BILD 1: The Cell

UC San Diego – Winter 2020

Where and When

Lecture time: TuTh 12:30-1:50pm
Lecture location: Peterson 108
Website: UCSD **Canvas** site for BILD 1, Winter 2020 (go to https://coursefinder.ucsd.edu/)
Section information: See below for section information, including IA names and emails.

Basic Contact Information for BILD 1 Professor

Melinda T. Owens, PhD
Assistant Teaching Professor, Neurobiology
Email: mtowens@ucsd.edu
Office: Bonner Hall 2230
Office Hours: T 10:30am-12n, W 2-3:30pm

Cressida Madigan, PhD.
Assistant Professor, Molecular Biology
Email: **cmadigan@ucsd.edu**
Office: Tata Hall 4102
Office Hours: M 12-1pm, W 12-1pm

If you want to meet and these times don't work for you, please send us an email to schedule another time.

Required and Optional Materials

Required materials:
- **iClicker or iClicker2.** *It must be registered on Canvas. See more details below.*
- **1 pack of 3"x5" index cards**
- ***Campbell Biology*** (8th, 9th, 10th, or 11th editions)

Lecture slides and all required course readings will be posted on the class website. Many students find the associated online resource *Mastering Biology* useful, but it is not mandatory.

Welcome to BILD 1: The Cell!

BILD 1 is an introduction to the **structure and function of cells**, both in organisms like bacteria and in organisms like us. We will study the **biological molecules** present in cells, how cells obtain **energy**, and how these organisms **pass information on to the next generation**. In other words, we will deepen our understanding of the essential functions of living things by exploring the physical structures and biological principles that underlie the fundamental unit of all living organisms, the cell.

This course also aspires to support you in developing basic content knowledge and skills necessary to evaluate new discoveries in the life sciences and to continue to expand your knowledge of biology throughout your life. That requires going **beyond memorization of facts** to acquire an understanding of how and why organisms function as they do, and what happens when the components of organisms do not function properly.

In addition, the teaching strategies in this course will **engage all of you as a community of biologists in the classroom** to develop leadership and communication skills as well as support each other in understanding biological concepts. You will also have the opportunity to practice scientific writing skills through numerous writing assignments and in-class activities.

Prerequisite: NONE, although knowledge of high-school chemistry is helpful.

What We Will Learn in BILD 1

We anticipate that you will learn many different things in BILD 1! We anticipate that what you will be able to do by the end of the quarter includes, but is not limited to, the following:

- **Demonstrate an understanding of the structure and function of cells** and how **information is transmitted from generation to generation**.
- **Predict how a perturbation** of a molecule, structure, or cell (like through a disease or experimental manipulation) **will affect its function** and the function of the cell as a whole.
- **Demonstrate a mechanistic (how) and teleologic (why) understanding** of the physiological processes underlying cells.
- **Develop critical thinking skills** to be able to think like a biologist and **solve biologically-relevant problems**.
- **Increase your understanding of your own learning (metacognition)**, including recognizing what topics are easy or difficult for you to learn, learning what study strategies work best for you, and seeking help from instructors and colleagues at appropriate times.

All questions on exams, as well as nearly all questions on homework and in-class and in-section activities, will be tied to at least one of these overall learning outcomes.

At the beginning of each unit, we will also provide you with specific biology-related learning outcomes to guide your learning of that material. The problems on the exams will be tied to those specific learning outcomes.

How We Teach in BILD 1 and Why

We have chosen the teaching strategies in this course to **promote everyone's learning.** Extensive educational research has shown that people learn best when they are **actively engaging with the material through thinking, writing, and discussing**.[1] To encourage that engagement, we will use class time to work on applying our knowledge, troubleshooting difficult topics, and practice solving problems. There will be pre-class assignments to prepare you for the material you will engage with in class.

We also want you to be able to **apply what you learn about biology in whatever context you find yourself in your future**, including in your career and your personal life. Therefore, instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Exams will include questions that are based on solving problems in new contexts.

Research has also shown that people generally learn best in **collaborative environments,** where they learn together and construct a shared understanding of the material.[2] While talking and working with your colleagues, you may identify gaps in your own knowledge, exercise the communication skills that are crucial in any career, and gain skills in working with colleagues as they learn to identify their confusions, ask questions, and think critically and skeptically about biology. Therefore, **active participation** both in class and discussion section is crucial. To encourage collaboration, class and section activities will be done in groups, and grades will never be assigned on a curve.

