

Welcome to Introductory Biology Laboratory! BILD 4 aims to develop an understanding for research in the biological sciences through inquiry-based laboratory experiments. We will work in groups 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 foundational 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

MAJOR COMPONENTS

- Lecture: 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

ACCESSIBILITY AND INCLUSION

<http://disabilities.ucsd.edu> | 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 should 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.

ACADEMIC INTEGRITY

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

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.

In this course, we need to establish a set of shared values. Following are values adopted from the International Center for Academic Integrity (<http://www.academicintegrity.org/icai/home.php>), which serve as the foundation for academic integrity. These values include: honesty, responsibility, respect, fairness, and trustworthiness.

COURSE LOGISTICS

Required materials: The BILD 4 Laboratory Manual, [knee-length](#) laboratory coat, [and](#) UV-blocking safety glasses or goggles are required for the laboratory and are available at the bookstore. iClicker2 is required for lectures. iClicker2 should be [registered on TritonEd](#).

Lecture	Time	Location	Instructor
B00	Thursday 8:00-9:20 am	Peterson 110	Stephanie Mel

Laboratory	Time	Location	Instructional assistants
B01	Thursday 9:30 am to 12:30 pm	York 4124	Garrett Wong, Kevin Cheng
B02	Thursday 1:00 pm to 4:00 pm	York 4124	Garrett Wong, Abdull Massri
B03	Thursday 4:30 pm to 7:30 pm	York 4124	Peter Kim, Clifford Liu
B04	Friday 8:00 am to 11:00 am	York 4124	Peter Kim, Chandra Couzens
B05	Friday 12:00 pm to 3:00 pm	York 4124	Samantha Yu, Andrew Kim
B06	Friday 4:00 pm to 7:00 pm	York 4124	Andrew Kim, Daryn Longman
B07	Friday 10:00 am to 1:00 pm	York 1310	April Guan, Komal Kapoor
B08	Friday 2:00 pm to 5:00 pm	York 1310	April Guan, Liangdao Li

Instructor	Email	Office	Phone	Office hours
Stephanie Mel	smel@ucsd.edu	York 4070E	858-822-0603	Tues 9:30 – 10:30 AM Wed. 1:30 – 2:30 PM

Instructional assistant	Email	Instructional assistant	Email
Garrett Wong	grwong@ucsd.edu	Andrew Kim	amk008@ucsd.edu

Kevin Cheng	k2cheng@ucsd.edu	Daryn Longman	dlongman@ucsd.edu
Abdull Massri	amassri@ucsd.edu	April Guan	a1guan@ucsd.edu
Peter Kim	d1kim@ucsd.edu	Komal Kapoor	kokapoor@ucsd.edu
Chandra Couzens	ccouzens@ucsd.edu	Liangdao Li	lil041@ucsd.edu
Semantha Yu	sey016@ucsd.edu	Clifford Liu	czliu@ucsd.edu

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 both in lectures and in the laboratory is expected. To encourage collaboration, many activities in the course will be done in groups, and grades will not be assigned on a curve. (See grading section for more details.)

Instead of memorization, we will focus on developing an understanding of fundamental concepts as they apply to different examples and learn to draw conclusions based on evidence and reasoning. Therefore, quizzes will include questions that are based on solving problems in new contexts, and laboratory reports and the research proposal will challenge us to think critically about data.

GRADING

BILD 4 has four grading components: participation (20%), quizzes (30%), laboratory reports (20%), and research proposal (20%). Because different people may excel in different aspects, the laboratory reports or research proposal component, whichever is higher for each individual, will be scaled to 30% instead of 20%, bringing the total to 100%.

The general grading scheme is as follows, but it may be adjusted to improve everyone's grades if necessary. Exact boundaries will be determined based on final grade distributions: Because course assessments are not perfectly precise, grade cutoffs will be identified by large gaps in between individual scores. However, 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+	97-100%	B+	87-90%	C+	77-80%	D+	67-70%	F	0-60%
A	93-97%	B	83-87%	C	73-77%	D	63-67%		
A-	90-93%	B-	80-83%	C-	70-73%	D-	60-63%		

Participation: Active participation both in lectures and in the laboratory is essential to learning. There will be many participation items, including pre-lecture and pre-laboratory assignments, in-lecture discussions, in-laboratory activities, and laboratory notebooks. Participation will be graded for thoughtful completion, and 80% participation items (rounded up to whole items) will be counted.

Quizzes: Quizzes will be open resources (e.g. notes and calculators [but not electronic equipment that can be used to communicate with others](#)). Quizzes will be cumulative but will focus on the most recent material. There will be 2 short quizzes (30 minutes) and 1 long quiz (90 minutes) that counts as 3 short quizzes. Out of 5 quiz equivalents, the top 4 quiz grades (5% each) will be counted.

