

BILD 3 – ORGANISMIC AND EVOLUTIONARY BIOLOGY

WINTER 2024

Professor: Dr. LaTisha Hammond (she/her)

Email: lhammond@ucsd.edu

Office Hours: F 10am - 12pm (Zoom only), or by appointment.

Schedule here: <https://calendly.com/lhammond8/office-hours> (Zoom info on Canvas)

Office: HSS 8089

Class Times:

T/Th, 2:00 – 3:20pm

Class location: JEANN AUD

Graduate IA: Xinyu (Mary) Lin

UGIAs: Amruth Chilukuri, Karleen Guerrero, Sarah Huynh, Ferg Schwartz

COURSE DESCRIPTION

BILD 3 is an introduction to the biological fields of evolution and ecology. Evolution is the study of how populations of living organisms change over time. Ecology is the study of the relationships between living organisms and their environment. To best understand why there are so many different kinds of living things and their myriad of complex interactions, we will study evolution and evolutionary processes. We will also focus on organismal diversity and the importance of a general understanding of these topics within biology so as to be better stewards of the earth's biota. We will also discuss human impacts on global climates, species extinctions, environmental alterations, and the role of conservation.

COURSE OBJECTIVES AND LEARNING OUTCOMES:

By the end of this course, students will:

- Explain how the processes of natural selection and evolution work, including the roles of mutation, genetic drift, and gene flow.
- Explain how evolutionary processes such as natural selection, sexual selection, gene flow, and chance events (mutation, genetic drift) change allele frequencies and phenotypes over time.
- Interpret evolutionary trees to determine homology, derived traits, common ancestors, and relationships between taxa.
- Identify the relative order of, and approximate elapsed time between, major events in earth's history, including the origin of the earth and of major taxonomic groups.
- Explain the processes by which new species arise and the mechanisms of reproductive isolation.
- Describe the evolution of *Homo sapiens*, including anatomical differences from our ancestors and our evolutionary relationship with non-human primate species.
- Identify the evolutionary relationships among the 3 domains of life: Archaea, Bacteria, and Eukaryota.
- Compare and contrast animals, plants, and fungi, including their adaptations, ecological roles, and evolutionary relationships.
- Identify the major phyla of animals and major plant groups based on their characteristics.
- Describe the ecological roles of producers, consumers, and decomposers and how they interact in a food chain/web
- Describe how energy flows, and nutrients cycle, within ecosystems.
- Explain how species in an ecological community interact with one other and their environments.
- Describe factors that produce different population growth patterns.
- Describe the causes and major consequences of global climate change.

COURSE FORMAT

This **lecture will be held in person**, with podcasting available. Each week lecture content will be posted on scheduled class days, along with required readings, and other key information. I will provide you general timelines on when things should be completed.

The **discussion sections are mandatory and will be remote**. During the discussion sessions, we will have short discussions, content exercises and assignments, and collaborative group work.

ASSESSMENT OF LEARNING

1. Attendance, Participation, and Collaborative Group Work (70 pts, 10 pts each)

Attendance and participation in the course are highly valued, as they will give you opportunities to discuss and work through the various concepts we will cover. You will regularly work collaboratively with others in discussion section for the purposes of sharing knowledge, discussing and making sense of the information, and developing problem-solving skills as you apply your knowledge.

2. Discussion Assignments (75 pts, 15 pts each)

There will be 6 assignments to complete. These assignments will be assessments of discussion section learning exercises. The lowest assignment grade will be dropped.

3. Quizzes (100 pts, 25 pts each)

There will be nearly weekly quizzes to assess your understanding of the lecture material and textbook readings as we move through the quarter, while also giving your practice with solving authentic biological problems. Each quiz will cover the lecture material since the last quiz (so, roughly two weeks of material each quiz). There will be a total of 5 quizzes, and your lowest scoring quiz will be dropped. Additionally, **you will be able to retake each quiz one time if you are not satisfied with your score on the first attempt**. The highest score will be taken.

4. Reflection Journals (30 pts, 10 pts each)

Throughout the quarter you will complete 3 assignments in which you will reflect on your learning. These assignments will take the form of reflective journaling. The purpose of these journals is to help you think about what you are learning, how you are learning, and how to improve your learning.

5. Midterm (100 pts)

There will be one midterm to assess your understanding of the core biological concepts we have covered up until that point in the quarter, and to determine how well you can apply those concepts and principles to novel biological problems and scenarios. **Also, you will take this midterm twice – once by yourself, and again with a small group of peers in your discussion section. Your final midterm grade will be an average of your individual score and the group score.** Note: if your individual score is higher than the group score, you will simply receive your individual score. If your individual score is lower than the group score, your final midterm score will be an average of the two.