[1] Freeman *et al.* 2014. Active learning increases student performance in science, engineering, and mathematics. http://www.pnas.org/content/111/23/8410

[2] Smith *et al.* 2009. Why Peer Discussion Improves Student Performance on In-Class Concept Questions. http://science.sciencemag.org/content/323/5910/122

BILD 1 Class Culture

BILD 1 is a **community of scientists** trying to increase their understanding of the biological world. The classroom culture is designed to engage you in collaborating and thinking like a scientist.

When people collaborate to work towards a common goal, in this case building our learning, we must **establish shared values** so that everyone understands acceptable ways of working together. In organizations, these are commonly called codes of conduct or ethics. In this course, we use the following statement, adapted from the International Center for Academic Integrity and Dr. Tricia Bertram Gallant, to explicitly state our values and describe the behaviors that maintain and protect these values.

	As students we will…	As the teaching team we will…
Honesty	• 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	• 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	• 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 • Take ownership of your own learning by using course and outside resources, including the BILD2 team, to clarify confusions and extend your knowledge	• 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 • Providing selected resources and a helpful environment to help you address your confusions and extend your knowledge
Respect	• Speak openly with one another while respecting diverse viewpoints and perspectives • Provide sufficient space for others to voice their ideas	• Respect your perspectives even while we challenge you to think more deeply and critically • Help facilitate respectful exchange of ideas
Fairness	• 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	• Create fair assignments and exams and grade them in a fair and timely manner • Treat all students and collaborative teams equitably
Trustworthiness	• Not engage in personal affairs while on class time • Be open and transparent about what we are doing in class	• Be available to all students when we say we will be • Follow through on our promises

	• Not distribute course materials to others in an unauthorized fashion	• Not modify the expectations or standards without communicating with everyone in the course
Courage	• 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	• 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

Note on electronic devices

If necessary, you are welcome to bring laptops or other devices to lecture to take notes. However, research shows that **"multi-tasking" on computers is likely to decrease not only your grade but also the grades of people around you who can see your screen!**[3] For this reason, we ask that you do not flip between lecture notes and the internet unless as part of an in-class activity. The use of cell phones, computers, or any other electronic devices is not permitted during exams; using such a device during an exam is grounds for receiving a failing grade.

[3] Sana *et al*. 2013. Laptop multitasking hinders classroom learning for both users and nearby peers. https://www.sciencedirect.com/science/article/pii/S0360131512002254

Grading

The activities, requirements, and assignments that comprise this course are designed to **promote your learning** and facilitate your understanding of biology from different viewpoint and using many different teaching methods. In addition, these assignments (particularly in-class lecture activities and Biologist Journal assignments) give me highly valuable information that allows me to adjust the course to meet your educational needs.

How Your Letter Grade will be Assigned

Grade assignments will be based on the percentage of total points earned. We do not decide your grade, but rather **you as a student do the work to earn your grade**.

%	Grade	%	Grade	%	Grade	%	Grade
98+	A+	87-89	B+	77-79	C+	60-69	D
93-97	A	83-86	B	73-76	C	0-59	F
90-92	A-	80-82	B-	70-72	C-		

How Your Grade will be Calculated

Course Component	Total Points	~% of Grade
Lecture Participation (Attendance and Homework)	**222**	**15%**
Attendance (13 @ 4 points each)	52	
Homework and Biologist Journals (15 @ 10 points each)	150	
Final Reflection	20	
Section Participation (9 @ 10 points each)	**90**	**6%**
Writing assignments	**240**	**16%**
Writing assignment 1 (total)	60	
Writing assignment 2 (total)	60	
Writing assignment 3 (total)	60	
Writing assignment 4 (total)	60	
Exams	**920**	**61%**
Highest scoring midterm	230	
Next highest scoring midterm	230	
Final Exam	460	
Professionalism	**28**	**2%**
TOTAL	**1500**	**100%**

Grades will be posted regularly on Canvas.

A note on re-grading

We are always happy to meet with you **to discuss your learning.** If you believe that a grading error has been made, please contact me within one week of the assignment or exam being returned with an explanation of the error. If you think your work deserves more points, please include in your explanation a concise description of how your answer compares to the rubric and why you think it should have earned more points.

Explanation of Course Components

Lecture Participation

As stated above, **active participation in lecture is important for your learning.** Participation includes attending class and participating in in-class activities, including using iClickers; completing pre-class Biologist Journal assignments; and completing a Final Reflection at the end of the quarter.

