

# BILD 3

Organismic and Evolutionary Biology

Spring 2024  
MWF 10 – 10:50 AM  
Galbraith Hall 242

**Office hour:** 3:30-4:30 pm Fridays  
Tata Hall  
Room 3103

**Professor:** Dr. Kim Cooper  
**E-Mail:** kcooper@ucsd.edu

**NOTE:** On all emails, **please put BILD 3 in the subject line** to indicate your email is about this course or you may not receive a response. I am teaching two courses this quarter, and I get dozens of emails each day. Alternatively, please come talk to me before or after lecture or during my office hours.

**Course Description:** BILD 3 is an introduction to biology in the context of whole organisms, their evolution, ecology, and behavior. The planet is teeming with a vast diversity of life, and the goal of this course is for you to understand the nature of that diversity, the evolutionary origin of species, mechanisms for the continuing diversification of life, and the ecological relationships between living organisms and their environment. We will also discuss human impacts on global climates, species extinctions, environmental alterations, and the role of conservation in preserving species diversity.

## How to excel in this class:

1) *Read the assigned pages of Campbell in advance of class and bring a copy of the Handouts, available on Canvas the night before each class.* Advance familiarity with the course content will help you to understand my explanations and examples. Plus, some people learn better by reading than by listening.

2) *Take notes during class and highlight concepts that seem unclear to you.* Consider handwriting your notes versus typing them. This is a great article about the benefits and drawbacks of various notetaking approaches. Please read it to the end:  
<https://medschoolinsiders.com/study-strategies/note-taking-for-straight-a-students/>

3) *Download the Concept Guides and Vocab study sheets after each lecture. **This will have the greatest impact on your success, because the concept guides literally tell you what I thought was important.*** Learning is a process of coming to the answers yourself, so I don't provide the answers until about two days before each exam. These guides will help you to learn if you: go over your notes, revisit the Podcast and the textbook, work with others during office hours or in study groups to discuss the questions and vocabulary. Every quarter, students initially ignore these guides because they aren't required or graded. They do worse than they hoped on the first midterm, start to use the guides, and then realize that the points earned for using the guides are found in higher exam grades.

4) *Study together with others.* Their knowledge will fill your gaps and vice versa. Even if you think you know more, studying with another person gives you the opportunity to teach, which reinforces learning. Study together early and often so the anxiety of an impending exam doesn't keep you from making the

most of the opportunity. Meet study partners during lecture, discussion section, office hours, or using the “Search for Teammates!” pinned post in Piazza.

**Grading Policies:** My grading policy is structured to *reward growth and to acknowledge challenges* that may arise at any point in the quarter. There will be three non-cumulative exams each worth 100 points. I will replace your lowest exam grade with the average of all three exam scores.

100 Points: Highest exam grade

100 Points: Second highest exam grade

100 Points: Average of all three exam grades

40 Points: iClickers (40 pts 17+ sessions, 30 pts 13-16 sessions, 20 pts 10-15 sessions)

70 Points: Quizzes (Eight 10 pt quizzes on Canvas beginning Week 3 - drop the lowest)

80 Points: Section attendance (10 pts each week, drop two)

Total graded points available = **490**

up to 5 Points Extra Credit: 1 point each for attending an office hour

5 Points Extra Credit for answering BOTH the pre and post learning assessment

2 Points Extra Credit if >70% of the class completes course evaluations

*My course curve policy is designed to encourage you to study together.* The class is not graded on a standard curve. Instead, I take the top 5% (~10-15 students), average their cumulative points without extra credit, and make that the ‘total possible points’ (e.g. 466 instead of 490). This normalizes the course difficulty to student performance. I then add extra credit to everyone who earned it and divide the cumulative points by the total possible points. I make letter grade cutoffs at standard eGrade intervals (e.g. 97 to 100%=A+, <97 to 94% A, <94 to 90 A-, etc). **Importantly, helping your classmates doesn't hurt you, and everyone can get an A.** Please note that I do these grade adjustments in Excel at the end of the course. Canvas may not accurately present your final course grade until just prior to the grade submission deadline.

**All exams will be held in person. Please bring multiple pencils, an eraser, and your UCSD identification card. No calculators/phones are allowed. All requests to make up an exam must be submitted by emailing the professor before the exam.** My make up policy for exams is as follows:

- 1) You must email me *in advance of the exam* to request a make-up. You will not be allowed to make up the exam if you sleep through the scheduled time or forget.
- 2) We will schedule your make up exam to be held **after** the exam is held in class.
- 3) Your make up exam will consist of the written exam administered in my office **and an oral examination of your understanding of the course content.**

**All quizzes will be available online.** During Weeks 3-10, a quiz will open at 9 am each Monday and close at 11:59 pm the same day. Each quiz has five multiple choice/TF/short answer questions worth 2 pts each. Although you can start the quiz at any time, it will close automatically after 10 minutes. You may use notes, but factor in the time it will take to look up material when you have two minutes per question.

