"Knowing how to think empowers you far beyond those who know only what to think."
– Neil deGrasse Tyson

Course Information

Course Description	BILD 4 is designed to be a collaborative environment for everyone to learn together and construct a shared understanding of the material. Active participation and contribution in classes and in the laboratory are essential because many ideas and laboratory methods that will be developed in these activities cannot be easily captured otherwise. Being able to communicate understanding, articulate confusion, and defend scientific arguments based on evidence and reasoning is both useful for learning and critical to success in any discipline. To encourage collaboration and community building, many class and laboratory activities and assignments will be done in teams, and grades will not be assigned on a curve. Instead of memorization, we will focus on developing an understanding of fundamental concepts and laboratory skills as they apply to different examples and learn to draw conclusions based on evidence and reasoning. We will utilize class and laboratory time to construct and apply our knowledge, troubleshoot challenging topics, practice problem solving, and develop skills in critical thinking. Laboratory reports and the research proposal will challenge us to think critically about data and experiments.
Credits	2
Instructor	Prof. Keefe Reuther (Call me Dr. Keefe or Dr. K) Email address: kdreuther@ucsd.edu (please put BILD 4 in the subject line)
Synchronous Course Elements	Lectures: Monday 5:00pm - 6:20pm CENTER HALL 119 (all lectures will be recorded for both synchronous and asynchronous remote viewing) Labs: Your registered lab time (see next table) including some group work, some writing assignments and other assessments and projects.
Asynchronous Course Elements	Readings, some group work, some writing assignments and other assessments and projects.

BILD 4 Spring 2022 - Tentative Schedule

Week	Meeting	Topic
1	Lab	Welcome, Icebreaker Field Trip to Reserve (FW1)
2	Lab	Form final groups/make logo Pipetting (BB1 and BB2)
3	Lab	Measure soil pH (SP1) Set up moisture (SP2) Save soil aliquots for FB and GB experiments (GB1) Plate soil samples (TB1) Start project ideas (SL) GROUP WRITING ASSIGNMENT #1 DUE FRIDAY MIDNIGHT
4	Lab	Moisture part 2 (SP3) Analyze Plates (TB2) Ecoplate setup (FB1)
5	Lab	Ecoplate Read and Analysis (FB2 and FB3) Continue to work on project INDIVIDUAL WRITING ASSIGNMENT #1 DUE FRIDAY MIDNIGHT
6	Lab	DNA purification PCR (GB2 and GB3)
7	Lab	Gel and (GB4) Projects INDIVIDUAL WRITING ASSIGNMENT #2 DUE FRIDAY MIDNIGHT
8	Lab	PCR Cleanup (GB5) Projects
9	Lab	Hopefully finish up projects
10	Lab	Group Writing Assignment GROUP WRITING ASSIGNMENT #2 DUE FRIDAY MIDNIGHT
Final	---	Poster Session!

INSTRUCTIONAL ASSISTANTS A1ND LABORATORY SECTION TIMES:

Section #	Days	Time	Room	IA's
C01	Tu	1p-3:50p	TATA 2301	Oscar & Amber
C02	Tu	1p-3:50p	TATA 2302	Molly & Amber
C03	Tu	1p-3:50p	TATA 2303	Ikran & Pabodha
C04	Tu	1p-3:50p	TATA 2304	Allison & Pabodha
C05	Th	1p-3:50p	TATA 2301	Oscar & Amber
C06	Th	1p-3:50p	TATA 2302	Molly & Amber
C07	Th	1p-3:50p	TATA 2303	Ikran & Pabodha
C08	Th	1p-3:50p	TATA 2304	Allison & Pabodha

Instructional Assistants:

Name	email
Allison	adelehoy@ucsd.edu
Molly	m7huang@ucsd.edu
Ikran	i1ibrahi@ucsd.edu
Oscar	opartida@ucsd.edu
Pabodha	pratnaya@ucsd.edu
Amber	arpiland@ucsd.edu

LEARNING OUTCOMES:

