

BICD 110 Cell Biology Fall 2023

Welcome!

Course description

This 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, cell cycle and cell death, cells in development and disease.

Prerequisites: BIBC 100 or BIBC 102.

Time and Place:

Mon/Wed/Fri 8:00 – 8:50a, Peterson Hall 108 (In-person lecture)

Wednesdays 11 – 11:50a, Remote Zoom Discussion

Instructor:

Emily Grossman, PhD

H&SS 1145H

egrossma@ucsd.edu

Office Hours

Wednesdays 1 – 2p

Fridays 9:30 – 10:30a

H&SS 1145L

Instructional Assistants

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Learning Goals

At the end of this course, students will be able to:

- Summarize techniques used to study cells and cell processes, and explain applications of the methods to real life
- Explain how proteins are transported and targeted to different cellular locations
- Discuss the structure and function of each cell organelle or cytoskeletal element
- Explain the stages of the cell cycle, and how misregulation can lead to cancer developing

Remote Discussion Section:

Section will start Week 1. This section is meant to serve as an opportunity to practice applying your knowledge of material on the Problem sets, as well as time to ask questions/get clarification. Attendance at discussion section is not mandatory, but strongly encouraged. **It is highly recommended that you participate in as many as possible because this is an opportunity to ask questions and get feedback.**

Class Web Site:

The class web site is on Canvas (canvas.ucsd.edu) All class notices, the syllabus, and other important information will be posted here. Please check the web site regularly for updates, since this will be the main form of distribution of information to the class. My lecture notes will be posted to the site.

Resources

1. Support for student writers:

Writing + Critical Expression Hub (part of the Teaching + Learning Commons)

There are undergraduate writing mentors on staff who are in Biological Sciences degree programs, so they have training not only in working with student writers, but also familiarity with science reasoning and science writing. Please don't hesitate to meet with a writing mentor for help—every writer can benefit from these conversations. Students can make appointments via <https://ucsd.mywconline.com>

2. Tutoring

OASIS: Office of Academic Support and Instructional Services

From the OASIS website (<https://students.ucsd.edu/sponsor/oasis/>): We are the learning center at UC San Diego and provide most of the free tutoring on campus in a collaborative, supportive environment. All UC San Diego students are eligible to receive OASIS services. Each year, OASIS serves 3,000 students in language, math, science, study skills, and writing as well as peer counseling and peer mentoring.

They are located on the third floor of Center Hall, (858) 534-3760 (phone), oasis@ucsd.edu (email)

Required Learning Materials:

iClicker (available at bookstore)

Optional Learning Materials:

Molecular Cell Biology (Lodish *et al.*, 9th edition)

The book is highly recommended, but not mandatory. If you wish to use previous editions of the book just keep in mind that the assigned reading page numbers given may not exactly correspond. You will have to determine the material referenced.

Basis for Final Grade

12.5 points In-lecture iClicker questions (2.5%)
25 points Post-lecture questions (5%)
12.5 points Protein Synthesis and Transport Write-up (2.5%)
100 points Problem sets (20%)
100 points Midterm I (20%)
100 points Midterm II (20%)
150 points Final (30%)
500 points total

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.

Total percentage	Grade	80.0 – 81.9%	B-
98.0 – 100%	A+	78.0 – 79.9%	C+
92.0 – 97.9%	A	72.0 – 77.9%	C
90.0 – 91.9%	A-	70.0 – 71.9%	C-
88.0 – 89.9%	B+	60.0 – 69.9%	D
82.0 – 87.9%	B	<59.9%	F

Due to the generous amount of extra credit opportunities, I do not round final scores.

1. Clicker participation (not for correctness), 2.5%

If you participate in answering at least 75% of the clicker questions during the lecture sessions, you will get full points. Because you only need 75% participation for full points, if you forget your clicker one day, or are out due to illness, this shouldn't affect your score. Additionally, bonus questions will be given toward the end of the course to allow you to make up for missed days. For participation below 75%, the breakdown is as follows:

65% – 74.9%: 10pts
55% - 64.9%: 8pts
40% - 54.9%: 6pts
15% - 39.9%: 4pts
Below 15%: 0pts

2. Post lecture questions, 5%

The quizzes posted on Canvas are meant to reinforce importance concepts covered during the lectures. Quizzes are to be completed *prior* to the start of the next lecture (deadlines will be posted on Canvas). Because mastery is not necessarily expected after watching the lecture, scoring 85% or higher overall will result in full points. If your average score overall on the quizzes falls below 85%, you will earn your average percent (out of 25 points) for this portion of the grade.

