

Fundamental Concepts of Modern Biology

BILD 10

Fall 2021

Instructor Cindy Gustafson-Brown (Dr. Gus)
Office: University Center 301, room 102 (turn right when entering building)
email: cgb@ucsd.edu (Put **BILD 10** in the subject line!)
office hours: Thurs 2:50-3:20, location TBA (no office hours until Oct 7)
Thurs, 1-2, on zoom (no office hours until Oct 7)

Please present your questions about course material in person during office hours, not by email. I cannot guarantee an answer to your email, unless it is an urgent issue.

Welcome to BILD 10!

This course provides an introduction to the biochemistry and genetics of cells and organisms; illustrations are drawn from microbiology and human biology. This course is designed for non-biology students and does not satisfy a lower-division requirement for any biology major. Open to non-biology majors only.

My goals for this class

- Provide you with a foundation of basic biology principles, particularly the biochemistry and genetics of cells and organisms
- Convince you that everyone can learn science.
- Convince you biology is relevant to your life.
- Empower you to understand and think critically about biology issues that come up.
- Convince you that biology is FUN and interesting!
- Empower you to learn on your own.

COVID-19-related impacts on courses

This syllabus is subject to change, particularly because of campus efforts to contain Covid-19. Any schedule changes will be posted on the course website. Make sure to frequently check the website to keep updated. Also, adjust your settings in Canvas to ensure you receive notifications (announcements) by email.

You may find general COVID-19 information for UCSD here:

<https://vcsa.ucsd.edu/news/covid-19/>

There is information on student well-being here:

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

Check out this UCSD website for resources on how to learn remotely:

<https://digitallearning.ucsd.edu/learners/learning-remote.html>

All **lectures** will be delivered in-person and podcast. Masks must be worn in the lecture hall.

Online **homework** will be done on the MindTap program, that comes with your eBook.

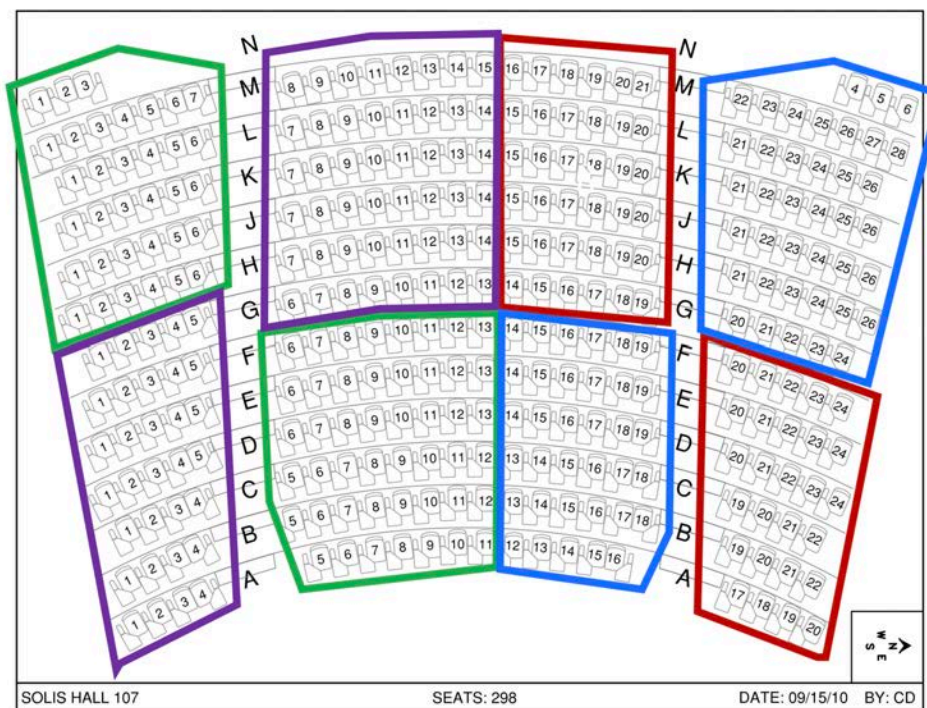
Exams will be in-person.