Attendance and in-class Activities, including iClickers

Every day, we will engage in in-class activities and use iClickers. iClicker usage is how we measure lecture participation for points. For your iClicker to correctly be associated with your name, **you must register your clicker on Canvas** (not TritonEd or the iClicker website). You can use a used iClicker or share an iClicker with someone in another class, but not with someone who is also in this class. Please be aware that it is dishonest and does not represent your learning if someone else uses your iClicker in class when you are not there, so in that situation we cannot give you or the person using your iClicker participation points.

We will start counting iClicker participation for points after one week of class (two class sessions). Everyone has different circumstances and life events, and sometimes iClickers are forgotten or run out of batteries. Therefore, to get full Attendance points, you only need to attend and click in during 85% (13/15) of lectures.

If you believe that you might have a situation or condition that will cause you to miss 2 weeks (4 days) or more of lectures, please contact us right away, *so we can strategize about accommodations****. This includes mental and physical health conditions.***

Homework and Pre-class Biologist Journals

To give you further practice, allow you to reflect on your learning, and prepare you for class, before most classes, there will be an assigned activity called a Biologist Journal, posted on Canvas. This activity may include a reading from online sources or primary literature, but it will always involve writing to a specific prompt. These Journals are not meant to be formal essays or finely polished documents for public view. Instead, they should reflect your own ideas and thought processes and should be as much for your own benefit as ours. Grades will be awarded for turning in these Journals on time, meeting the word count, and writing thoughtfully on topic. Biologist Journal prompts will be posted on Canvas several days before they are due. **They will be due NO LATER THAN 11:50pm the night before class.**

Because of the size of this class and to prepare you for hard deadlines later in your career, **we cannot award points for assignments submitted late.** Even if you miss the deadline for an assignment, we still highly recommend doing the work to prepare for class and exams. As with lecture attendance, you can submit 85% of Biologist Journals and other homework (including the More about You survey) (15/17) and still receive full credit.

Final Reflection

A final reflection on your experiences in this course is due at the end of the quarter on **the Friday of finals week at 11:50pm**. The prompt for this reflection will be: "What did you learn in BILD 1 that will continue to influence you for many years to come? How did you learn these things?"

Section Participation

Weekly discussion sections are designed to **engage you in applying your knowledge and exercising your skills** in collaborative problem solving and data analysis. Therefore, part of your score will depend on attendance and participation in section. The first sections will meet in Week 1. Similar to lecture participation and attendance, attending at least 85% of sections (9/10) will award you full section participation scores.

To prepare you for meaningful participation in section, **material will be posted for you to complete before you attend section.** It is very important that you genuinely attempt the exercises before section so you can meaningfully contribute in section and be awarded full points. These will typically be posted on Canvas several days before section.

You should already be enrolled in a section, and **you must attend the section which you are enrolled** to receive credit. We are not able to change the number of students in a section, so if a section is full you must choose another one.

Writing assignments

Writing about biology not only helps you develop professional communication skills; it also has been shown to help you learn the material. Therefore, we will have four short writing assignments (roughly 3-5 sentences in length) that will be similar to free response questions on the exams that focus on concepts that have been tricky for students in the past.

Peer review is an important part of the process of scientific writing, and both giving and receiving peer feedback can help you learn. Therefore, after you turn in your own draft, you will give anonymous peer feedback on other student's drafts through Canvas. Finally, you will revise your own draft according to what you have learned from the class, the process of peer review, and your peer feedback and turn it in. Drafts and peer reviews will be graded for completeness and effort, while the final product will be graded on correctness as well.

We will give more detailed instructions and a schedule for when various pieces are due during the term.

Exams

To facilitate developing useful knowledge and skills for the long term, tests in this course will focus on **applying knowledge to assess and solve novel problems.** Questions will be multiple choice and short answer. Any material covered in or closely related to each lesson's learning objectives may be tested.

Midterms

There will be 3 midterms in this course. Your lowest midterm grade will be dropped. If you miss one of the midterms, that will be the midterm dropped.

The midterms will be **two-stage exams.** More information is provided on Canvas, but briefly, in a two-stage exam, there is an **individual stage** and a **collaborative stage**. In the individual stage, you will answer all the midterm questions individually and turn in your answers. Next, in the collaborative stage, you will work in groups of 3 or 4 to answer some of the exam questions again. Your group will come to a consensus on the answers and hand in one answer packet.

In the vast majority of cases, the individual stage will be worth 85% of your midterm grade, and the collaborative stage will be worth 15% of your midterm grade. However, if your individual stage score is higher than your combined individual and collaborative score, your grade will be based only (100%) on your individual score. **Therefore, the collaborative stage can only help your grade**.

