

Welcome to Introductory Biology Laboratory! BILD 4 aims to develop an understanding for research in the biological sciences through discovery-based laboratory experiments. We will work in teams to collect, analyze, and present original research data while learning foundational biological concepts and laboratory skills. Data collected in this course will contribute to an on-going research project on soil microbiomes at the Scripps Coastal Reserve on campus.

### Learning goals

- Collaborate with one another to learn foundation biological concepts and laboratory skills
- Engage in research and learn to draw conclusions based on evidence and reasoning
- Connect with resources on campus, such as faculty research groups, library, and writing center

### Components of the course

- Class: Learn biological concepts related to the laboratory research project
- Laboratory: Engage in a collaborative research project on soil microbiomes on campus
- Project: Develop and present research proposals on hypothetical projects

### Learning in this course

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<sup>1</sup> 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.

<sup>1</sup> Smith et al (2009) Science 323: 122-124. <http://science.sciencemag.org/content/323/5910/122.short>

### Course logistics

The core learning components in this course are comprised of collaborative activities in class meetings and laboratory sections, in addition to independent and group work on studying and completing assignments. Course materials, announcements, and other important details will be available on TritonEd (<https://triton.ed.ucsd.edu>). Please check the course website and your @ucsd email regularly for updates and relevant information.

Class	Time	Location	Instructor
C00	Wednesday 6:30 – 7:50 PM	Solis 107	Stephanie Mel

Laboratory	Time	Location	Instructional assistants
C01	Thursday 8 – 10:50 AM	York 4124	Annee Nguyen, Alexandra Vargas
C02	Thursday 8:30 – 11:20 AM	York 1310	Tiffany Ho, Kevin Tang
C03	Thursday 11:30 AM – 2:20 PM	York 4124	Annee Nguyen, Kshitij Gaur
C04	Thursday 12 – 2:50 PM	York 1310	Zijun Wu, Jeffrey Chiu
C05	Thursday 3 – 5:50 PM	York 4124	Tiffany Ho, Nguyen Tran
C06	Thursday 3:30 – 6:20 PM	York 1310	Zijun Wu, Tomomi Yoshida

Instructor	Email	Office	Phone	Office hours
Stephanie Mel	<a href="mailto:smel@ucsd.edu">smel@ucsd.edu</a>	York 4070E	858-822-0603	Wed. 4:30 – 5:30 PM or by appointment

**Course materials:** Laboratory activities are detailed in the BILD 4 Laboratory Manual, available at the bookstore. Each student will need to purchase a copy of the BILD 4 Laboratory Manual with carbonless sheets. For the laboratory, knee-length laboratory coat and UV-blocking safety glasses or goggles are required, and they are also available at the bookstore. iClicker2 is required for lectures and should be registered on TritonEd.

Participation and contribution in class meetings will be mainly through clicker questions and short writing activities. To participate in clicker-based discussions, please have an iClicker2 registered on TritonEd. Short in-class writing activities will be done in the carbonless personal lab manuals, so please be sure to bring the Laboratory Manual to class meetings and laboratory sections.

**Podcast:** Whenever possible, class meetings will be recorded and made available online as a resource for learning (<http://podcast.ucsd.edu/>). However, participation and contribution are highly encouraged, as substantial portions of class meetings will be interactive. Many important concepts and ideas that are the result of collaborative learning cannot be easily captured on video. Therefore, podcasts are provided for the purpose of review and should not be used solely to substitute for active engagement in class meetings.

**Technology:** Students are welcome to bring laptop computers, tablets, or similar technology to class meetings for note-taking purposes. Please see this research study, which shows that multi-tasking on computers in class is likely to decrease not only your own grade but also the grades of people around you who can see your screen!<sup>2</sup> For this reason, we ask that you do not flip between relevant course materials and irrelevant activities on the internet. The use of cell phones, computers, or other personal devices is not permitted in the laboratory for safety reasons.

<sup>2</sup> Sana et al (2013) Computers and Education 62: 24-31  
<http://www.sciencedirect.com/science/article/pii/S0360131512002254>

[Grading – see separate sheet posted on TritonEd](#)

**From the beginning of the first lab, appropriate laboratory attire is always required.** Appropriate laboratory attire includes long pants or equivalent, long socks or equivalent, and closed-toe and closed-heel shoes. No skin should be exposed from the waist down at all times. Starting at the beginning of the second lab, personal protective equipment (PPE) is required. PPE includes laboratory coats that cover to the knees and UV-blocking safety glasses or goggles, both of which are available at the bookstore.

#### Library guide

<http://ucsd.libguides.com/bild4>

A specific library guide has been designed for BILD 4. This website serves as the starting point for navigating campus library resources that support our needs in completing major assignments, such as the research proposal. Please feel free to schedule a consultation with Bethany Harris ([bethany@ucsd.edu](mailto:bethany@ucsd.edu)), our biomedical librarian, for further assistance.

#### Writing and Critical Expression Hub

<http://commons.ucsd.edu/students/writing/index.html>

The Writing and Critical Expression Hub provides support for undergraduates working on course papers, i.e. laboratory reports and the research proposal, as well as other independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing. The Writing and Critical Expression Hub offers: one-on-one writing tutoring by appointment; supportive and in-depth conversations about writing, the writing process, and writing skills; help with every stage in the writing process, walk-in tutoring; and workshops on writing.

#### Accessibility and inclusion

<http://disabilities.ucsd.edu> | [osd@ucsd.edu](mailto:osd@ucsd.edu) | 858-534-4382

Any student with a disability is welcome to contact us early in the quarter to work out reasonable accommodations to support their success in this course. Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD). Students are required to present their AFA letters to faculty and to the OSD Liaison in the Division of Biological Sciences in advance so that accommodations may be arranged.