COVID precautions in the classroom

While we are thrilled to be back in school “in-person,” we need to take some common sense Covid precautions.

- All persons must wear a mask while in the lecture hall.
- Also, we are asking students to sit in particular areas by section number. If a student tests positive for Covid, we need to be able to notify other students who were sitting nearby, so they can get tested.

Purple A01-02 Green A03-04 Blue A05-07 Red A08-09



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

If you are a *concurrent enrollment student* (taking the course through UCSD extension), you can get access to Canvas right away. You must inquire at the Extension office. It is critical to do this as soon as possible!

IA office hours (There will NOT be IA office hours until week 2, that is Oct 4.)

time	location	IA
Tues 11-12:00 PM	Muir Woods Coffee House (Outside)	Grace Kovalick
Tues 3:30-4:30 PM	Zoom (using your UCSD email address)	Yuanshan Li
Tues 4-5:00 PM	Zoom (using your UCSD email address)	Leyna Nguyen
Wed 10-11 AM	Tent P416 across from Center Hall	Jeffrey Keller
Wed 9-10 AM	Zoom (using your UCSD email address)	Katheren Chiang
Thurs 11-12:00 PM	Price Center Starbucks (Outside)	Katherine Xia
Thurs 2-3:00 PM	Zoom (using your UCSD email address)	Titania Huang
Fri 1-1:50 PM	outdoor tables at Art of Espresso (Mandeville)	Kate Lin

You may attend the office hours of any IA.

Discussion sections (There will NOT be discussion sections until week 2, that is Oct 4.)

Each section meets once per week. In section you may review the lecture material and/or discuss the readings.

	time	location	IA	email
A01	M 9-9:50 AM	HSS 1315	Katherine Xia	kwxia@ucsd.edu
A02	M 10-10:50 AM	HSS 1315	Kate Lin	k4lin@ucsd.edu
A03	M 11-11:50 AM	HSS 1315	Jeffrey Keller	jkeller@ucsd.edu
A04	M 3-3:50 PM	SOLIS 111	Leyna Nguyen	ltn002@ucsd.edu
A05	M 4-4:50 PM	SOLIS 111	Katheren Chiang	k2chiang@ucsd.edu
A06	M 5-5:50 PM	CENTR 203	Grace Kovalick	gkovalic@ucsd.edu
A07	M 6-6:50 PM	CENTR 203	Grace Kovalick	gkovalic@ucsd.edu
A08	Tu 2-2:50 PM	YORK 3000A	Titania Huang	t6huang@ucsd.edu
A09	M 12-12:50 PM	APM 2301	Yuanshan Li	yul024@ucsd.edu

Classroom etiquette

Because this is a large lecture class, minimizing distractions is important. Please have respect for your classmates and the instructor by silencing cell phones and other electronic devices, not talking, and minimizing other distracting activities in class.

How will this online class work??? What do I do???

1. Students will read a passage from the (online) **textbook** and complete a short **homework** on that passage before each lecture. The homework is due at 1:00 PM on the day of the accompanying lecture, but you may do it earlier if you wish. Each homework assignment is available 7 days before it is due. Late homeworks are not accepted. Students are expected to complete these homeworks on their own without collaboration. The lowest homework score will be dropped.
2. For your convenience, the **PowerPoint slides** for each lecture will be posted the morning of the lecture.
3. On Tuesdays and Thursdays we will have **in-person lecture** in Solis 107. The lecture and reading schedule is at the end of the syllabus. The lecture will be podcast, so you can listen to it later.
4. Students are encouraged to come to Dr. Gus' **office hours** on Thursdays. Even if you don't have questions prepared in advance, do come! If you are struggling or you don't know where to start, do come! I'm happy to tutor you. Even if you want to talk about other things, like grad school or career options, do come! I also make appointments for private in-person meetings and zoom calls.
5. Students are encouraged to come to their assigned **discussion section**. In sections you will get practice exam questions and work on activities to help you learn more and prepare for exams.
6. There will be three **films** posted for you to watch. (see below)
7. There will be two in-person **midterms**. They are in the evening.
8. The in-person **final exam** will be on Friday, Dec 10.