### **Office Hours**

Large courses with large sections make it difficult to learn. Small groups and peer instruction are preferred. So you will find office hours below for the instructor and all instructional assistants. Please make use of our time and knowledge. To incentivize office hours, you can earn up to 5 extra credit points (1 per visit). If you aren't sure how to use office hours, here are some suggestions:

- "I'm confused about topic X, can you go over it slowly?"
- "I don't understand these specific learning objectives."
- "How do you study for exams? How do you manage your time?"
- "Which classes/professors do you recommend?"
- Pathfinding questions, such as "How can I get into a research lab?" and career advice

**Cheating: Don't do it.** *I have and will continue to report every cheating incident to the Office of Academic Integrity once it comes to my attention.* Students often think they hurt no one but themselves when they cheat. You do hurt yourself, by not preparing yourself for exams and by not preparing your mind and defining your values before transitioning to the work force or professional school. You also hurt your classmates by devaluing the hard work they put into learning when you take a grade you haven't put equivalent effort into earning.

Students are expected to do their own work, as outlined in the UCSD Policy on Academic Integrity. **Academic misconduct** is broadly defined as any prohibited and dishonest means to receive course credit, a higher grade, or avoid a lower grade. Studying with others in advance of an assessment and requesting assistance from the instructors to prepare for assessments and to understand the homework assignments is not considered cheating. Giving or receiving answers to any graded assessment by any means (including use of contract cheating sites, such as Chegg and Course Hero) is considered cheating. Those caught cheating will be reported to the Academic Integrity Coordinator, which reports directly to the Dean of the student's college. For the Academic Integrity policy at UCSD, see here: <http://senate.ucsd.edu/Operating-Procedures/Senate-Manual/Appendices/2>

**What will be assessed?** All content presented in the lectures is fair game for quizzes and exams, and only content from lectures will be covered. Since the course presents foundational knowledge that will be useful/necessary for upper division biology courses, there will be some degree of 'recall' assessment. I aim, however, to write assessments that also ask you to apply and extend concepts to new scenarios. It is therefore in your best interest to approach this course with an effort to understand the content conceptually and not to simply memorize lectures.

**Textbook:** Campbell Biology is required. You will only be tested on information and concepts covered in lecture, but the book is highly likely to aid your learning. I am requiring the book this year in part because of a very helpful AI tool that will summarize content, answer questions, and produce questions to test your knowledge. You have access to Campbell Biology through Pearson, unless you 'opt out' (See Canvas Announcement on 4/3). You may also be able to find used physical copies of previous editions online or at the bookstore, and several copies of the texts are on reserve at Geisel Library. Older versions are similar, but not identical, and will still be a good resource at a lower price. The publisher of Campbell Biology also offers Mastering Biology. These supplemental materials may be useful to you, but they are NOT required.

### **Piazza**

This term we will be using Piazza for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and myself. Rather than emailing questions course logistics or content questions to the teaching staff, I encourage you to post your questions on Piazza. If you have any problems or feedback for the developers, email [team@piazza.com](mailto:team@piazza.com).

Find our class signup link at: [https://piazza.com/ucsd/spring2024/bild3\\_sp24\\_c00](https://piazza.com/ucsd/spring2024/bild3_sp24_c00)

**iClickers:** Beginning April 10<sup>th</sup>, we will be using iClicker Cloud so that I can assess your understanding in real time. You must use a physical iClicker. Register your iClicker using the link available on Canvas. Points are assigned per session attendance rather than per question so that I can use more or fewer questions as needed per lecture.

**OSD students:** If you need testing accommodation for this class, please work with the Office for Students with Disabilities (OSD). Students requesting accommodations and services due to a disability for this course need to provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD), prior to eligibility for requests. Receipt of AFAs in advance is necessary for appropriate planning for the provision of reasonable accommodations. OSD Academic Liaisons also need to receive current AFAs. For more information, contact the OSD at (858) 534.4382 (V); (858) 534-9709 (TTY); osd@ucsd.edu, or <http://osd.ucsd.edu>. **You will also need to coordinate scheduling of exams with me. All of these arrangements should be made within the first two weeks of the quarter.**

**COVID and other illness policies:** If you test positive for Covid during the quarter, please email the professor and follow the current campus guidelines for isolation and masking. Please recognize that these guidelines can change <https://blink.ucsd.edu/safety/resources/public-health/covid-19/index.html#If-You-Test-Positive-for-COVID-> For other illness(es), mask if you feel unwell and stay home if you have a fever. Lectures are podcasted and points are structured to allow you to miss things. Consider the grading structure like ‘sick leave’ in the work-world. You can skip things or drop a low grade for any reason, but you probably don’t want to use it up and then get sick because I only allow make up work when pre-arranged for an exam.

