

Syllabus BICD 110: Cell Biology Spring 2023

- What:** This course will cover the structures, pathways, and principles within cells. We will start by discussing the basic building blocks of biological molecules and the experimental strategies used to investigate them. Next, we will move onto organelle function and protein transport through the cell. In the latter half of the course, we will discuss signaling cascades, the cytoskeleton, and the cell cycle. We will conclude by examining how these processes are integrated into tissue biology and how they go awry in cancer.
- When:** Monday, Wednesday, and Friday, 12:00-12:50pm
All lectures will be podcasted and available at <https://podcast.ucsd.edu/>
- Where:** Franklin Antonio Hall 1301
- Who:** Dr. Andrew Muroyama
Assistant Professor
Cell and Developmental Biology
3218 Muir Biology
Email: amuroyama@ucsd.edu
Note: Please include "BICD 110" in the subject line to ensure prompt reply.
- Office Hours:** Tuesday 2-3pm & Wednesday 2-3pm
Muir Biology, Rm 1138
- Instructional assistants:** Samuel Altshuler, saltshuler@ucsd.edu
Andrew Doan, a1doan@ucsd.edu
Josiah Diaz, jod004@ucsd.edu
Hanna Gootin, hgootin@ucsd.edu
Raha Shelton, rpselton@ucsd.edu
Laura Zhao, yuz177@ucsd.edu
- Course Materials:** Molecular Cell Biology (9th Edition), Lodish et al.
The textbook is **optional**.

All course materials, including the syllabus, lecture slides, and problem sets will be posted to Canvas.
(<https://canvas.ucsd.edu>)
- Prerequisites:** BIBC 100 or BIBC 102 or CHEM 114A or CHEM 114B
- Quizzes and exams:** Quiz 1 – Wed, April 19, in-class
Midterm – Wed, May 3, 7:00-8:50pm, MOS 0113
Quiz 2 – Monday, May 22, in-class
Final exam – Wed, June 14, 11:30am-2:30pm, Location TBD

Assessment: To accommodate student flexibility and provide ample opportunities for students to demonstrate their knowledge, there are two available grading rubrics.

Grading rubric 1:

One of the two quizzes: 100 pts
Midterm: 150 pts
Final exam: 200 pts
Participation: 50 pts

Grading rubric 2:

Midterm: 200 pts
Final: 250 pts
Participation: 50 pts

The grading rubric that benefits the student's grade will be used to calculate the final grade.

Important note: To use grading rubric 1, the student must take both quizzes and the midterm. If a student misses either of the two quizzes or the midterm without a valid excuse (e.g. doctor's note), grading rubric 2 will be used.

Participation:

- 5pts per discussion section attendance (one attendance/week) (45pts max)
- If you attend one pre-exam review session (in-class on 5/3 or 6/9), you will be awarded 5pts (5pts max)
- If >90% of the class completes the mid-quarter anonymous survey, everyone will be awarded 10 pts
- If >90% of the class fills out their CAPES, everyone will be awarded 10 pts.

Optional extra credit A) research paper or B) current topic report – 30 pts to your final grade

A) Three cell biology-related research publications will be posted to Canvas by the midterm. The student may choose one of these three papers and submit a written report (≥ 2 single-spaced pages, 12pt font) that details 1) the motivation for the study, 2) methods used, 3) main conclusions, and 4) a discussion of why these findings are novel. The report must be sent to me by email by the last day of class (June 9, by 5pm) to be reviewed. Each of these four points must be adequately addressed to receive full credit.

B) Biology does not exist just within the confines of academia. It is essential for and impacts all aspects of our society! In this spirit, the student can submit a written report (≥ 2 single-spaced pages, 12pt font) about a current issue related to the topics covered in class that 1) details the issue as it appears in popular media, 2) provides context for the issue, 3) describes how the issue relates to the material in the course, and 4) briefly summarizes an academic article that treats the topic. The report must be sent to me by email by the last day of class (June 9, by 5pm) to be reviewed. Each of these four points must be adequately addressed to receive full credit.

You can let your creativity shine and choose something you are passionate about! Possible topics are endless and include, for example, the visibility of scientists from historically marginalized communities, the effects of increasing heat stress on plant cells, new technologies to control mosquito populations, etc. **Important:** The topic and the paper must be approved by the instructor by email by **Friday, May 26th**.

Final grades will be calculated according to the following scale:

485 – 500 pts: A+
450 – 484 pts: A
435 – 449 pts: B+
400 – 434 pts: B
385 – 399 pts: C+
350 – 384 pts: C
300 – 349 pts: D
Below 300 pts: F

Regrade policy: Regrades will only be accepted up to one week after the exam return date. If a regrade is requested, the student must supply 1) a written explanation of the error and 2) the original exam.

Makeup tests: There will be no makeup exams. If there is a family or medical emergency, the instructor must be contacted ahead of time. Failure to do so will result in an automatic 0 on the missed quiz or exam.

Problem sets: Problem sets will be provided via Canvas and will cover the previous week's material. The problem sets will not be graded and are meant to reinforce key concepts from past lectures. The questions on the problem sets will be similar to those on the quizzes and exams, and are, therefore, meant to be an extra preparation tool to make sure you stay up to speed as the class moves along. Answer keys will be provided after the discussion sections meet.