Textbook

Biology, Today and Tomorrow, 6th edition, (2020) by Starr, Evers, and Starr, plus the *MindTap V2* online homework program.

Weekly textbook reading is required in this course. Frequent homework assignments, found on the accompanying *MindTap* web site, will assess your understanding of the reading. Further, reading prior to lecture provides a foundation for better comprehension and discussion in lecture. It will be difficult to pass the course without doing the reading.

Your digital textbook (eText plus MindTap homework program) is provided by the UC San Diego Bookstore via the “inclusive access” program, linked on our course Canvas page. The textbook is free for the first two weeks of classes. After two weeks, your student account will be charged a special reduced price *unless you opt out*.

Information about UCSD Inclusive Access Program is at <https://ucsandiegobookstore.com/t-inclusiveaccess.aspx>

For any questions about billing please contact textbooks@ucsd.edu

RedShelf customer support is here:

<https://solve.redshelf.com/hc/en-us/categories/115000384354-Student-Customer-Support>

How to buy your Textbook + MindTap homework program

Step 1: Sign into **Canvas** and click on **BILD 10**

Step 2: Click on the Cengage link

Step 3: Create or sign into your Cengage account to access or purchase the materials for this course.

Films

There are three required films, each one hour long. You will be responsible for watching the first two on your own time. The third will be shown in lecture 18, on Nov 30. All three are available for viewing online, streaming from the publisher’s web site. See the course web site for links, which are also provided below.

Supplements and Safety (2016)

<http://www.pbs.org/video/2365646371/>

An investigation into the hidden dangers of vitamins and supplements, a multibillion-dollar industry with limited FDA oversight. FRONTLINE, The New York Times and the Canadian Broadcasting Corporation examine the marketing and regulation of supplements, and cases of contamination and serious health problems.

This film will be covered on midterm 1.

Hunting the Nightmare Bacteria (2013)

<http://www.pbs.org/wgbh/frontline/film/hunting-the-nightmare-bacteria/>

Has the age of antibiotics come to an end? From a young girl thrust onto life support in Arizona to an uncontrollable outbreak at one of the nation's most prestigious hospitals, FRONTLINE investigates the alarming rise of a deadly type of bacteria that our modern antibiotics can't stop.

This film will be covered on midterm 2.

Vaccination from the Misinformation Virus (2021)

<https://www.pbs.org/video/vaccination-from-the-misinformation-virus-a6mhdw/>

In the age of social media, we can all be fooled by digital misinformation. This one-hour documentary explains how to overcome our bias to understand why vaccines are safe, crucial to community health and save millions of lives annually.

Shown in lecture 18, on Nov 30.

This video will be covered on the final exam.

How to study the films: The midterms and final exam will test you on material from the films. You should take notes when you watch them, and review your notes before the exams. Do NOT worry about exact dates, numbers statistics, or names of characters in the films. Instead, focus on the stories, history (major events and general time frame), arguments of different stake-holders, policy issues, causes of controversies, impact of the situations described on individuals and society, appropriate and inappropriate responses, biological bases for understanding the situations, etc. For each part, or chapter, of the film you should be able to say something intelligent about what the message was. *Do NOT wait to the last minute to watch the films, in case there is a technical glitch.*

I have made additional interesting films available to you, which are not required for the course. See the links on the Canvas web site. Some link directly to the publishers' web sites, and some link to library reserves. When using UCSD library reserves, you *must* access the films from within the UDSD protected network or use a VPN if you are off campus.

Exams

Note that the **midterms** are in-person, and are in the evening, outside of normal lecture time! Put this on your calendar.