Whenever possible, we will use universal designs that are inclusive. For example, colors used in this syllabus are distinguishable by most colorblind and non-colorblind people, and this font is designed to be dyslexic friendly. If you have feedback on how to make the class more accessible and inclusive, please get in touch!

**Discrimination and harassment:** The Office for the Prevention of Harassment & Discrimination (OPHD) provides assistance to students, faculty, and staff regarding reports of bias, harassment, and discrimination. OPHD is the UC San Diego Title IX office. Title IX of the Education Amendments of 1972 is the federal law that prohibits sex discrimination in educational institutions that are recipients of federal funds. Students have the right to an educational environment that is free from harassment and discrimination.

Students have options for reporting incidents of sexual violence and sexual harassment. Sexual violence includes sexual assault, dating violence, domestic violence, and stalking. Information about reporting options may be obtained at OPHD at 858-534-8298, [ophd@ucsd.edu](mailto:ophd@ucsd.edu), or <http://ophd.ucsd.edu>. Students may receive confidential assistance at CARE at the Sexual Assault Resource Center at 858-534-5793, [sarc@ucsd.edu](mailto:sarc@ucsd.edu), or <http://care.ucsd.edu>, or Counseling and Psychological Services (CAPS) at 858-534-3755 or <http://caps.ucsd.edu>.

Students may feel more comfortable discussing their particular concern with a trusted employee. This may be a student affairs staff member, a faculty member, a department chair, or other university official. These individuals have an obligation to report incidents of sexual violence and sexual harassment to OPHD. This does not necessarily mean that a formal complaint will be filed.

If you find yourself in an uncomfortable situation, ask for help. The university is committed to upholding policies regarding nondiscrimination, sexual violence, and sexual harassment.

#### Academic integrity

<https://students.ucsd.edu/academics/academic-integrity/index.html>

Integrity of scholarship is essential for an academic learning community. In this course and at the university, we expect that both students and the instructional team 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 to whom it is assigned, without unauthorized aid of any kind. Instructors, for their part, will exercise care in planning and collaborating with students on academic work, so that academic integrity is upheld.

When people collaborate to work toward a common goal, shared values must be established so that everyone understands the acceptable ways for working together. In organizations, these are commonly called codes of conduct or ethics. In this course, we are using a statement of values<sup>4</sup> in support of codes of ethics, like the Policy on Integrity of Scholarship, to state explicitly our values and describe the behaviors for maintaining and protecting those values.

The following values are fundamental to academic integrity and are adapted from the International Center for Academic Integrity. In our course, these values are open to discussions and possible alterations based on mutual agreements among all students and the instructional team. In collaborative work, each group should discuss these values and must articulate the expectations for how they are made manifest within the group's work together.

	As students, we will ...	As the instructional team, we will ...
Honesty	<ul style="list-style-type: none"> <li>Honestly demonstrate your knowledge and abilities according to expectations listed in the syllabus or in relation to specific assignments and exams</li> <li>Communicate openly without using deception, including citing appropriate sources</li> </ul>	<ul style="list-style-type: none"> <li>Give you honest feedback on your demonstration of knowledge and abilities on assignments and exams</li> <li>Communicate openly and honestly about the expectations and standards of the course through the syllabus and in relation to assignments and exams</li> </ul>
Responsibility	<ul style="list-style-type: none"> <li>Complete assignments on time and in full preparation for class</li> <li>Show up to class on time and be mentally physically present</li> <li>Participate fully and contribute to team learning and activities</li> </ul>	<ul style="list-style-type: none"> <li>Give you timely feedback on your assignments and exams</li> <li>Show up to class on time and be mentally and physically present</li> <li>Create relevant assessments and class activities</li> </ul>
Respect	<ul style="list-style-type: none"> <li>Speak openly with one another while respecting diverse viewpoints and perspectives</li> <li>Provide sufficient space for others to voice their ideas</li> </ul>	<ul style="list-style-type: none"> <li>Respect your perspectives even while we challenge you to think more deeply and critically</li> <li>Help facilitate respectful exchange of ideas</li> </ul>
Fairness	<ul style="list-style-type: none"> <li>Contribute fully and equally to collaborative work, so that we are not freeloading off of others on our teams</li> <li>Not seek unfair advantage over fellow students in the course</li> </ul>	<ul style="list-style-type: none"> <li>Create fair assignments and exams and grade them in a fair and timely manner</li> <li>Treat all students and collaborative teams equally</li> </ul>
Trustworthiness	<ul style="list-style-type: none"> <li>Not engage in personal affairs while on class time</li> <li>Be open and transparent about what we are doing in class</li> <li>Not distribute course materials to others in an unauthorized fashion</li> </ul>	<ul style="list-style-type: none"> <li>Be available to all students when we say we will be</li> <li>Follow through on our promises</li> <li>Not modify the expectations or standards without communicating with everyone in the course</li> </ul>
Courage	<ul style="list-style-type: none"> <li>Say or do something when we see actions that undermine any of the above values</li> <li>Accept a lower or failing grade or other consequences of upholding and protecting the above values</li> </ul>	<ul style="list-style-type: none"> <li>Say or do something when we see actions that undermine any of the above values</li> <li>Accept the consequences (e.g. lower teaching evaluations) of upholding and protecting the above values</li> </ul>

All course materials are the property of the instructor, the course, and 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. Any suspected instances of a breach of academic integrity will be reported to the Academic Integrity Office for review.

<sup>4</sup> This class statement of values is adapted from Tricia Bertram Gallant Ph.D.