- Collaborate with one another to learn foundation biological concepts and laboratory skills.
- Apply knowledge of molecular biology concepts and molecular techniques to plan experiments, explain and troubleshoot results.
- Demonstrate proficiency at the basic molecular biology techniques used in the lab.
- Explain the importance of proper controls in designing experiments and interpreting results.
- Perform basic lab math skills, statistical analysis, and graphing.
- Draw conclusions based on evidence and reasoning.
- Use basic bioinformatics databases and applications.
- Find, read, and evaluate primary literature.
- Collaborate with one another to learn foundation biological concepts and laboratory skills.

CONTACT:

The best way to contact me is by email: kdreuther@ucsd.edu. On all emails PLEASE put BILD 4 in the subject line to indicate that the email pertains to this course. If you email about anything regarding your status in the course, please include your UCSD username, and PID. If you have questions about course content, it is often faster to email your IA directly.

LAB MANUAL, PPE, & PROPER LAB ATTIRE:

The lab manual is required for the course. You must have your own lab coat and goggles for the course. The lab coat must be thigh length. In the lab, you must wear proper lab attire at all times. This includes close-toes shoes, shocks, pants with no holes, and hair tied back. Basically, it is not safe for there to be any significant skin showing below the waist.

WEBSITE:

Everything related to the class is kept on the Canvas site (https://Canvas.ucsd.edu/webapps/login/). Announcements will be posted on the Canvas site. Check the site often! All grades will be posted on Canvas.

LEARNING PHILOSOPHY:

Science is like sport. Improving requires play and practice. You must experiment, take risks, think creatively, and work hard. My responsibility as your professor is to give you a space where you feel emboldened to do so. Active participation by engaging with the lecture material, asking and answering questions, and contributing to breakout sessions during discussion time is expected. Being able to communicate understanding, and confusion, is critical to success in any discipline, and is very useful for learning. To encourage collaboration, activities will be done in groups, and grades will not be assigned on a curve. Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples. Therefore, assignments and assessments will include questions that are based on solving problems in new contexts.

Assessment:

The general grading scheme is as follows, although it may be adjusted to improve everyone's grades if necessary. BILD 4 is not graded on a curve, i.e. 20% of students getting A, B, C, and such. Thus, the ability to do well in this course is not dependent on others doing poorly.

A+	96-100%	B+	87-90%	C+	77-80%	D+	67-70%	F	0-60%
A	93-96%	B	83-87%	C	73-77%	D	63-67%		
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%		

ASSESSMENT PHILOSOPHY:

As educators in this course, our primary goal is to help you develop the mindset of a biologist rather than just memorizing their knowledge. To facilitate this, the course is designed around the learning goals outlined earlier in the syllabus. Assessment is a crucial component of this process, encompassing all tasks for which you receive feedback or grades. This enables both you and the instructional team to monitor your progress towards mastering the skills embedded in this course.

While the grading guide's nine assessment categories may appear overwhelming, each is essential for evaluating your growth as a responsible, creative, and productive scientist in the laboratory. A single final exam cannot adequately achieve this objective. Adopting a more holistic approach to feedback and grading provides a better understanding of your strengths and areas for improvement.

To help you stay organized, we recommend establishing an intentional and user-friendly system to keep track of your goals and tasks. A calendar app is an excellent starting point, ensuring that each deliverable for every class is scheduled and regularly reviewed. For notes, thoughts, and other materials, you can explore various options such as paper and pen, Apple Notes, Notion, Evernote, etc. This class will support your organization with a schedule and grading guide in the syllabus, as well as weekly announcements and module pages listing all upcoming deliverables.