- Midterm 1 Thurs Oct 14, 8-9:50 PM GA AUD
- Midterm 2 Tues Nov 9, 8-9:50 PM GA AUD

GA AUD is the large lecture hall in the "General Academic building" in the SE corner of the N. Torrey Pines Living and Learning Neighborhood. It is just west of Peterson Hall.

Exams will be closed-notes/closed-book, primarily short answer with a few true/false, multiple choice, and short essay questions. You will be accountable for **all material covered in lecture, PowerPoint slides, assigned material in MindTap, and all required reading.**

There will also be exam questions pertaining to the **required films.**

The final exam will be in-person. It will be comprehensive, with emphasis on the last part of the course. The final exam will not cover first two films from the midterms.

BRING STUDENT ID. It will be checked at the exam.

You must write in nonerasable pen and avoid using white-out on the midterm in order to be considered for a regrade. Your handwriting must be legible; we will disregard answers which cannot be deciphered.

Old exams will be posted on the course web site. The material will not be exactly the same or covered in the same order, and during different quarters the exam lengths may differ. Use old exams to become familiar with my style of exams, but don't assume the material is exactly the same. Old exams are not a review sheets.

The IAs will conduct a **review session** before each exam:

First review session	Thurs, Oct 14, during regular lecture time
Second review session	Tues, Nov 9, during regular lecture time
Final review session	Thurs, Dec 9, in the evening

Missed exams

Make sure your class schedule has NO conflicts with the midterms or the final exam! There are no alternate exams for scheduling conflicts.

If you know in advance you must miss an exam due to an unavoidable situation (e.g. surgery), it is your responsibility to clear it with Dr. Gus as soon as the conflict becomes apparent.

If a spontaneous emergency (e.g. illness or accident) arises, you **must contact the instructor within 24 hours** of the missed exam. Please note that as of this writing (9/18/2021), UCSD's policy is that "Vaccinated students who have been exposed [to COVID-19] are allowed to attend class and move about campus masked" which includes attending in-person exams. **This does not include people who have COVID symptoms or a positive test result.** You can find an up-to-date policy and more details here: <https://returntolearn.ucsd.edu/return-to-campus/exposure-contact-tracing/index.html>

If you are concerned that you would endanger others by attending an in-person exam, please email me as soon as possible to discuss your situation. If you have extraordinary circumstances that make it impossible for you to take an exam in person, email me as soon as possible. Otherwise you will receive a zero on the missed exam.

Course grade

This course will be graded on a curve. The class mean will be a B. There will be pluses & minuses. There will be 1000 points total during the quarter. You must achieve at least 395 combined points (50% of the total points) on the three exams in order to pass the class (C minus).

	<u>percent</u>	<u>points</u> (out of 1000)
Homework (MindTap)	21%	210
Midterm 1	22%	220
Midterm 2	22%	220
Final exam	35%	350

Academic integrity

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. **Academic misconduct** is 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.

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.

BILD 10 students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. Because all homework/quizzes/exams are required for satisfactory completion of this course, any student caught engaging in academic dishonesty may receive a failing grade for the course. He/she may also be suspended from UCSD. *Please* do not risk your future by cheating!

The Office of Academic Integrity has compiled a useful list of tips here:

<https://academicintegrity.ucsd.edu/take-action/covid-19-students.html>

In this course, we need to establish a set of shared values. Following are values* adopted from the [International Center for Academic Integrity](#), which serve as the foundation for academic integrity.

	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 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

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

How can I succeed in BICD 10?

1. **Read** the assigned pages before lecture. You will understand the lectures better and learn more. The lecture will be related to the assigned reading, but may expand on the topic. Nevertheless, you are accountable for all reading. It will be covered on the exams.
 - a. **Keep up with the reading.** Pace yourself with the reading schedule. If you bump into material that is too technically challenging, *don't get bogged down*. Skip it (temporarily). Return to the most difficult material later.
 - b. **Outline** the important points as you read. This will help you remember the flow of information and contextualize the details. You will not remember all the reading unless you take notes. Use index cards, or a notebook, to summarize the important points.
2. **Look up words** you don't understand in the MindTap glossary, or online. Pay attention to the vocabulary words in each chapter, which are in bold type.
3. **Keep up with the homework on MindTap.** If you miss a question, try it again to learn the concept well and to maximize your points.
4. **Come** to lecture.
 - a. **Listen** to the podcast.
 - b. **Review** your notes within 24 hours of the lecture.