Discussion sections: You may only attend the section in which you are enrolled unless you have permission to attend a different section ahead of time. Permission should be granted from both your IAs (the one from your enrolled section and the one you are planning on attending).

Section	Day	Time	Location	IA
A01	M	10:00-10:50AM	APM 2301	Sam Altshuler, saltshuler@ucsd.edu
A02	T	11:00-11:50AM	CENTR 203	Raha Shelton, rpshelton@ucsd.edu
A03	M	1:00-1:50PM	CENTR 203	Sam Altshuler, saltshuler@ucsd.edu
A04	M	3:00-3:50PM	HSS 1305	Josiah Diaz, jod004@ucsd.edu
A05	M	7:00-7:50PM	APM 2301	Hanna Gootin, hgootin@ucsd.edu
A06	M	8:00-8:50PM	APM 2301	Laura Zhao, yuz177@ucsd.edu
A07	W	8:00-8:50AM	CENTR 203	Andrew Doan, a1doan@ucsd.edu

Piazza: A Piazza page has been set up for students to post questions related to the problem sets or lectures. Piazza will be monitored by the IAs, and absolutely no abusive or derogatory language will be tolerated.

<https://piazza.com/ucsd/spring2023/bicd110/home>

Week	Lecture #	Date	Day	Topic
1	1	3-Apr	M	Introduction
	2	5-Apr	W	Molecular Building Blocks; Proteins
	3	7-Apr	F	Methods in Cell Biology
2	4	10-Apr	M	Lipid bilayers
	5	12-Apr	W	Endoplasmic reticulum (ER)
	6	14-Apr	F	Protein modification and quality control
3	7	17-Apr	M	Transport into mitochondria, chloroplasts, and nuclei
	19-Apr	W	In-class Quiz I (lectures 1-7)	
	8	21-Apr	F	Secretory pathway I: Vesicles and ER
4	9	24-Apr	M	Secretory pathway II: Golgi
	10	26-Apr	W	Secretory pathway III: Trans-golgi network
	11	28-Apr	F	Endocytosis
5	12	1-May	M	Channels and transporters
	3-May	W	Optional review session in-class Midterm Exam (7-8:50pm, MOS 0113) (lectures 1-12)	
	13	5-May	F	Signal Transduction I: Signaling cascades
6	14	8-May	M	Signal Transduction II: GPCRs
	15	10-May	W	Signal Transduction III: RTKs and MAPK
	16	12-May	F	Cytoskeleton I: F-actin
7	17	15-May	M	Cytoskeleton II: Microtubules
	18	17-May	W	Cytoskeleton III: Cytoskeletal motors
	19	19-May	F	Cytoskeletal functions: Crawling and cilia
8	22-May	M	In-class Quiz II (lectures 13-19)	
	20	24-May	W	Cell Cycle I: Progression and cyclins
	21	26-May	F	Cell Cycle II: Mitosis

9	29-May	M	Memorial Day – No Class
	22	31-May	W Cell Cycle III: Cell cycle checkpoints
	23	2-Jun	F Cancer
10	24	5-Jun	M Cells in animal tissues
	25	7-Jun	W Cells in plant tissues
		9-Jun	F Review
14-Jun W Final Exam 11:30am-2:30pm (lectures 1-25)			

Please note that the subject matter covered over the course is subject to change (except for quiz/exam dates and the grading policies) as needed to enhance student learning and outcomes.

Inclusion: I am committed to fostering a learning environment where all students are supported and one that embraces diversity of thought, opinion, identity, and experience. As I will highlight in my lectures, our community is made stronger and science advances when as many perspectives as possible are uplifted. Please feel free to reach out to me if you have ideas about inclusion. More resources are also available from the Office of Equity, Diversity, and Inclusion: <https://diversity.ucsd.edu/>

Accessibility: Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. **Please note that instructors are unable to provide accommodations unless they are first authorized by OSD.** For more information, contact the OSD at (858) 534-4382 (voice), osd@ucsd.edu, or visit osd.ucsd.edu.

Academic integrity: Please, do not cheat. Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. **Academic misconduct** is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade. Academic misconduct misrepresents your knowledge and abilities, which undermines the instructor's ability to determine how well you're doing in the course. Please do not risk your future by cheating.

Other student resources:

Throughout your time at UC San Diego, you may experience a range of issues that can negatively impact your learning. These may include physical illness, housing or food insecurity, strained relationships, loss of motivation, depression, anxiety, high levels of stress, alcohol and drug problems, feeling down, interpersonal or sexual violence, or grief. These concerns or stressful events may lead to diminished academic performance and affect your ability to participate in day-to-day activities. If there are issues related to coursework that are a source of particular stress or challenge, please speak with us so that we are able to support you. UC San Diego provides a number of resources to all enrolled students, including:

Counseling and Psychological Services (858-534-3755) | caps.ucsd.edu)

Student Health Services (858-534-3300) | studenthealth.ucsd.edu)

CARE at the Sexual Assault Resource Center (858-534-5793 | care.ucsd.edu)

The Hub Basic Needs Center (858-246-2632) | basicneeds.ucsd.edu)