

Fundamental Concepts of Modern Biology

BILD 10

Summer 2023

Instructor Cindy Gustafson-Brown (Dr. Gus)

Office Humanities & Social Sciences 1145F

office hours Wednesdays 2-2:50 PM, location TBA

email cgb@ucsd.edu

IF YOU EMAIL, PUT **BILD 10** IN THE SUBJECT LINE.

IN YOUR EMAIL, INCLUDE YOUR:

- First and last name
- PID
- Section number
- IA name

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.

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

Discussion sections (First discussion sections will be Thurs, Aug 10)

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

	time	location	IA	email
A01	Tu/Th 1-1:50 P	PCYNH 240	Leanne Dugan	ldugan@ucsd.edu
A02	Tu/Th 2-2:50 P	PCYNH 240	Leanne Dugan	

Classroom etiquette

Please have respect for your classmates and the instructor by silencing cell phones and minimizing other distracting activities in class.

Textbook and online homework program

Biology, Today and Tomorrow, 6th edition, (2020) by Starr, Evers, and Starr, plus the *MindTap* online homework program. You must use the online homework program, and it cannot be purchased without the integrated eBook.

Weekly textbook reading is required in this course. Frequent homework assignments, found in the accompanying *MindTap* program, will assess your understanding of the reading. Studies have shown that students who have frequent opportunities to practice what they are learning retain more information! 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, which will be covered by the exams even if it is not reiterated in lecture.

Your digital textbook (eBook plus MindTap homework program) is provided by the UC San Diego Bookstore via the “**Inclusive Access**” program, linked on our course Canvas page. This is the cheapest way for you to access both the textbook and the homework program. The textbook is free for the first week of class. After that, your student account will be charged a special reduced price *unless you opt out by the deadline*. Pay attention to information provided by the bookstore regarding the deadline.

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

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

1. Students will read a passage from the (online) **textbook** before each lecture. The reading assignments for each week are located:
 - a. on the schedule at the end of this syllabus
 - b. on Canvas, in the “Weekly Reading” module.
2. **Students will submit online homework** by 10 AM, Mon-Thurs. You can link to the online homework in either of these locations:
 - a. on the “Assignments” page on Canvas
 - b. directly in the Cengage MindTap program

On the class schedule (last page of syllabus), you can see which days have homework due, by looking for an **orange dot** next to each date. The homework is due at 10 AM on the relevant day, 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.

3. For your convenience, the **PowerPoint slides** for each lecture will be posted by the start of each lecture. They mostly contain diagrams, graphs, photos, etc, to illustrate the topic of the lecture.
4. On M/Tu/W/Th we will have **in-person lecture** in Pepper Canyon Hall 122. The lecture topic and reading schedule is at the end of the syllabus. The lecture will be

podcast, so you can also listen to it later, but you will learn more if you come to class in person!

5. Students are encouraged to come to Dr. Gus' **office hours** on Wednesdays.
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.
Students are also encouraged to attend the office hours of **the IA, Leanne**. She has a lot of experience as an IA and can help you be successful!
6. Students are encouraged to come to their **discussion section**. In section you will get practice exam questions and work on activities to help you learn more and prepare for exams.
7. There will be three **films** posted for you to watch. (see below)
8. Each student will research a scientist and give a **presentation** in section.
9. **Exams** will be in-person, closed-notes/closed-book, primarily short answer with a few true/false, multiple choice, and possibly short essay questions. You will be accountable for **all material covered in lecture, PowerPoint slides, required reading, and films**.

Exams will be graded using the **Gradescope** program, which will *only* see you answer if you place it within the designated box. If your answer is not within the box (or blank), it will not be graded. 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 lecture period, and therefore 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 sheet.

Review sheets will be posted on Canvas shortly before each exam.

The IA will conduct a **review session** before each exam.

a. Two midterms (18% and 19% of the course grade, respectively)

There will be two midterms, in lecture on **Wed, Aug 16** and **Tues, Aug 29**.

b. Final exam (30% of the course grade)

There will be a final exam, on **Fri, Sept 8, 11:30 AM – 2:30 PM**. The final exam will be comprehensive for the **lecture** material, with emphasis on the last part of the course. The final exam will **NOT** cover films that were covered on the midterms.

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. Under **NO** circumstance will an exam be given online in BILD 10.

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.

You can find the up-to-date UCSD policy on Covid here: <https://returntolearn.ucsd.edu/return-to-campus/exposure-contact-tracing/index.html>

Films

There are three required films, each one hour long.

1. You will watch *What's Living in You?* on your own, instead of coming to lecture on **Aug 16**. (There will also be a short recorded lecture to watch that day.) It will be covered on Midterm 1.
2. You will watch *Supplements and Safety* on your own, instead of coming to lecture on **Aug 28**. (There will also be a short recorded lecture to watch that day.) It will be covered on Midterm 2.
3. You will watch *Hunting the Nightmare Bacteria* on your own time. It will be covered on the final exam.

All are available for viewing online, streaming from the publisher's web site. See the course web site for links, which are also provided below.

1. What's Living in You? (2018)

<https://www.pbs.org/wgbh/nova/video/nova-wonders-whats-living-in-you/>

NOVA Wonders peers into this microscopic world to discover the fascinating, bizarre, and downright surprising secrets of the human microbiome. ***This film will be covered on midterm 1.***

2. 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 2.***

3. 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 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 UCSD protected network or use a VPN if you are off campus.