Even more effective: rewrite (outline) your notes within 24 hour of the lecture.

There may be material presented in lecture that is not in the textbook, for example applications of the topics to our everyday experiences. You are accountable for all lecture material.
 - c. **Review** the PowerPoint slides with your lecture notes. PowerPoint slides will NOT contain all the instructor's notes. They primarily contain announcements, illustrations, graphs, diagrams, and photos which augment the lecture. They will be posted by the morning of each lecture. You are accountable for everything in the PowerPoint slides.
5. **Study** frequently. Repetition over time is the key to retaining information. Your goal is to establish new neural pathways in your memory and fire them often! Cramming does not accomplish this.
6. **Study** with other students, and choose those who are serious about academics. Make up questions and quiz each other. Anticipate potential exam questions. This is a strategy that has been demonstrated to increase student learning.
7. **Take notes** during the films. If you have time, you may watch a film twice! Do not wait until the last minute.
8. **Go** to your discussion section. There will be opportunities to review the material and ask questions. There will also be practice exam questions, so you can assess your progress.
9. **Go** to the office hours of the IAs and the instructor. Office hours are a time to ask questions, ask for help or advice, or just hang out and chat! It is also a time for you and your instructor or IA to get to know one another in an informal setting.
10. **Go** to the review sessions.

11. Utilize **study aids** provided
 - a. on the course web site (Canvas)
 - b. on the textbook web site
12. If you are having personal difficulties, do not hesitate to seek help at Counseling and Psychological Services. They can help you get over many types of hurdles.
<http://caps.ucsd.edu/>
 Their self-help library of resources covers many relevant topics, and can be accessed at <http://caps.ucsd.edu/selfhelp.html>

Academic support

Geisel Library	Research tools and eReserves
Content Tutoring with the Teaching + Learning Commons	Drop-in and online tutoring through the Academic Achievement Hub
Supplemental Instruction with the Teaching + Learning Commons	Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses
Writing Hub Services in the Teaching + Learning Commons	Improve writing skills and connect with a peer writing mentor
Learning Strategies Tutoring	Address learning challenges with a metacognitive approach
OASIS	Intellectual and personal development support
Student Success Coaching Program	Peer mentor program that provides students with information, resources, and support in meeting their goals

Technical support

Technical Support	Assistance with accounts, network, and technical issues (not MindTap)
Connect from Off-Campus	Help connecting to electronic library resources such as eReserves and e-journals

Student resources

Basic Needs	Provides access to food, housing, and financial resources
Counseling and Psychological Services (CAPS)	Provides confidential counseling and consultations for psychiatric services and mental health programming

Community Centers	As part of the Office of Equity, Diversity, and Inclusion the campus community centers provide programs and resources for students and contribute toward the evolution of a socially just campus
Office for Students with Disabilities	Documents students disabilities, provides accessibility resources, and reasonable accommodations
Triton Concern Line	Report students of concern at (858) 246-1111
CARE at the Sexual Assault Resource Center	Support for victims of sexual assault 858.534.5793

Inclusion

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>

Accessibility

<http://disabilities.ucsd.edu> | osd@ucsd.edu | 858-534-4382 (UCSD campus contact)

<https://biology.ucsd.edu/education/undergrad/osd.html> | bioosd@ucsd.edu (UCSD Biology)

Any student with a disability is welcome to contact me early in the quarter to work out reasonable accommodations to support their success in this course. Students requesting accommodations should 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. Instructors will receive Authorization for Accommodations Letters from the OSD online portal. 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

Discrimination and Harassment

The University of California, in accordance with applicable federal and state laws and university policies, does not discriminate on the basis of race, color, national origin, religion, sex, gender, gender identity, gender expression, pregnancy (including pregnancy, childbirth, and medical conditions related to pregnancy or childbirth), physical or mental disability, medical condition, genetic information, ancestry, marital status, age, sexual orientation, citizenship, or service in the uniformed services (including membership, application for membership, performance of service, application for service, or obligation for service in the uniformed services). The university also prohibits harassment based on these protected categories, including sexual harassment, as well as sexual assault, domestic violence, dating violence, and stalking. The nondiscrimination policy covers admission, access, and treatment in university programs and activities.