Inevitably, life events can interfere with your ability to attend class or submit assignments on time. Balancing these challenges with a fair grading policy is a complex task. Here are two guiding principles that underpin our approach:

1. Life happens, and your privacy matters. Illness, family emergencies, or other unforeseen events might prevent you from completing assessments on time, and these personal matters should not be divulged in service of your grade.
2. Grading policies have both advantages and disadvantages. While accepting late assignments could benefit many students, there are costs involved. Instructional assistants, who are often busy students themselves, need to manage their grading schedules effectively. Additionally, accepting late work after answer keys are posted is problematic. To balance these concerns, we will either drop a certain number of assignments for all students or adjust the weighting of missed assignments. This approach accommodates everyone, particularly those uncomfortable discussing their reasons for late or missed submissions.

While grades may currently be a primary focus, it's crucial to remember that once you embark on your chosen career or academic path, your skills, knowledge, motivation, and wisdom will take precedence. Focus on cultivating these attributes in each of your classes, ultimately building a solid foundation of knowledge and expertise rather than a fragile house of cards.

PLEASE REFERENCE THE GRADING GUIDE ON THE NEXT PAGE!!!

BILD 4 Grading guide

DR. KEEFE SPRING '23

Online Weekly Canvas Quizzes - 20%

- Each quiz will open Thursday at 5pm PST. You will have 30 minutes and 1 attempt.
- Your 2 lowest scores will be dropped except for cumulative last quiz.
- No late or makeup quizzes - key posted the next day.

Due: Every Sunday night @ 11:59pm

Individual Writing Assignments - 10%

- There are two assignments.
- Late penalty is -2% per hour.
- After 48 hours or if assignment can't be completed, then your grade will be completely based on other Ind. writing assignment.

Due: Friday @11:59pm Weeks 5 and 7

Group Writing Assignments - 10%

- There are two assignments.
- Late penalty is -2% per hour.
- Each group member turns in the same writing assignment separately. One is graded at random. Each person must submit to receive their grade.

Due: Friday @11:59pm Weeks 3 and 10

Pre-lab Discussion Board - 5%

- There are 10 (1 per week) and your 2 lowest scores will be dropped.
- No late or makeup posts.

Due: Before the beginning of your lab time

Lab Participation - 20%

- If you miss 1 lab for any reason than you have to complete a lab makeup assignment.
- If you miss a 2nd lab there is a second makeup assignment.
- Missing more lab for any reason will result in lost points.

Your lab time

Lecture Participation - 5%

- Participating in lecture weeks 2-10 will be recorded.
- You may miss up to 3 lectures and still receive full credit.
- Download the Mentimeter app. No account or $ needed.

Lecture Monday @ 5pm

Lab Research Notebooks - 10%

- Your group will collectively complete 1 each week in your group's Google Doc.
- Must be completed within 48 hours of the end of lab. Usually, you will finish during the lab time.

Due: 2 days after lab

Final Poster - 10%

- Hard deadline since it must go to printers.
- Each group member turns in the contribution writeup separately. Each person must submit to receive their grade.

Due: End of week 9

Final Poster Presentation - 10%

- Poster presentations will involve each member of the group helping with a live poster presentation during the scheduled final exam time.

Due: Final exam time

GROUP WORK AND PROFESSIONALISM:

A major goal of the course is to learn to collaborate with others. Unfortunately, despite best efforts and intentions, groups do not always function optimally. Dealing with these challenges is a natural part of the learning experience. Everyone is expected to contribute fully and equitably to group work as part of the university learning community. If significant disputes occur over the relative contribution of individual members of the group, please bring them up with Dr. Keefe.

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 individually demonstrating maturity and professionalism, as well as contributing meaningfully to our online. By default, every student is assumed to be professionally mature. Hence, this component is awarded to every student at the beginning of the quarter. During the quarter, based on observations by the teaching team, which includes but is not limited to one-on-one interactions, electronic communication, following deadlines, and follow-up conversations on grades, your professionalism credit may be deducted.

