### UCSD BILD 1: The Cell Lecture Schedule Summer 2023

Professor: **Dr. Brooke Pickett** Professor contact: bpickett@ucsd.edu Office Hour: Tuesday at 1pm via OH zoom link Quarter start: **7/3/23** Quarter end: 8/4/23

<u>Overview:</u> Welcome to BILD 1! In this class, we will develop an understanding for cellular structure and function, biological molecules, bioenergetics, the genetics of both prokaryotic and eukaryotic organisms, and the elements of molecular biology. Please keep in mind that this summer microbiology course is a relatively advanced, fast-paced course, so it is imperative to keep up with the material. Note that students should plan on spending **two to three hours of studying for every hour of class.** Learning anything new can be difficult at first and requires a lot of practice before you can understand it. Coming to lecture and reading through the slides is important, but it's also very important to practice the material. It will also really help to study the material as you go, since the next lecture will expand upon what was covered in the previous lecture. **We're in this together, so if you have any issues or concerns, please let me know right away.** 

# COURSE MEETING TIMES

This class is fully remote and synchronous (see schedule below). Please look closely at the following course meeting times and the more detailed lecture schedule in this syllabus. The Zoom links for lecture, discussion section, and all office hours can be found on CANVAS.

Lecture:

Section	Day	Time
All	MTWTh	9am – 10:20am

Discussion Sections: <u>check WebReq to see which section you are assigned to.</u>

Section	Day	Time	IA Name
A01	TTh	11am – 11:50am	Sehee
A02	MW	11am – 11:50am	Saya
A03	MW	1pm – 1:50pm	Saya
A04	TTh	2pm – 2:50pm	Sehee
A05	MW	3pm – 3:50pm	Isha

IA Information: for IA office hours and location, see CANVAS.

IA Name	Email
Saya French	skfrench@ucsd.edu
Isha Desai	idesai@ucsd.edu
Sehee Oh	seoh@ucsd.edu

# **COURSE DESCRIPTION**

<u>Required Materials</u>: access to CANVAS, access to Zoom, a **working** camera (either on a laptop or phone) for exams – **you will not be allowed to take exams without this, no exceptions**. If you do not have access to a computer, please see UCSD student resources on CANVAS to request a loaner.

<u>Recommended Textbook:</u> "Campbell Biology", 12th Edition by Urry, Cain, Wasserman, Minorsky and Orr (Pearson 2021) ISBN 9780135188743. If you order directly from the publisher, the loose-leaf version of the book is \$60: https://www.pearson.com/store/p/campbell-biology/P100002940947/9780135856215. You can also choose to purchase the ebook (allows you to highlight and make notes directly on the page, reads the book to you). See the **"Recommended Textbook Reading Schedule" below** to keep up with the course reading. This book is recommended, not required.

There is also a free Openstax Biology textbook pdf posted under the "Important Files" module in CANVAS – this is a very general source of information with limited diagrams and information, but it can be useful.

<u>Prerequisites:</u> prior completion of high school- or college-level chemistry course.

<u>CANVAS</u>: all course related information will be posted on our Canvas site. The lecture slides will be posted before lecture and recordings will be posted after lecture. Please check the Canvas site and your UCSD e-mail regularly for any announcements as these will contain essential information.

<u>Lecture Structure:</u> Lecture will be presented via Zoom (<u>https://zoom.us/</u>). The most important aspects of the material are presented in lecture. Lecture attendance is required, as concepts will be presented in a step-wise fashion designed to help you learn the material. Participation questions will be presented during lecture. Lecture slides are available for download from CANVAS prior to the lectures and lecture recordings will also be posted to CANVAS after lecture under the "Media Gallery" tab.