**Enrollment questions:** Administrative, advising, or registration questions should be submitted via the Virtual Advising Center ([vac.ucsd.edu](http://vac.ucsd.edu)).

**Situations arising:** If a serious medical or personal challenge arises during the quarter, the university does allow medical withdrawals. Contact the Biology Student Affairs Advising Services office at 858-534-0557 or go to their website (<http://biology.ucsd.edu/undergrad/advising-services.html>).

**Instructional Assistant Contacts and Office Hours**

<b>Name</b>	<b>Email</b>	<b>Office hours</b>
Ebony Argaez (Graduate IA)	<a href="mailto:eargaez@ucsd.edu">eargaez@ucsd.edu</a>	Monday 9 am outside Galbraith Wednesdays 12:00 outside Galbraith
Aishwarya Ramesh (UGIA)	<a href="mailto:airamesh@ucsd.edu">airamesh@ucsd.edu</a>	Tuesday 10-11 am at Art of Espresso
April Yang (UGIA)	<a href="mailto:ayyang@ucsd.edu">ayyang@ucsd.edu</a>	Monday 2 pm Coffee cart at Center Hall Friday 11 am outside Galbraith
Hani Kang (UGIA)	<a href="mailto:hskang@ucsd.edu">hskang@ucsd.edu</a>	Monday at 11 tables outside Galbraith Wednesday 4:30 at the Revelle Plaza coffee cart

**Section Activities**

<b>Week 1</b>	Syllabus scavenger hunt
<b>Week 2</b>	Selection activity
<b>Week 3</b>	Hardy Weinberg equilibrium
<b>Week 4</b>	Genetic drift activity
<b>Week 5</b>	Speciation activity
<b>Week 6</b>	Phylogenetic tree activity
<b>Week 7</b>	Jeopardy game
<b>Week 8</b>	Ecology worksheet activity
<b>Week 9</b>	Biodiversity project presentations
<b>Week 10</b>	Climate change activity

## Lecture Schedule

(The following is an estimation, and the timing will adjust as the course proceeds.)

Date	Lecture Topic	Textbook Sections Campbell 12 <sup>th</sup> Ed.
<b>April</b>		
1	1. Introduction and History of evolutionary thought, Part 1	22.1, 22.2
3	2. History of evolutionary thought, Part 2	
5	3. Fossil transitions, vestigial structures, and homology	22.3
8	4. Genotype/phenotype relationships	23.1
10	5. Types of Selection	23.4
12	6. Probability and Hardy-Weinberg	23.2
15	7. Hardy-Weinberg and effects of selection and fitness	23.2
17	8. Microevolution, genetic drift, and gene flow	23.3
19	9. Sexual selection and species concepts	24.1
22	10. Species concepts and speciation	24.2, 24.3
24	11. Phylogenetic trees	26.1, 26.2
26	12. Taxonomic groupings	26.3
29	<b>MIDTERM I on Lectures 1-Speciation</b>	
<b>May</b>		
1	13. History of life on Earth Part 1	25.1, 25.2
3	14. History of life of Earth Part 2	25.3, 25.4
6	15. Organismal diversity I (bacteria, archaea, protists)	27.3, 27.4, 28.1
8	16. Organismal diversity II (algae and plants)	28.4, 29.1-3, 30.1-3
10	17. Organismal diversity III (fungi and most inverts)	31.1, 31.4, 32, 33
13	18. Organismal diversity IV (deuterostomes to human evolution)	33.5
15		
17	19. Human evolution Part 2 and Intro to Ecology	34.7
20	20. Abiotic factors and biomes	52.1-4
22	<b>MIDTERM II on Trees – Human Evolution</b>	
24	21. Population ecology (life histories)	53.4
27	Memorial Day (no class)	
29	22. Population ecology (growth models)	53.1-3, 53.5-6
31	23. Community ecology (interspecies interactions)	54.1, 54.2
<b>June</b>		
3	24. Ecosystem ecology (production efficiencies)	55.1-3
5	25. Ecosystem ecology (nutrient cycles and climate change)	55.4
7	26. Loss of biodiversity and conservation	56
10	<b>(8-11 AM) Non-cumulative Exam on Ecology (Lectures 19-26)</b>	