing anxiety, depression, or worse, you are not alone. On top of facing the normal stresses of college, many college students are in their late teens or early twenties, which is when many mental illnesses emerge for the first time because of brain maturation. In addition, you may be experiencing the effects of trauma or violence. Or, you might be one of the 19% of UC students who report not being able to access adequate food³ or who do not have a safe, stable place to live.

Whatever your situation, whether your problems feel big or small, we encourage you to seek help and support, either from us or from professional resources on campus. Some are listed below.

It is also important to find a community of like-minded people around you. You may be interested in the following resources: the Black Resource Center (brc.ucsd.edu), the Cross-Cultural Center (ccc.ucsd.edu), the LGBT Resource Center (lgbt.ucsd.edu), the Raza Resource Centro (raza.ucsd.edu), the Student-Parents Resource page (students.ucsd.edu/well-being/wellness-resources/student-parents), the Student Veterans Resource Center (students.ucsd.edu/sponsor/veterans), the Women's Center (women.ucsd.edu).

³ Martinez *et al.* 2016. University of California Global Food Initiative: Student Food Access and Security Study. <https://www.ucop.edu/global-food-initiative/best-practices/food-access-security/student-food-access-and-security-study.pdf>

<i>Help and Resources</i>		
Academic Support	Psychology & Physical Safety*	Basic Needs
<p>OASIS (http://oasis.ucsd.edu) The Office of Academic Support & Instructional Services (OASIS) offers math and science tutorial Programs for everyone. They also have services and scholarships for those of you who have overcome significant obstacles to become successful (like being first in your families to go to college).</p> <p>Teaching + Learning Commons (http://commons.ucsd.edu) The Teaching + Learning Commons offers tutoring, consultations, and workshops on learning strategies as well as assistance with writing in the Writing + Critical Expression Hub.</p>	<p>CAPS (http://caps.ucsd.edu) CAPS offers free, confidential counseling. They can help with urgent crises, such as an assault or thoughts of self-harm. They can also talk if you are worried about a friend or classmate.</p> <p>CARE at SARC http://care.ucsd.edu Campus Advocacy, Resources, and Education at the Sexual Assault Resource Center (CARE at SARC) offers support for those of you who have experienced sexual violence or violence from a partner. They have free confidential counseling, including on nights and weekends.</p>	<p>Triton Food Pantry (http://basicneeds.ucsd.edu/triton-food-pantry/) The Triton Food Pantry discreetly offers food for current UCSD students to ensure each of you has enough nutrition to get through the day.</p> <p>The Hub (https://basicneeds.ucsd.edu) The Hub serves those of you who have trouble accessing basic needs, including food or stable housing, or who have financial emergencies. They can help you connect with a variety of on- and off-campus programs, including the Food Pantry, CalFresh, emergency loans, emergency housing, or changes to your financial aid.</p>

*Please note that while we on the instructional team are here to support you, instructors are obligated by law to notify UCSD's Title IX coordinator if a student (or any person at UCSD) discloses to us a personal experience of sexual harassment, sex or gender discrimination, domestic violence, or stalking. This is so that the University can properly address the issue. If you do not want your experiences to be reported, please contact CAPS or CARE, which can talk to you confidentially.

General Agreement

In a large class it is impossible to teach directly to everyone's needs. It is my (and the IAs) responsibility to keep the class organized, to be well prepared and to provide students with multiple pathways to learning the topics, including lecture slides, questions, assignments, practice exams, discussion sections, and office hours. It is your **responsibility** to put a significant effort into the class, by follow lectures with printed lecture slides, taking notes, actively participating in questions/peer discussions, reviewing materials, working through assignments and actively participating in the discussion of assignments during TA discussion sections. This way, BICD 110 should be an enjoyable and exciting learning experience. Embrace this opportunity to understand the basics of cellular biology and, perhaps, one day you will contribute to this rapidly growing field in biology and medicine!

Tips on how to do well

1. Print out or download lecture slides and skim through it before watching each asynchronous lecture. This will facilitate your notetaking process and shift your focus onto trying to understand the concept rather than writing note.
2. Use the textbook and internet resources (see the Links Section of the course TritonEd page) as reference material to help you better understand lecture material. It's rarely beneficial to read a textbook like a novel from front to back. Use the index and table of contents to find material covered in class.
3. Attend discussion section and prepare well for them. Go through the previous week's material and come up with specific topics or questions for the IA to clarify.
4. Take all the material from lecture, the textbook, and the PowerPoints and consolidate it in a fashion that makes sense. The key to understanding and remembering so much complex concepts and terminology is to ORGANIZE, ORGANIZE, ORGANIZE!
5. Assess yourself frequently and accurately! Just looking at flashcards is rarely enough. Try and teach a topic to a friend or draw out an important figure from memory.
6. When you study, keep a running list of questions and issues you are having with the material. Bring those questions to office hours or a study group.
7. It's better to study for short bursts often than in massive cramming sessions.
8. Come to office hour, don't be afraid to post questions.

HAVE FUN LEARNING & GOOD LUCK

Lecture Overview and Course Schedule

More specific information will be provided weekly on Canvas. We may adjust the schedule, assignments, and readings as necessary while still focusing on the foundational concepts listed below. The shaded colors below are for purely visual purposes, to separate the weeks.

Date	Subject
Class #1 M Aug. 1	Introduction, Methods in Cell Biology; Membrane Biochemistry Reading: Lodish Ch 1, 4, 7 (8 th edition)
Class #2 W Aug. 3	Membrane Transport of Small Molecules/Ions; Endocytosis Reading: Lodish Ch. 11, 14
Class #3 M Aug. 8	Protein Sorting; Secretory Pathway I Reading Lodish Ch. 13 and 14
Class #4 W Aug. 10	Secretory Pathway II Reading Lodish Ch. 14
Class #5 M Aug. 15	The nucleus; Signal Transduction I Reading Lodish Ch. 15 and 16
Class #6 W Aug. 17	Midterm
Class #7 M Aug. 22	Signal Transduction II Reading Lodish Ch. 16
Class #8 W Aug. 24	Cytoskeleton part I Reading Lodish Ch. 17 and 18
Class #9 M Aug. 29	Cytoskeleton part II Reading Lodish Ch. 17 and 18
Class #10 W Aug. 31	Cell Cycle Reading Lodish Ch. 19
Class #11 F Sept. 2	Final