<u>Discussion Section Structure</u>: Discussion sections are an ideal time to ask your IA questions about course material, practice questions, exam preparation, post-exam questions, etc. In general, your IA will go over the 1) main slides from lecture, 2) the answers to practice questions, and 3) answer any other questions you may have. Discussion section attendance is mandatory and participation is graded. Practice questions will be available on CANVAS before the discussion section. They consist of questions designed to help you understand the material presented in lecture and are not to be turned in or graded. Discussion section attendance is mandatory.

# DETAILED COURSE SCHEDULE

Below is the <u>tentative</u> lecture schedule; i.e. schedule may be a little ahead or behind track as the course progresses. Review sessions are remote via Zoom and are schedule outside of class time via a Doodle poll, they are not mandatory. The second table below is the corresponding recommended textbook reading for each lecture topic.

Week	Day	Date	Торіс	
	М	3-July	Topic 1: Intro to Biology Topic 2: Chemistry – atomic structure	
1	Т	4-July	<i>Vacation</i> – no lecture	
-	W	5-July	Topic 2: Chemistry – bonding, water and pH	
	Th	6-July	Topic 3: Macromolecules – General info	
			Topic 3: Macromolecules – carbs, lipids	
2	М	10-July	Topic 3: Macromolecules – proteins, nucleic acids	

	т	11-July	Topic 4: Cell structure – cell types and endomembrane systems	
	1	II-July	Topic 4: Cell structure – other cellular structures	
			Topic 5: Membranes and transport – membrane structure	
	W 12-July		Topic 5: Membranes and transport – chemical movement and	
			transport (end of Exam 1 material)	
	Th	13-July	Topic 6: Metabolism – energy and enzymes	
	Μ	17-July	<b>Exam 1</b> (1.5hrs)	
			Topic 7: Cell communication – reception, transduction, and	
	Т	18-July	response	
			Topic 8: Cellular respiration and fermentation overview, redox	
3	W	10 1.1.1.	Topic 8: Aerobic respiration (Glycolysis, CAC, electron transport),	
	vv	19-July	anaerobic respiration, fermentation	
			Topic 9: Photosynthesis – background and light reactions	
	Th		Topic 9: Photosynthesis – Calvin cycle and photorespiration (end	
			of exam 2 material)	
	M 24-		Topic 10: Mitosis – cell cycle and division	
	IVI	24-July	Topic 10: Mitosis – checkpoints and cancer	
	Т	25-July	<b>Exam 2</b> (1.5hrs)	
4	W	26-July	Topic 11: Meiosis – general info and division	
	Th	27 1.1.	Topic 11: Meiosis – division (cont.), nondisjunction	
Th		27-July	Topic 12: Genetics – Mendel's model (end of exam 3 material)	
	М	31-July	Topic 12: Genetics – nonmendelian inheritance and pedigrees	
	Т	1-Aug	<b>Exam 3</b> (1.5hrs)	
			Topic 13: Chromosomes – linkage and X-linked traits	
5	w	2-Aug	Topic 13: Chromosomes – chromosome alterations (may not	
5			have time)	
			Topic 14: DNA replication – DNA and synthesis	
			Topic 15: Gene expression – transcription, translation	
	Th	3-Aug	Topic 15: Gene expression – mutations (end of exam 4 material)	
Final's Week	F	4-Aug	<b>Exam 4 (final exam)</b> , 8am – 9:30am	

Topic	Recommended Textbook Reading Schedule			
	Chapter 1:			
	"The Cell: An Organism's Basic Unit of Structure and Function" p. 6			
1	"DNA, the Genetic Material" p. 7-8			
1	Figure 1.8b: "Gene Expression: Cells use" p. 8			
	"The Three Domains of Life" p. 12-13			
	Figure 1.13: "The three domains of life" p. 12			
	Chapter 2:			
	"Elements and Compounds" p. 29			
	"The Elements of Life" p. 29			
2	"Subatomic Particles" p. 30-31			
	"Covalent Bonds" p. 36-37			
	"Ionic Bonds" p. 37-38			
	"Weak Chemical Interactions" p. 38-39			