6. Final Exam (100 pts)

There will be one final exam **that will cover all the information after the midterm**, to assess your understanding of the core biological concepts we have covered, and to determine how well you can apply those concepts and principles to novel biological problems and scenarios.

How will you succeed in this course?

Everyone has the ability to succeed in this course. The key comes down to preparation, participation, and communication.

Preparation – The course requires that you do the assigned readings BEFORE you view lectures and attend discussion section. You will often find yourself reading about the topic BEFORE we talk about it in the week's assigned lecture material. *This is intentional*. The purpose is to give you some time to begin familiarizing yourself with the material before you view the lectures, and before you participate in the discussion section activities. This also allows you to make note of questions you have from the readings, and can help focus your attention during the lectures and discussion section activities.

Participation – The course requires your regular, active participation for the purpose of learning. As you will regularly be working in collaborative groups to complete activities in discussion section, the more you are prepared, and the more you are willing to participate and contribute to the group learning experience, the more likely you are to succeed. Also, as you will often be working in groups, please remember to be respectful. Get to know each other. Be patient with each other. You are all on the learning journey together, so ask questions of each other, and help each other as best as you can. It is inevitable that you all will have some overlapping strengths, but also some differing strengths that can provide unique perspectives as you work together to complete activities and solve problems.

Communication – It can be challenging to speak up and ask questions in class, but please do so. Often, the question you have is similar to questions that others have, so asking the question often benefits everyone. Asking questions also helps the learning team get a sense of what you understand and what is not clear. Additionally, we are happy to take questions, via email, or during virtual office hours. If you start this habit early in the quarter, then we will be able to identify what challenges you are having and be better positioned to help you succeed in the course.

Evaluation of Learning

Your final letter grade will be based on your **TOTAL** number of points. If you get over 90% of the points you will receive an A, over 80% you will receive at least a B, etc. For those taking the class pass/no pass (P/NP), the minimum final grade to receive a grade of P is a C-. Please note that the University will not allow us to change a letter grade after it has been turned in except in cases of clerical error.

Attendance, Participation, and collaborative group work (70 pts)

Discussion section assignments (75 pts)

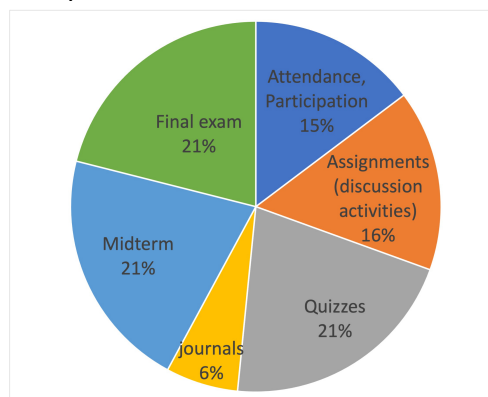
Quizzes (100 pts)

Reflection Journals (30pts)

Midterm (100 pts)

Final exam (100 pts)

Total: 475 pts



Your final letter grade will be based on the following breakdown:

- 90%+ A-/A
- 80%+ B-/B/B+
- 70%+ C-/C/C+
- 60%+ D
- <60% F

COURSE MATERIALS

Texts, Readings, and other materials

The format of the class will mainly be lecture with group discussions and will require you to have some familiarity with the material being covered that day. As such, assigned readings and viewings should be completed BEFORE class. The textbook for the course is required; it makes a great supplement to the material we cover in lecture and discussion.

Textbook

OpenStax Biology 2e (OER ebook)

OR

(Optional): Campbell Biology, 12th edition (ebook), or Campbell Biology, 11th edition.

Note: Campbell, 12th ed. is on course reserves

Technology requirements and platforms

Canvas: <https://Canvas.UCSD.edu/>. All assignments, quizzes, and exams will be posted, and must be submitted through Canvas. Assessments of learning and grades will also be posted on Canvas only.

Mentimeter.com: used for in-class polls, surveys, word clouds, etc. Can be accessed with internet on your phone, laptop, or tablet. All access codes will be given each day during lecture.

COURSE POLICIES

Attendance and Participation

Attendance in discussion section is required. If you must miss section due to an existing conflict (religious observances, university athletics, university performances, etc.) you must let your IA know well in advance. These absences will be excused as long as documentation is provided. Medical or family emergencies will also be excused. Otherwise, the absence will be unexcused. You have one (1) free unexcused absence that will not count toward participation. Absences after any excused absences and your free absence will need to be discussed with your IA and me. Overall, you can't receive participation points when you aren't there to participate.