Final Exam

Everyone must take the final exam. It is only completed individually. **If you need to miss the final exam due to a verifiable, unplanned emergency, you must notify us (by phone or e-mail) of the problem as soon as it is reasonable to do so. You must also provide adequate documentation (doctor's note, copy of death certificate, etc.).** We will discuss your best options given your circumstances.

Professionalism

This portion of the course grade is intended to motivate you to **consider the impact of your actions on your own learning and the learning of others** in the course. Unprofessional interactions consume time yet have no meaningful benefits to you, your fellow students, and/or the teaching team. Analogously in the workplace, being unprofessional to your colleagues or supervisors will only discount you. When you are discounted, you will not be invited for new opportunities that you may or may not be aware of.

Professionalism can be demonstrated through individual (described here) and community efforts (described below). The individual component is to account for you personally demonstrating maturity and professionalism.

By default, everyone is assumed to be professionally mature, so this component is automatically awarded to you at the beginning of the quarter. During the quarter, based on observations by the teaching team, including but not limited to one-on-one interactions, electronic communication, and follow-up conversations on grades, **your professionalism credit may be deducted** in steps of 5pts.

Examples of interactions with meaningful benefits:

- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- Clarifying course material that facilitates deeper learning
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Reporting errors or problems in class, on assignments, or other course material

Examples of interactions that have no meaningful benefits and thus should be avoided:

- Contributing inequitably to team work in class, in discussion section, or on exams
- Harassing and/or bullying the instructional team or other students, either in person or online
- Ignoring the directions or requests from the instructional team
- Asking for course credit when such credit would conflict with stated course policies (such as the policy on late assignments) or when it would be applied inequitably (such as just for you)
- Being disruptive to fellow students in class, in discussion section, or on exams

Extra Credit Opportunities

You have several opportunities for extra credit. Extra credit questions will be offered on each exam to make up for exam points missed. In addition, there are two other opportunities for extra credit:

- 10 points for **meeting with Prof. Owens or Madigan** during office hours or another scheduled meeting, including coffee or dining with a prof.
- 10 points for **community professionalism**. This can be earned by completing course evaluations and related surveys. If 90% or more of all students complete all CAPEs and other course evaluation surveys in a mature and professional fashion (taking them seriously and providing timely and constructive feedback), 10 points will be awarded to everyone in the course.

Course Policies

Students with Disabilities or other Special Circumstances

UC San Diego (as an institution) and we (as human beings and instructors of this course) are committed to full inclusion in education for all persons. If you have a disability, **including mental health issues**, or other special circumstance that might affect your attendance or performance in this course, please contact us early in the quarter to work out reasonable accommodations to support your success. To ensure fairness and proper support, anyone who requests accommodations because of a disability must get a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). To contact OSD, use the student portal: https://academicaffairs.ucsd.edu/sso/osdsp/home, email the Biology OSD liaison at bioosd@ucsd.edu, or call 858-534-4382.

Whenever possible, we strive to use universal designs that are inclusive. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

Podcasts and Lecture Recording

Whenever possible, **classes will be recorded and made available online** as a resource for learning (http://podcast.ucsd.edu). However, remember that active participation and contribution are highly encouraged, and many important concepts and ideas will be developed collaboratively by doing in-class activities that cannot be replicated by watching a video. Also, I may record class to study my own effectiveness as an instructor.

Academic Integrity and Originality

Integrity of scholarship and learning is fundamental to creating our classroom community and the academic community at large. The University expects that both students and faculty will honor this principle and in so doing protect the validity of University intellectual work.

For you, this means that all academic work you submit for this course should be **your own new original work.** We emphasize this for several reasons. First, **using your own thoughts and putting things in your own words helps you learn.** There is no better way to discover quickly what you understand and what you don't than to explain a concept to someone else. Second, in professional settings, trying to hide dishonest behavior or pass someone else's words off as your own can lead to trouble.

To encourage original thought and writing in this class, we take precautions. For example, exams are scanned before being graded. **Our goal is not to *catch* anyone** (although we can't give credit for dishonest work or plagiarized material), **but to help everyone make a habit of using their own thoughts and voice.**

In addition, part of being a good member of a community **is not facilitating dishonest behavior by others**. No course materials, particularly homework and exams, may be posted online, submitted to private or public repositories, or distributed to unauthorized people outside of the course.