It is very important to follow-up in office hours or during discussion on concepts you were unclear on.

3. Protein Synthesis and Transport Write-up, 2.5%

A writing assignment that details the journey through the cell of a chosen protein of interest. This assignment will be graded on completion rather than correctness. Guidelines will be provided on Canvas.

4. Problem Sets: 20% There will be eight Problem Sets due throughout the quarter. The problem sets will cover material from the previous weeks' lectures. Problems sets will be submitted to Gradescope.

5. Exams (Midterms (20% each) and Final (30%)): 70% total

All exams will be given during the scheduled lecture time. Dates for exams will be noted on the schedule in the syllabus, and on Canvas. Midterm exams will cover material from Weeks 0 – 3 and 4 – 6 respectively. The final exam will be cumulative. All exams will be scanned and graded through Gradescope.

6. Extra credit opportunities (opportunity to earn up to 10pts (2%))

Extra credit problems will be presented throughout the quarter on Problem Sets. In addition, if 85% of the class completes a CAPE evaluation at the end of the quarter for me, everyone will receive 2pt of extra credit as well.

Late policy:

Assignments must be submitted on time to be eligible for full credit. Except in the case of medical or family emergencies, late assignments will be subjected to a 5% deduction per day if submitted within 72 hours after the posted due date. Assignments not submitted within 72 hours of the due date will receive a score of 0.

Regrades:

If a grading error has been made, you should submit a re-grade request to your Instructional Assistant or Dr. Grossman. **Students who submit items for re-grading (for example, a question on a problem set) understand that we may re-grade the entire item (for example, the entire problem set) and the score may go up or down.**

Accessibility

Any student with a disability is welcome to contact me in order to work out reasonable accommodations to support their success in this course. Students requesting accommodations for this course due to a disability must work through the Office for Students with Disabilities (OSD). Instructors will receive Authorization for Accommodations Letters from the OSD online portal. Whenever possible, we will use universal designs that are inclusive. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

If you received accommodations during Spring 2023 and would like to request the same accommodations, please email your OSD specialist using the subject line "Requesting Fall Accommodations." Your Specialist will review your file and

let you know if you need to provide updated documentation before accommodations can be determined.

Students Who Have Not Received Accommodations Through The OSD Previously (This includes those with temporary limitations (concussions, broken bones, etc.))

All intake appointments will take place over the phone/Zoom. Call the OSD at 858.534.4382 to schedule an appointment. If campus is closed, send an email to osd@ucsd.edu and put "Request for Intake Appointment" in the subject line. Indicate dates and times during the subsequent two weeks that you are available for a 60 minute phone appointment, and you will be contacted via phone or email. If you are deaf or hard of hearing and would prefer to have your intake conducted via email or through Zoom with captions, please let us know.

Before your appointment, complete the intake and consent forms which may be found on the OSD website: osd.ucsd.edu/students/forms.html#Student-Forms and email them back to osd@ucsd.edu. These will be forwarded to your Disability Specialist before your appointment.

Contact the OSD for further information:
858.534.4382 (phone) osd@ucsd.edu (email) <http://disabilities.ucsd.edu> (website)

Inclusion

It is our goal to create a learning environment that supports diversity of thought, perspective, experience, and identities. We encourage all of you to participate in discussion and contribute to the field from your perspective. If you have feedback on how to make the class more inclusive, please get in touch!

Office of Equity, Diversity, and Inclusion:
858.822.3542 | diversity@ucsd.edu | <https://diversity.ucsd.edu/>
<https://students.ucsd.edu/student-life/diversity/index.html>
<https://regents.universityofcalifornia.edu/governance/policies/4400.html>

A Culture of Respect: The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. 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, or <http://ophd.ucsd.edu>. Students may receive confidential assistance at the Sexual Assault Resource Center at

(858) 534-5793, sarc@ucsd.edu, or <http://care.ucsd.edu>, or through 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 UCSD student affairs staff member, a department Chair, a faculty member 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. UCSD is committed to upholding policies regarding nondiscrimination, sexual violence and sexual harassment.

Student Expectations

Waitlist policy

In order to be added, a seat must become available (someone dropping from the class). The waitlist will automatically update and add the current #1 student into the class until the end of the second week. I will not add anyone past this, even if seats become available in the course.