If students have questions about student-related nondiscrimination policies or concerns about possible discrimination or harassment, they should contact the Office for the Prevention of Harassment & Discrimination (OPHD) at (858) 534-8298, <https://ophd.ucsd.edu/> , or <http://ophd.ucsd.edu/report-bias/index.html>

Campus policies provide for a prompt and effective response to student complaints. This response may include alternative resolution procedures or formal investigation. Students will be informed about complaint resolution options. A student who chooses not to report may still contact CARE at the Sexual Assault Resource Center for more information, emotional support, individual and group counseling, and/or assistance with obtaining a medical exam. For off-campus support services, a student may contact the Center for Community Solutions. Other confidential resources on campus include Counseling and Psychological Services, Office of the Ombuds, and Student Health Services.

Subject to change policy

The information contained in the course syllabus, other than the grade and absence policies, may be – under certain circumstances (*e.g.* to enhance student learning) – subject to change with reasonable advance notice, as deemed appropriate by the instructor.

Lecture/reading schedule on next page →

Tentative Class Schedule

Reading in *Biology, Today and Tomorrow, 6th edition*, (2020). Each chapter has a section titled “Digging into the data.” You are NOT required to read these sections, except in Chapter 23 for Dec 2.

Date	Session	Topics	Required reading PRIOR to lecture
Thur, Sept 23	1	Introduction	
Tues, Sept 28	2	Diversity of life (recorded)	1.1-1.4, 3.7
Thurs, Sept 30	3	How is science done?	1.5-1.7
Tues, Oct 5	4	Molecules of life	2.1, 2.7-2.10
Thur, Oct 7	5	Cell structure	3.1-3.3
Tues, Oct 12	6	Cell structure	3.4-3.5
Thurs, Oct 14	7	MIDTERM 1 (8-10 PM)	Review session in lecture
Tues, Oct 19	8	Transport across membranes, Microbiome	4.5, 4.6, 14.1, 23.3 (portion on microbiota) additional article will be assigned
Thur, Oct 21	9	DNA	7.1, 7.2 (ONLY the last section “DNA: The Molecule of Heredity”), 7.3
Tues, Oct 26	10	DNA	7.4-7.6
Thurs, Oct 28	11	Genes	8.1-8.3 (NOT the last section “A New RNA is Modified”) (no homework)
Tues, Nov 2	12	Genes	8.4, 8.5 (Not “How RIPs Interfere with Translation”), 8.6 (NOT “Mutations in Regulatory Sites”)
Thur, Nov 4	13	Viruses, Antibiotic resistance, Phage therapy	13.1, 14.7, additional article will be assigned
Tues, Nov 9	14	MIDTERM 2 (8-10 PM)	Review session in lecture
Thurs, Nov 11	--	HOLIDAY	
Tues, Nov 16	15	Cell division (recorded)	9.1-9.3
Thur, Nov 18	16	Cell division & cancer (recorded)	9.4, 9.5, 9.6 (ONLY last section “From Gametes to Offspring”)
Tues, Nov 23	17	Inheritance	10.1-10.3 (NOT “Independent Assortment of Genes into Gametes”)
Thurs, Nov 25	--	HOLIDAY	
Tues, Nov 30	18	Inheritance, watch 3 rd film	10.6-10.7
Thurs, Dec 2	19	Immunity, vaccines	23.1 (<u>including</u> Digging into Data), 23.2, 23.8
Friday, Dec 10	--	FINAL EXAM (7-10 PM)	