To hold everyone accountable for their actions, any serious suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review. For more information on academic integrity, please visit https://students.ucsd.edu/academics/academic-integrity/index.html.

Helpful Resources

Supplemental Instruction and Tutoring for BILD 1

The Teaching + Learning Commons is now offering supplemental instruction (SI) and tutoring for BILD 1. The Commons has data that indicates that students who take regularly advantage of these opportunities earn better grades.

Supplemental Instruction is offered three times a week. With a peer leader who attends our section, you will collaborate with your peers to explain, explore, and elaborate what you know. Simultaneously, you will clarify what you might struggle to understand and develop skills and strategies to be highly successful with the content. SI is open to everyone in the course on a drop-in basis (meaning you do not need to reserve a slot ahead of time). More details, like the schedule, are available on Canvas.

General Resources at UCSD

If you are experiencing anxiety, depression, or worse, you are not alone. On top of facing the normal stresses of college, many college students are in their late teens or early twenties, which is when many mental illnesses emerge for the first time because of brain maturation. In addition, you may be experiencing the effects of trauma or violence. Or, you might be one of the 19% of UC students who report not being able to access adequate food[4] or who do not have a safe, stable place to live.

Whatever your situation, whether your problems feel big or small, we encourage you to seek help and support, either from us or from professional resources on campus. Some are listed below.

General Help and Resources		
Academic Support	**Psychology & Physical Safety***	**Basic Needs**
OASIS (http://oasis.ucsd.edu) The Office of Academic Support & Instructional Services (OASIS) offers math and science tutorial Programs for everyone. They also have services and scholarships for those of you who have overcome significant obstacles to become successful (like being first in your families to go to college). **Teaching + Learning Commons (http://commons.ucsd.edu)** The Teaching + Learning Commons offers tutoring, consultations, and workshops on learning strategies as well as assistance with writing in the Writing + Critical Expression Hub.	**CAPS (http://caps.ucsd.edu)** CAPS offers free, confidential counseling. They can help with urgent crises, such as an assault or thoughts of self-harm. They can also talk if you are worried about a friend or classmate. **CARE at SARC** **http://care.ucsd.edu** Campus Advocacy, Resources, and Education at the Sexual Assault Resource Center (CARE at SARC) offers support for those of you who have experienced sexual violence or violence from a partner. They have free confidential counseling, including on nights and weekends.	**Triton Food Pantry** **(http://basicneeds.ucsd.edu/triton-food-pantry/)** The Triton Food Pantry discreetly offers food for current UCSD students to ensure each of you has enough nutrition to get through the day. **The Hub** **(https://basicneeds.ucsd.edu)** The Hub serves those of you who have trouble accessing basic needs, including food or stable housing, or who have financial emergencies. They can help you connect with a variety of on- and off-campus programs, including the Food Pantry, CalFresh, emergency loans, emergency housing, or changes to your financial aid.

It is also important to find a community of like-minded people around you. Some of the resources here at UCSD include: the Black Resource Center (brc.ucsd.edu), the Cross-Cultural Center (ccc.ucsd.edu), the LGBT Resource Center (lgbt.ucsd.edu), the Raza Resource Centro (raza.ucsd.edu), the Student-Parents Resource page (students.ucsd.edu/well-being/wellness-resources/student-parents), the Student Veterans Resource Center (students.ucsd.edu/sponsor/veterans), the Undocumented Student Services Center (uss.ucsd.edu), the Women's Center (women.ucsd.edu).

[4] Martinez *et al.* 2016. University of California Global Food Initiative: Student Food Access and Security Study. https://www.ucop.edu/global-food-initiative/best-practices/food-access-security/student-food-access-and-security-study.pdf

*Please note that while we on the instructional team are here to support you, instructors are obligated by law to notify UCSD's Title IX coordinator if a student (or any person at UCSD) discloses to us a personal experience of sexual harassment, sex or gender discrimination, domestic violence, or stalking. This is so that the University can properly address the issue. If you do not want your experiences to be reported, please contact CAPS or CARE, which can talk to you confidentially.

Section Schedule

Section Meeting Times

You must attend the section to which you are assigned. If you cannot, please contact us as soon as possible.