Exam policies:

All exams will be given during the scheduled class time as noted on the class schedule. If an exam is missed due to medical or family reasons, a make-up exam will be scheduled within one week of the original exam.

Academic Integrity:

Although we encourage students to work together on problem sets and during discussion sections, the following is not allowed.

- Copying another student's work on the problem sets or exams, or allowing another student to copy your work
- Plagiarizing (copying) the answers to your problem sets from another source (lecture slide, book, online, *etc*). They need to be written in your own words
- Altering graded exams or assignments and submitting them for a regrade
- Responding to clicker questions in class using another student's clicker

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. A breach of academic integrity may result in a zero on the assignment/test/participation item in question and/or a failed grade in the course.

We hold the following values (adapted from the International Center for Academic Integrity) as important to academic integrity and for maintaining an inclusive classroom environment.

	As students, this means you will...	As the Instructional team, this means we will...
Honesty	<ul style="list-style-type: none"> ➤ Honestly demonstrate your knowledge and abilities ➤ Communicate openly without using deception, including citing sources appropriately 	<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 guidelines for course assignments
Responsibilities	<ul style="list-style-type: none"> ➤ Complete your assignments on time and be fully prepared for class ➤ Arrive to class on time and be active participants 	<ul style="list-style-type: none"> ➤ Give you timely feedback on your assessments ➤ Arrive to class on time and be active participants ➤ Create relevant assessments and class activities
Respect	<ul style="list-style-type: none"> ➤ Speak openly with others while honoring diverse viewpoints and perspectives ➤ Allow others to voice their opinions and perspectives 	<ul style="list-style-type: none"> ➤ Respect your perspective even while we challenge you to think more deeply and critically ➤ Help facilitate the respectful exchange of ideas in class
Fairness	<ul style="list-style-type: none"> ➤ Contribute fully and equally when working in teams ➤ Not seek unfair advantage over others 	<ul style="list-style-type: none"> ➤ Create fair assessments and grade in a fair and timely manner ➤ Treat students and teams equally
Trustworthy	<ul style="list-style-type: none"> ➤ Not engage in personal affairs while on class time ➤ Be open and transparent about what you are doing in class ➤ Not distribute course materials to others in an unauthorized fashion 	<ul style="list-style-type: none"> ➤ Be available when we say we will be ➤ Follow through on our promises ➤ Not modify the expectations or standards without communicating with everyone
Courage	<ul style="list-style-type: none"> ➤ Say or do something when you see actions that undermine any of the above values 	<ul style="list-style-type: none"> ➤ Say or do something when we see actions that undermine any of the above values

This class statement and table of values is adapted from Dr. Tricia Bertram Gallant.

If you observe anyone not acting in accordance with the above values we are trying to foster, please bring your concerns to my or the instructional team's attention, and we will do our best to determine appropriate actions to uphold and protect these values.

ChatGPT policies

Use of ChatGPT or other similar software to complete assignments is not allowed. The goal of the problem sets, writing assignments, and other given assignments is to help you engage with and learn the material, and if you are not completing the assignment on your own (without the use of AI assistance), you will not be able to synthesize and retain the necessary information (in order to complete exams for example).

Although ChatGPT can be useful in some contexts, it is important to remember that ChatGPT is a general-purpose language model and may lack specific knowledge and expertise in specialized scientific fields (like ours!).

If plagiarism or use of this type of AI program is suspected, detectors will be used, and any violations will be reported to the Academic Integrity Office.

Course Schedule (subject to change):

Week	Dates	Lecture topic
Wk 0	Fri 9/29	Introduction to cells and Eukaryotic cell organelles
Wk 1	Mon 10/2	Techniques used to study the cell
	Wed 10/4	Membrane Structure
	Fri 10/6	Membrane Proteins
Wk 2	Mon 10/9	Membrane Transport and Electrical Properties I
	Wed 10/11	Membrane Transport and Electrical Properties II
	Fri 10/13	Secretory Pathway - Protein synthesis: ER
Wk 3	Mon 10/16	Secretory Pathway - Protein modification
	Wed 10/18	Endocytosis and Transport Vesicles I
	Fri 10/20	Midterm I
Wk 4	Mon 10/23	Endocytosis and Transport Vesicles II
	Wed 10/25	Secretory Pathway: Golgi I
	Fri 10/27	Secretory Pathway: Golgi and Lysosome
Wk 5	Mon 10/30	The Nucleus
	Wed 11/1	Signal Transduction I
	Fri 11/3	Signal Transduction II
Wk 6	Mon 11/6	Signal Transduction III
	Wed 11/8	Cytoskeleton I: Actin
	Fri 11/10	Veteran's Day Holiday - No class
Wk 7	Mon 11/13	Midterm II
	Wed 11/15	Cytoskeleton II: Actin Motor Proteins
	Fri 11/17	Cytoskeleton III: Tubulin
Wk 8	Mon 11/20	Cytoskeleton III: Microtubule Motor Proteins
	Wed 11/22	Extracellular Matrix (pre-recorded, no in person lecture)
	Fri 11/24	Thanksgiving Holiday - No class
Wk 9	Mon 11/27	Development and Stem Cells
	Wed 11/29	Neuron focus: Axon outgrowth/ Development II
	Fri 12/1	Cell Cycle I
Wk 10	Mon 12/4	Cell Cycle II/Cancer I
	Wed 12/6	Cancer II
	Fri 12/8	Review for Final
Final	Mon 12/11	Final 8 - 11a, Location TBD