Chapter 3: "Water and Life" "Cohesion of Water Molecules" p. 45-46 "Water: The Solvent of Life" p. 49Chapter 5: "Sugars" p. 68-70 "Fats" p. 72-74"Fotein Structure and Function" p. 75, 78 Figure 5.18: "Exploring Levels of Protein Structure" p. 80-81 "The Roles of Nucleic Acids" p. 84 "Components of Nucleic Acids" p. 84-86Chapter 6: "Comparing Prokaryotic and Eukaryotic Cells" p. 97-99 "The Nucleus: Information Central" p. 102 (1st paragraph) "Ribosomes: Protein Factories" p. 102-104 (1st paragraph) "The Endoplasmic Reticulum: Biosynthetic Factory" p. 104 "The Golgi Apparatus: Shipping and" p. 105-106 (1st & 2nd paragraph) "Vacuoles: Diverse Maintenance Compartments" p. 108 "Mitochondria and Chloroplast Change Energy" p. 109, 110
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9 "Photosynthesis feeds the biosphere" p. 188
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	"The Nature of Sunlight" p. 192
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	"Linear electron flow" p. 197-198
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# GRADING CRITERIA AND SCALE

The grading scale for the course is standard (see second table below). **The course assignments are not curved and the final grades are not rounded.** For example, this means a grade of 89.9% will not be rounded up to a 90%.

Assessment	Points
Exam 1	100
Exam 2	100
Exam 3	100
Exam 4	100
Study Guide Assignments (5, 10pts)	50
Lecture Participation (16, 2pts)	32
Discussion Section Participation (9, 4pts)	36
Extra Credit	5
Total for Course	518

Letter	Percent	GPA
A+	96-100	4.0
А	94-95	4.0
A-	90-93	3.7
B+	86-89	3.3
В	84-85	3.0
B-	80-83	2.7
C+	76-79	2.3
C	74-75	2.0
C-	70-73	1.7
D	60-69	1.0
F	<60	0

### EXAMS

There will be four exams (see schedule above), none of which are cumulative (yay!). The exams are based solely on lecture material, they are closed-note and will be completed on Zoom, through CANVAS. In general, the exams will be 1.5hrs and consist of multiple choice, matching, T/F, fill-in, and short answer questions. We will have exam reviews before every test, each one will be scheduled via a Doodle poll and will take place outside of lecture hours. I highly suggest either making a study guide or digital flash cards (using the free Anki program –apps.ankiweb.net) after each lecture. This is a fast-paced course, so it is imperative to keep up with the material. None of the exam grades will be dropped and make-up exams will only be given with a doctor's note.

### **STUDY GUIDE ASSIGNMENTS**

Creating study guides from the lecture slides is a great way to prepare for the exams. This allows you to study the study guide, rather than going through dozens of lecture slides before the exam. Each week, you will create at least 5 questions and answers per lecture that we covered that week. For example, if we covered four lectures that week, you'll want to write 20 questions and answers in your study guide assignment. The questions must be **short answer format** and must relate to the main points from the lecture. These cannot be recycled practice questions. This way, before the exam, you will have a study guide to study for each lecture we went over. Note, that you are only required to write 5 questions and answers for each lecture, but I highly

recommend writing more than that to make a more useful study guide. If students complete the study guide assignments with a strong attempt at correct answers and integrity, they will receive the full 10pts each week. Your questions and answers must be written in your own words, do not copy and paste from lecture slides or other sources. Assignments with high Turnitin scores will not be accepted. Note that none of the study guide grades will be dropped.

# LECTURE AND DISCUSSION SECTION PARTICIPATION

At some point during every <u>lecture and discussion section</u>, a simple question will be asked based on the material we just went over. Students will scan a QR code and fill out their name and answer on a Google form. The participation answers are not graded for accuracy, just completion. Students must be present in lecture and discussion section the <u>entire time</u> to receive participation points. Each lecture is worth 2pts and each discussion section is worth 4pts. The lowest participation grade for lecture and discussion section will be <u>dropped at the end of the quarter</u> (to account for any Google form issues). See attendance policy below for further information regarding how to report an absence, excused, and unexcused absences.