Section	Day	Time	Location		IA	IA email
B01	W	8-8:50am	WLH	2115	Bianca Barriga	bkbarrig@ucsd.edu
B02	W	9-9:50am	WLH	2115	Bianca Barriga	bkbarrig@ucsd.edu
B03	W	10-10:50am	WLH	2115	Tamar Bar Ziv	tbarziv@ucsd.edu
B04	W	11-11:50am	WLH	2115	Ivan Chim	ichim@ucsd.edu
B05	W	12-12:50pm	WLH	2115	Bryan Chavez	b9chavez@ucsd.edu
B06	F	1-1:50pm	HSS	2154	Kanas Huynh	kbh008@ucsd.edu
B07	F	2-2:50pm	HSS	2154	Lily Vu	ltvu@ucsd.edu
B08	F	3-3:50pm	HSS	2154	Janine Fong	jaf055@ucsd.edu
B09	F	4-4:50pm	HSS	2154	Rachel Ng	ran001@ucsd.edu
B10	F	5-5:50pm	HSS	2154	Khang Nguyen	k6nguyen@ucsd.edu
B11	F	2-2:50pm	HSS	1128A	Ruben Hernandez	ruh040@ucsd.edu

IA Office Hours

You are encouraged to attend any IA's office hours.

IA	Day	Time	Location
Tamar Bar Ziv	M	10:30-11:30am	Mandeville
Lily Vu	M	1-2pm	Starbucks at Price (Tables outside)
Janine Fong	M	2-3pm	Fairbanks Coffee (Outside of York)
Ivan Chim	M	3-4pm	PC Theater Lounge
Kanas Huyn	T	5-6pm	Audrey's
Bryan Chavez	W	11am-12pm	Mandeville Coffee Cart
Khang Nguyen	Th	4-5pm	Fairbanks Coffee (Outside of York)
Bianca Barriga	F	8:50-9:50am	Peet's coffee
Rachel Ng	F	12n-1pm	The Loft
Ruben Hernandez	F	3pm-4pm	Mandeville Coffee Cart

Class Calendar Overview

More specific information will be provided weekly on Canvas. We may adjust the schedule, assignments, and readings as necessary while still focusing on the foundational concepts listed below.

Date	Guiding Questions	Assignments Due 11:50pm Night Before Class
Class #1 Tu Jan. 7	Welcome! Who are we? How do I think like a biologist? What is life?	
Class #2 Th Jan. 9	How we do think across size and scale? What makes up the structure of living things?	**Biologist Journal #1 Due!** Reading: Syllabus
Class #3 Tu Jan. 14	What makes up the structure of living things?	**Biologist Journal #2 Due! More about YOU Survey Due!**
Class #4 Th Jan. 16	What is the cell membrane? How do things pass through the cell membrane?	**Biologist Journal #3 Due!**
Class #5 Tu Jan. 21	How do we know what reactions will happen inside a cell? What are enzymes?	**Biologist Journal #4 Due!**
Class #6 Th Jan. 23	**Midterm 1**	
Class #7 Tu Jan. 28	Where does all the matter and energy for living things come from?	**Biologist Journal #5 Due!**
Class #8 Th Jan 30	How do living things get matter and energy from food?	**Biologist Journal #6 Due!**
Class #9 Tu Feb. 4	How do living things get matter and energy from food?	**Biologist Journal #7 Due!**
Class #10 Th Feb 6	What is the relationship between DNA, protein, and traits?	**Biologist Journal #8 Due!**
Class #11 Tu Feb 11	**Midterm 2**	
Class #12 Th Feb 13	How are genes expressed?	**Biologist Journal #9 Due!**
Class #13 Tu Feb 18	Where do mutations come from? How do mutations cause cancer?	**Biologist Journal #10 Due!**
Class #14 Th Feb 20	How do cells inherit mutations? What cells in the adult body are actively dividing? How is mitosis like a copy machine?	**Biologist Journal #11 Due!**
Class #15 Tu Feb 25	How are mutations and traits passed between generations? How is meiosis like a slot machine?	**Biologist Journal #12 Due!**
Class #16 Th Feb 27	What is the relationship between alleles and mutations? What is the relationship between genotype and phenotype?	**Biologist Journal #13 Due!**
Class #17 Tu Mar 3	**Midterm 3**	

Class #18 Th Mar 5	How do dominant and recessive alleles contribute to traits?	**Biologist Journal #14 Due!**
Class #19 Tu Mar 10	How do genes interact with each other and with the environment?	**Biologist Journal #15 Due!**
Class #20 Th Mar 12	How do cells pass signals within themselves? What have we learned in BILD 1?	**Biologist Journal #16 Due!** Reading: Final Exam study guide
Tu Mar 17	**Final Exam 11:30am-2:29pm**	
Fr Mar 20	**Final Reflection due at 11:59pm**	