Regrades

See regrade policy on Canvas.

Course grade

A = 82% - 100%	There will be pluses and minuses.
B = 72% - 81.9%	
C = 62% - 71.9%	
D = 54% - 61.9%	
F = below 54%	

	<u>weight</u>
Homework (MindTap)	19%
Presentation	14%
Midterm 1	18%
Midterm 2	19%
Final exam	30%

You must achieve at least 50% of the total points on the three exams in order to pass the class with a C minus.

How can I succeed in BILD 10?

1. See the information on the “**Effective studying and learning**” page of the “Study aids” module on Canvas. There is a lot of practical information there about how to get the most out of your studying time.
2. **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.
3. **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.
4. **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.

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. **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 start of each lecture. You are accountable for everything in the PowerPoint slides.
7. **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.
8. **Take notes** during the films. If you have time, you may watch a film twice! Do not wait until the last minute.
9. **Go** to 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.
10. **Go** to the office hours of the IA 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.
11. **Go** to the review sessions.
12. Utilize **study aids** provided
 - a. on Canvas
 - b. on the textbook web site
13. 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 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.

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)

Instructors are unable to provide accommodations unless they are first authorized by the Office for Students with Disabilities (OSD). Any student with a disability is welcome to contact me AND the Biology OSD liaison **early** in the course to work out reasonable accommodations to support their success in this course. Students requesting accommodations must first provide a current Authorization for Accommodation (AFA) letter issued by OSD. Receipt of the AFA by the biology liaison in advance is necessary for appropriate planning for the provision of reasonable accommodations. Arrangements for special exams require the student to coordinate together with the Biology OSD liaison.

For more information, contact the OSD at (858) 534-4382 (voice), osd@ucsd.edu, or visit osd.ucsd.edu

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>

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.

Student resources

[Click here](#) for a video tour of student services and cultural centers across campus. This is a great place to start, for an excellent overview!

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

UCSD 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
Computer labs	Find the locations of computer labs in different areas of campus.
Tech Lending Program	Circulates technology items to currently enrolled UCSD students to ensure that users have the technological means to complete coursework as efficiently as possible. TLP inventory consists mostly of frequently-requested items like device chargers, adapters (e.g., mini-HDMI to HDMI), flash drives, and headsets.
Technology Lending Request Form	Fill out this form for requests.
Tools for Remote Learning	Guidance on technology for students, including Zoom and Canvas , trouble-shooting and resources for internet access

Personal support

Basic Needs	Provides access to food, housing, and financial resources
Basic needs assistance forms	Assistance forms for a variety of services
Financial Aid and Scholarships	Answers to questions about financial aid and scholarships. Virtual counseling is available.
Financial Wellness	Access to emergency loans, appeals to increase financial aid, and financial literacy resources.
Counseling and Psychological Services (CAPS)	Provides confidential counseling, consultations, and workshops for psychiatric services and mental health programming
CAPS Crisis and Emergency Services	CAPS provides crisis and urgent counseling to students as well as emergency services.
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
Student Affairs Case Management Services Get help at (858) 246-1111	Triages and addresses student distress by ensuring that students are connected to appropriate resources. Inclusive, comprehensive support services that empower UCSD students to address all aspects of their health and well-being.
CARE at the Sexual Assault Resource Center	Support for victims of sexual assault 858.534.5793

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

Reading is 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 Sept 7.

Color codes: orange dot ● homework is due this day
 green exam
 lavender no in-person class this day
 yellow holiday

Date	Session	Topics	Required reading
Mon, Aug 7	1	Introduction to BILD 10	
Tues, Aug 8	2	Introduction; Diversity of life	1.1-1.4
Wed, Aug 9 ●	3	Diversity of life	3.7
Thur, Aug 10 ●	4	How is science done?	1.5-1.7
Mon, Aug 14	5	Molecules of life	2.1, 2.7-2.10
Tues, Aug 15	6	Cell structure	3.1-3.3, 3.4-3.5
Wed, Aug 16	7	Film: What's Living in You? & recorded lecture on Cell Structure	14.1, 23.3 (portion on microbiota)
Thur, Aug 17	8	MIDTERM	
Mon, Aug 21	9	Energy, Membrane transport	4.5, 4.6
Tues, Aug 22	10	DNA	7.1, 7.2 (ONLY the last section "DNA: The Molecule of Heredity"), 7.3
Wed, Aug 23	11	DNA	
Thur, Aug 24	12	Genes	8.1-8.3 (NOT the last section "A New RNA is Modified")
Mon, Aug 28	13	Film: Supplements & Safety & recorded lecture on Genes	8.4, 8.5 (Not "How RIPs Interfere with Translation"), 8.6 (NOT "Mutations in Regulatory Sites")
Tues, Aug 29	14	MIDTERM	
Wed, Aug 30	15	Antibiotic resistance; Viruses	13.1, 14.7
Thur, Aug 31	16	Phage therapy; Cell division	9.1-9.3
Mon, Sept 4	17	HOLIDAY	
Tues, Sept 5	18	Cell division	9.4, 9.5, 9.6 (ONLY last section "From Gametes to Offspring")
Wed, Sept 6	19	Inheritance	10.1-10.3 (NOT "Independent Assortment of Genes into Gametes"), 10.6-10.7
Thur, Sept 7	20	Immunity, Vaccines	23.1 (including Digging into Data), 23.2, 23.3 (entire section this time!), 23.8
		FINAL EXAM	