## **EXTRA CREDIT**

There are five points of possible extra credit in this course. Extra credit assignments may take the form of student surveys or paper analysis – these assignments will be announced during class and via email. <u>Asking for extra credit points beyond this or asking for added points to boost your grade is inappropriate</u> and not in line with the ethics of academia; any requests of this nature will be dismissed.

## **PRACTICE QUESTIONS**

Practice questions will be posted on CANVAS each week and will pertain to the material we covered that week. They are **not turned in and not graded**. These questions are very useful for studying for the exams and your IAs will be going over them in discussion section each week.

### WEEKLY CHECKLIST

Below is a helpful checklist that students can follow each week to make sure they are up to date on all tasks:

- $\hfill\square$  Attend weekly remote lecture
- □ Answer the weekly practice questions
- □ Attend weekly remote discussion sections
- □ Read the portions of the (recommended) textbook that correspond to that week's lectures
- Turn in weekly study guide assignments by Fri each week
- $\hfill\square$  Study for tests as you go

# **COURSE POLICIES**

Below you will find the class policies regarding attendance, late assignments, extra credit, accommodations, and cheating.

# ATTENDANCE

Lecture and discussion section attendance is <u>required</u> and is essential to understanding the material and performing well on the exams. If lecture is missed, students can watch the lecture podcast (via the "Media Gallery" tab in CANVAS). If you will be absent from either lecture or discussion section, **please fill out this form** (also linked on CANVAS): <u>https://forms.gle/RR1iyqCDNVopVsdS9</u>. **Any emails regarding absences, will not be addressed, all absences must be entered into the above form.** Please fill out the form once for each day you will be absent. This form must be filled out before the absence will occur (except in emergencies). Your response will be sent directly to your professor and IAs. If the absence is excused, participation points will be awarded, if not, participation points will not be awarded. Please see the detailed guidelines below regarding unexcused and excused absences in lecture and discussion section:

*Unexcused absences:* will result in no participation points for that lecture/discussion. Unexcused absences include: 1) missing lecture/discussion without first notifying the professor or IA (except in medical emergencies), 2) arriving to lecture/discussion 15min late or more, 3) leaving lecture/discussion with 15min or more remaining, 4) absences due to scheduling conflicts (other coursework, vacations, planned meetings, etc.), or 5) attending a discussion section the student is not registered for.

*Excused absences:* will result in full participation points for that lecture/discussion. Excused absences include feeling sick, being COVID-positive, having COVID symptoms, unexpected occurrences, or events out of the student's control. Students must let Dr. Pickett know of lecture absences and IAs know of discussion absences **ahead of time** (this excludes medical emergencies) in order for the absence to be excused.

<u>Add/drop deadlines:</u> The deadline to add or drop courses (with a late fee), the last day to drop a course with tuition reversal or refund, and the deadline for all students to pay enrollment fees before administrative cancellation from courses for non-payment is **July 7**. Deadline for all students to drop classes **without "W"** grade on transcript is **July 14**. Deadline for undergraduate students to drop **with "W"** grade on transcript is **July 21**, for graduate students it's Aug 1. More information can be found here: <u>https://summersession.ucsd.edu/calendar/</u>.

### LATE ASSIGNMENTS

Late assignments are **not accepted** unless there is a doctor's note, a prior request for accommodations, or existing accommodations. If a student is struggling, it is their responsibility to seek out help and let the professor know of their circumstances <u>before</u> assignments are to take place (excepting emergencies). <u>Students cannot ask for accommodations retroactively</u> – this includes asking for an extension for work that has already been due.