Example interactions with meaningful benefits:

- Following the course and university rules of Academic Integrity
- Developing deeper insight into course material, concepts, biology, and/or society in general
- Working collaboratively to improve in skill building and future opportunities
- Contributing to an inclusive learning environment
- Learning conceptually and meaningfully why full credit was not awarded for an assignment
- Clarifying course material that facilitates deeper learning
- Reporting errors or problems in class, on assignments, or for other course material
- Completing the work expected of you by posted deadlines
- Keeping up with reading information distributed by the instructor and IA's

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

- Harassing and/or bullying the instructional team or other students.
- Asking questions when the information is already available or will eventually be known
- Not communicating with your group or IA when you will be absent or late. This applies both to the lab meetings and to any separate work meetings within your group.
- Editing the contribution section without proper collaboration with group members.
- Ignoring the directions or requests from the instructional team.

Additional enrollment and waitlist policies are available online (https://biology.ucsd.edu/education/undergrad/course/waitlist.html).

Campus Policies

- UC San Diego Principles of Community
- UC San Diego Policy on Integrity of Scholarship
- Religious Accommodation
- Nondiscrimination and Harassment
- UC San Diego Student Conduct Code

Diversity and equity statement
It is important for us to make sure that how we teach this course and how we accommodate different student needs reflects the differences of race, ability, sexual orientation, age, and gender identity that enrich our classroom experience and campus. If you have any concerns related to diversity and equity in the course, please contact the instructor.

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.

Student Resources

Learning and Academic Support	
Ask a Librarian: Library Support *Chat or make an appointment with a librarian to focus on your research needs* Course Reserves, Connecting from Off-Campus and Research Support *Find supplemental course materials* First Gen Student Success Coaching Program *Peer mentor program that provides students with information, resources, and support in meeting their goals* Office of Academic Support & Instructional Services (OASIS) *Intellectual and personal development support*	Writing Hub Services in the Teaching + Learning Commons *One-on-one online writing tutoring and workshops on key writing topics* Supplemental Instruction *Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses* Tutoring – Content *Drop-in and online tutoring through the Academic Achievement Hub* Tutoring – Learning Strategies *Address learning challenges with a metacognitive approach*

Support for Well-being and Inclusion	
Basic Needs at UCSD *Any student who has difficulty accessing sufficient food to eat every day, or who lacks a safe and stable place to live is encouraged to contact:* foodpantry@.ucsd.edu | basicneeds@ucsd.edu | (858) 246-2632 Counseling and Psychological Services *Confidential counseling and consultations for psychiatric service and mental health programming* Triton Concern Line *Report students of concern:* (858) 246-1111 Office for Students with Disabilities (OSD) *Supports students with disabilities and accessibility across campus*	Community and Resource Centers Office of Equity, Diversity, and Inclusion *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* (858).822-.3542 | diversity@ucsd.edu Get Involved *Student organizations, clubs, service opportunities, and many other ways to connect with others on campus* Undocumented Student Services *Programs and services are designed to help students overcome obstacles that arise from their immigration status and support them through personal and academic excellence*

Privacy Practices

(From https://cio.ucop.edu/privacy-tips-for-your-syllabus/)
This course is a community built on trust; as a learning community, we are collectively responsible for upholding privacy protections. In order to create a community built on trust and the most effective learning experience, our interactions, discussions, and course activities must remain private and free from external intrusion. We have obligations to each other to preserve privacy and cultivate fearless inquiry. We respect the individual dignity of all and will refrain from actions that diminish others' ability to learn.

As your instructor, I am committed to protecting your privacy by only using university-approved course technologies and adhering to the Family Educational Rights and Privacy Act
(FERPA) https://catalog.ucsd.edu/about/policies/notification-of-rights/index.html and Campus Privacy Office guidelines. This includes using your educational data only as allowed by

FERPA, for example, for legitimate educational purposes such as submitting your final grades to the registrar's office.

Subject to Change Policy

Due to unforeseen circumstances, minor aspects of this syllabus may change. This includes changes to scheduling, grading values, and policy. It is the responsibility of the instructor and instructional assistants to announce changes with reasonable notice in multiple formats (e.g. lecture and Canvas announcements, email, etc.). It is the responsibility of the student to make note of these changes and communicate with the instructor if you have questions or concerns about the changes.