Important Dates to Remember

Midterm 1:	Friday, Oct 20, 2023
Drop Deadline (without W):	Friday, Oct 27, 2023
Withdrawal Deadline:	Friday, Nov 10, 2023
Midterm 2:	Monday, Nov 13, 2023
Final Examination:	Monday, Dec 11, 2023, 8 – 11a

Potentially Useful Resources (listed alphabetically):

Black Resource Center: The Black Resource Center is a Campus Community Center that serves everyone at UC San Diego while emphasizing the Black experience. We promote scholarship, foster leadership, and cultivate community for students through the committed, collaborative effort and support of faculty, staff, and the broader UC San Diego community.

<http://brc.ucsd.edu/> (website)

Counseling And Psychological Services (CAPS): CAPS provides FREE, confidential, psychological counseling and crisis services for registered UCSD students. CAPS also provides a variety of groups, workshops, and drop-in forums.

<http://caps.ucsd.edu/> (website)

Cross-Cultural Center: The Cross-Cultural Center strives for meaningful dialogues and context across all cultures, particularly those of underrepresented or underprivileged backgrounds. We offer supportive and educational services through art, social and educational programs, workshops, and outreach. We welcome creative venues for enhancing social consciousness and equity.

<http://ccc.ucsd.edu/> (website)

Hub Basic Needs Center & Triton Food Pantry: The Hub Basic Needs Center addresses the gaps and concerns students have with accessing nutritious food, stable housing, and financial wellness resources. We are committed to transforming dialogues surrounding the basic needs of students so they can focus on their academic success contributing to holistic well-being.

<https://basicneeds.ucsd.edu/> (website)

Inter-Tribal Resource Center: We are focused on supporting Native American students and promoting educational access in our tribal communities.

<https://itrc.ucsd.edu/> (website)

LGBT Resource Center: The Lesbian Gay Bisexual Transgender Resource Center at UC San Diego provides a visible presence on campus and enhances a sense of connection and community among LGBT faculty, staff, students, alumni and the UC San Diego Community.

<http://lgbt.ucsd.edu/> (website)

Office for Students with Disabilities (OSD): The Office for Students with Disabilities (OSD) at UC San Diego works with undergraduate, graduate, and professional school students with documented disabilities, reviewing documentation and determining reasonable accommodations.

<https://disabilities.ucsd.edu/about/index.html> (website)

Raza Resource Centro: The Raza Resource Centro team is committed to our student's success and we work collectively to meet the needs of our students. The Centro is a lively space where students study, meet, write, get tutoring, and most importantly are in community. It is a space where Latina/o Chicana/o organizations hold meetings, events and where culture, arte, and academics interconnect.

<http://raza.ucsd.edu/> (website)

Student Veterans Resource Center: The Student Veterans Resource Center (SVRC) is committed to ensuring that military affiliated students successfully make the transition from the military environment to campus life, and are assisted in their progress toward completing their academic degree. The Center also provides opportunities for peer-to-peer support, mentoring and social networking.

<https://students.ucsd.edu/sponsor/veterans/> (website)

Women's Center: The Women's Center serves as a resource for the entire campus community while placing the experiences of diverse women at the center through the resources we provide, the programming and learning opportunities we facilitate, and the dynamic community space that we create.

<https://women.ucsd.edu/> (website)

There are many other resources available to you on campus, and if you wish to know more about where you can go for support – please let me know and we can find it together. If you would like me to include resources other than those I have listed above, let me know as well! I want to know what is important for everyone!