#### LEARNING OUTCOMES (LOs)

- 1) Explain the relationship between chemical structure and function of molecules such as DNA, RNA, proteins, amino acids, and lipids.
- 2) Compare and contrast how the structures and elements of prokaryotic cells, eukaryotic cells, and viruses' impact how they function.
- 3) Predict how and when molecules may enter or exit cells through various pathways in the cell membranes.
- 4) Analyze how energy is produced and used by cells, including processes such as cellular respiration and photosynthesis.
- 5) Explain how cells receive and act on external chemical signals, including the stages of cell signaling and how signals are amplified.
- 6) Explain mechanisms that lead to genetic diversity including mutation and meiotic recombination.
- 7) Analyze how environment interacts with genotypes to produce phenotypes.
- 8) Explain patterns and mechanisms of inheritance.
- 9) Apply the central dogma to explain how genes give rise to the traits we observe in organisms.
- 10) Explain how gene expression can be modulated.

#### **ACADEMIC INTEGRITY**

Honesty is primarily the responsibility of each student. The College considers cheating to be a voluntary act for which there may be a reason, but for which there is no acceptable excuse. It is important to understand that collaborative learning is considered cheating unless specifically allowed for by the professor. The term cheating includes but is not limited to: plagiarism, receiving or knowingly supplying unauthorized information, using unauthorized material or sources, changing an answer after work has been graded and presenting it as improperly graded, illegally accessing confidential information through a computer, taking an examination for another student or having another student take an examination for you, and forging or altering grade documents. **This holds true for every assignment, regardless of the assignment's perceived magnitude or significance.** If any act of academic dishonesty is observed, **the professor is required to report it.** The student will **automatically receive a zero** on that test or assignment (the grade received as a result of an academic integrity violation stays calculated into the student's GPA even if the student retakes the class). There will also be an Al Administrative Fee of \$50 (posted to the student account), mandatory Al Training, **at least one Disciplinary Action**, and possibly other actions per the professional judgement of the Appropriate Administrative Authority (AAA). Discipline may include probation, suspension (from a Quarter to Two Years), or dismissal. <u>Please do not risk your GPA and/or future career by cheating</u>.

# **RESOURCES FOR STUDENTS**

If a student is struggling, it is **their responsibility to seek out help and let the professor know of their circumstances before assignments are to take place** (excluding emergencies). **Students cannot ask for accommodations retroactively.** A complete list of student resources can be found on the CANVAS homepage.

- Triton Food Pantry (https://basicneeds.ucsd.edu/food-security/pantry/index.html) Don't go hungry! Triton Food Pantry is free and available for any student. The pantry has food staples such as oatmeal, canned soups, fresh produce, dry goods, and milk that students can access for free at Student Center A (next to The Hub) or Graduate Housing (a.k.a "OMS") on Miramar Street. For food pantry hours, please see the above website. In general, food items are assigned a point value and any registered student is able to pick up 15 points worth of food per week. The Triton Food Pantry also provides a range of services including care packages, emergency food relief, basic needs events, and various pop-up locations on campus.
- The Hub Basic Needs Center (<u>https://basicneeds.ucsd.edu/index.html</u>) If you are facing challenges with your access to adequate food, stable housing, or general resources, please complete this form so assistance can be provided: <u>https://basicneeds.ucsd.edu/forms/basicneeds/index.html</u>. The Basic Needs Center also provides free hygiene products on an emergency basis.
- Teaching + Learning Commons (<u>https://commons.ucsd.edu/students/academic%20support.html</u>) Made up of six unique, but integrated hubs, The Teaching + Learning Commons provides comprehensive academic support for students. Includes tutoring, writing help, learning strategy workshops, and study groups.
- 4. The Writing and Critical Expression Hub (<u>http://commons.ucsd.edu/students/writing/index.html</u>) provides support for undergraduates working on course papers, i.e. lab reports as well as other independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing. The Writing and Critical Expression Hub offers: one-on-one writing, tutoring by appointment, supportive and in-depth conversations about writing, help with every stage in the writing process, walk-in tutoring, and workshops on writing.
- 5. *Office for Students with Disabilities (OSD)* (<u>https://osd.ucsd.edu/</u>) Assists students with documented disabilities (psychological, psychiatric, learning, attention, chronic health, physical, vision, hearing,