To facilitate reflection and learning from quizzes, each quiz (small or large) will be in two phases: The first phase will be done individually (15 or 45 minutes), and the second phase will be the same quiz done again in groups (15 or 45 minutes). The individual portion will count for 80% of the quiz grade, and the group portion will count for 20%.

Laboratory reports: Two laboratory reports will be written in groups in the format of papers from research journals. We will use the Division of Biological Sciences undergraduate research journal Saltman Quarterly (<http://sq.ucsd.edu/>) as a guide. The first laboratory report (5%) is one page, and the second laboratory report (15%) is four pages.

Research proposal: The project will be a research proposal written and presented in poster format collaboratively in groups (15%). Each group will identify a topic to study hypothetically and propose experiments to investigate that topic using foundational concepts and laboratory skills learned in the course. An individual component (5%) will involve critiques and summaries of other posters.

LABORATORY SAFETY

Safety precautions are crucial in the laboratory setting. Appropriate personal protective equipment (PPE) is required: these include laboratory coats that cover the knees, UV-blocking safety glasses or goggles, long pants or equivalent, and closed-toe and closed-heel shoes.

LABORATORY ATTENDANCE

Attendance in laboratory is required. Missing two laboratory sessions, except in the case of a documented short-term illness or serious family emergency, will automatically result in an **F grade**. Please **be on time for laboratory sessions**, as instructional assistants go over the experiments at the beginning of each session. Two late attendances will be counted as one absence. Additional policies are available online (<https://biology.ucsd.edu/education/undergrad/course/waitlist.html>).

ASSIGNMENTS AND QUIZZES

No late participation items will be accepted, and no make-up quizzes will be offered, as only up to 80% of these grades are counted. No late assignments (i.e. laboratory reports and the research proposal) will be accepted, except in the case of a documented short-term illness or serious family emergency. Please coordinate within groups to ensure that group assignments are completed.

LECTURE PODCAST

<http://podcast.ucsd.edu/>

Whenever possible, lectures will be recorded and available online as videos as a resource for review. However, attendance and participation are highly encouraged, as **substantial portions of lectures will be interactive**. Please see participation in the grading section for more details.

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, including laboratory reports and the research proposal. Please feel free to schedule a consultation with Bethany Harris (bethany@ucsd.edu), our biomedical librarian, for further assistance.

WRITING CENTER

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

The Writing Center provides support for undergraduates working on course papers (i.e. laboratory reports and the research proposal) and independent writing projects. Writing mentors can help at any stage of the writing process, from brainstorming to final polishing.

The Writing Center offers: one-on-one appointments for undergraduates with peer writing mentors; group workshops addressing a variety of writing projects, genres, and issues; and Drop-In Zone for quick questions, targeted assistance, and a comfortable writing space.

CALENDAR

A general outline for the course is available below. More specific details for each week, including reading and assignments, will be provided on TED and in class. We may also adjust the schedule as necessary, while still focusing on the foundational concepts and laboratory skills.

Week	Dates	Lecture	Laboratory	Deadlines
1	1/3 to 1/9	<ul style="list-style-type: none">BILD 4 introductionMicrobiomes	<ul style="list-style-type: none">Asking questionsError analysis	---
2	1/10 to 1/16	<ul style="list-style-type: none">Forms of biodiversityEcoplate introduction	<ul style="list-style-type: none">Scripps Coastal ReserveSoil properties and Ecoplate	---
3	1/17 to 1/23	<ul style="list-style-type: none">Measuring biodiversityEcoplate analysis	<ul style="list-style-type: none">Ecoplate analysisData presentation	---
4	1/24 to 1/30	<ul style="list-style-type: none">Quiz 116S rDNA sequences	<ul style="list-style-type: none">Genomic DNA prepLab report peer review	---
5	1/31 to 2/6	<ul style="list-style-type: none">DNA replicationPolymerase chain reaction	<ul style="list-style-type: none">Polymerase chain reactionGel electrophoresis	---
---	2/9 at 11:59 pm	---	---	Report 1
6	2/7 to 2/13	<ul style="list-style-type: none">Recombinant DNABiotechnology	<ul style="list-style-type: none">LigationTransformation	---
7	2/14 to 2/20	<ul style="list-style-type: none">Quiz 2DNA sequencing	<ul style="list-style-type: none">Blue/white colony selectionDesigning posters	---
8	2/21 to	<ul style="list-style-type: none">Research opportunities for	<ul style="list-style-type: none">Designing posters	---

	2/27	undergraduates		
---	3/1 at 11:59 pm	---	---	Poster
9	2/28 to 3/5	<ul style="list-style-type: none">• Sequence alignment• Bioinformatics	<ul style="list-style-type: none">• Sequence analysis• Data presentation	---
10	3/6 to 3/12	<ul style="list-style-type: none">• Quiz 3-5	<ul style="list-style-type: none">• Lab report peer review	---
---	3/11 at 11:59 pm	---	---	Report 2
Exam	3/17 at 8:00 am	<ul style="list-style-type: none">• Poster presentations	---	---