brain injury) to provide accommodations in classrooms and labs. For example, if you think you may have test anxiety due to an underlying condition that interferes with your ability to learn, focus, or concentrate, OSD is a great resource. In many cases, students are entitled to assistance with test taking, such as extra time to complete a test, testing in a less distracting room or having questions read aloud. OSD's mission is to offer quality programs and services that empower students with disabilities to access and engage in educational activities at UCSD. Please notify your instructor immediately if you require special health or disability accommodations.

- Counseling and Psychological Services (CAPS) –
   (<u>https://wellness.ucsd.edu/CAPS/services/Pages/Appointments.aspx</u>) This is an amazing resource for coping with anxiety and stress issues. For first-time appointments, you can now go directly to MyStudentChart.ucsd.edu and book an appointment online.
- 7. The Office for the Prevention of Harassment & Discrimination (OPHD) (https://ophd.ucsd.edu/) OPHD provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. 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 CARE at the Sexual Assault Resource Center at 858-534-5793, sarc@ucsd.edu, or <a href="http://care.ucsd.edu">http://care.ucsd.edu</a>, or Counseling and Psychological Services (CAPS) at 858-534-3755 or <a href="http://caps.ucsd.edu">http://caps.ucsd.edu</a>.

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a student affairs staff member, a faculty member, a department chair, 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. The university is committed to upholding policies regarding nondiscrimination, sexual violence, and sexual harassment.

# **OTHER TIPS**

### Office hours

Office hours are a great resource if you have any questions about the course content. You can also consider office hours to be more like study sessions or free-formed fireside chats, where we can talk about anything related to your academic and general experiences on campus. Stop by for just a few minutes or stay for the entire duration – your choice! Join us with your own questions or come and see what other students have questions about. Please feel free to email and set up a separate appointment with me if necessary. Office hours with instructional assistants will be posted on CANVAS.

# College Survival Skills

- Keep a calendar of all exam/assignment due dates and appointments
- Plan on spending two to three hours of studying for every hour of class
- Be on time to class, ask questions when needed, and participate

- Take notes in class and review them often
- Complete all assignments on time
- Take advantage of services on campus to help you succeed such as tutoring
- Arrange for needed accommodations early in the term
- Visit the ACCESS office for assistance, questions, counseling, and class selection they are here to help
- Plan time to eat, sleep and have some fun
- If trouble arises, seek assistance as soon as possible

### Coping Skills for Test Anxiety

- Breathing techniques or holding something small to fidget with (like a rubber band)
- Reframing thoughts: believing in yourself and remembering this is just one exam
- Doing the hardest questions (like short answer) first so you can relax a little bit
- Studying as you go, instead of all at once
- Studying in a place that is relaxing or familiar
- Making a routine maybe adding a few questions to a study guide right after each lecture. Routine tends to decrease stress.
- Having breakfast and water (no coffee) right before a test

### Self-Advocacy Tips

- Understand my disability and learn ways to compensate
- Learn how to explain my disability and needs to others
- Learn how to ask for appropriate accommodations
- Learn that it is OK to use appropriate accommodations
- Identify my strengths and weaknesses
- Learn that it is OK to ask for help
- Express my needs clearly to all college employees, especially the ACCESS staff and my instructors, early in the term
- Take responsibility and develop independence in coordinating your services
- Meet with instructors when needed

\*\*\* This syllabus is subject to change. Any changes will be announced in class and on CANVAS. Students will be responsible for all changes.