Assignments and Exams

Unless I state otherwise, all assignments should be typed. All assignments should be submitted, via Canvas, by the due date. **Late assignments (discussion section assignments and journals) will be accepted for full credit up until the end of week 9.** The purpose of the assignments is to give you practice and additional exposure to the content to aid in your learning, and they coincide with the timing of course topics. So, it is in your best interest to submit your assignments by the due date, especially so you can receive important feedback about your understanding and progress. However, life happens and issues arise (whether it be issues pertaining to physical health, mental health, emotional health, work schedules, caregiving responsibilities, etc.), and sometimes it isn't possible to

get work in by the due date. Therefore, points won't be deducted for late work. However, because there is a fair amount of grading that takes place in this course, late work will take longer to be returned to you, as other on-time work is graded with the pace of course content to provide timely feedback. Also, late work is less likely to receive detailed feedback given the bulk of grading for the course, and out of respect for IAs, given their own workloads. So, please be aware of this when you need to submit late work.

All quizzes, on the other hand, must be turned in by the due date and will not be accepted if late. Additionally, the midterm must be turned in by the due date because you will be taking it twice, and you cannot participate in the group portion without completing the individual portion (see "Assessment of Learning" for further explanation).

Make-up assignments won't be given because you have until the end of week 9 (that Friday, by 11:59pm PT) to submit assignments. **Make-up Quizzes and Make-up Exams** can only be considered for emergencies or university-approved absences, both of which will require documentation. In the case of university-approved activities, documentation will need to be presented to the instructor *well in advance* of scheduled exam date so that an alternative date *before the actual exam date* can be scheduled. **No exceptions can be made for the Final Exam** given that faculty have a tight turnaround for completing grading and submitting final grades by the university-mandated deadline.

Assignment Collaboration Policy and Academic Integrity

Discussing course material and forming study groups is encouraged. Working with other students while you complete your assignments in a study capacity is also ok. **HOWEVER, all work that is turned in should be of individual effort, meaning that all submitted work should be in your own words of your own effort.** Assignments demonstrating improper or excess collaboration may result in Integrity Code violation charges (see below in UC San Diego Policy on Integrity of Scholarship) and zero credit. The minimum penalty for academic dishonesty is to receive a zero on the assignment. Collaboration on exams (in class and take home) is not allowed. Academic dishonesty on an exam will result in receiving a zero on the exam. Major offenses will result in a failure of the course.

Communication

Communicating with the instructional team

Communicating with us is very important. Please utilize office hours. If you absolutely cannot make those times, please email your IA or me so an alternate time can be set up (this may include attending the office hours of another IA). However, attending office hours is suggested and preferred. Should you need to email questions and cannot attend office hours, **please email your IA first.** If the question cannot be answered by your IA, or the head IA, then they will forward the email to me. Alternatively, you can email me, **but it must include the previous email chain from the IAs.** I will respond to emails by 4pm, M-F. Emails received after that time will be responded to the following weekday unless otherwise stated by me. I am not available for immediate responses late in the evenings or on weekends unless otherwise stated. In terms of email conduct, emails should be polite and professional, with proper salutations (e.g. Dear Dr. Hammond or Hi Prof. Hammond), and with your name at the end. **Please include "BILD 3" and your section number in the subject line when emailing us.**

****Note:** Additionally, if you are having issues in the course, struggling with the material, have extenuating circumstances that are impacting your participation and effort in the class, the earlier you

reach out to us, the more likely we will be able to figure out a solution. Please don't wait until the last minute to seek assistance, as it is very difficult to determine solutions at that point.

Instructor communications with you

Whole-class announcements will be made via Canvas, so please check Canvas regularly for these announcements. Urgent class announcements will be sent directly to your UCSD email address.

Wait list: If you are on the wait list for this class you will be automatically added if space becomes available. If you have any concerns, please contact the Biology Student Affairs Advising Services office at 858-534-0557 or go to their website (<http://biology.ucsd.edu/education/undergrad/advising/index.html>). Please do not ask IAs to add you to their section; they do not have any control over this process.

Diversity, Equity, Inclusion, and Justice Statement

Equity and justice provide the foundation for everything I do, from what I teach, how I teach, and how I move through the world. It is of utmost importance to me to ensure that the classroom space (in person and online) is one that fosters open, equitable, and safe dialogue and discussion. A diversity of perspectives and voices is critical to learning and living. Also, differing intersectional identities and privileges impact the learning space, and the discussions and collaborations that happen within. Given this, it is important to me to ensure there is equity in our learning spaces. Disagreements may arise and are sometimes necessary. However, not all disagreements are grounded in equity and thus, not entitled to the class space. As Robert Jones Jr. says: *"We can disagree and still love each other unless your disagreement is rooted in my oppression and denial of my humanity and right to exist."* As such, I feel it is imperative to ensure that what happens in the classroom (in-person and virtually) supports diversity and minoritized identities, voices, and experiences, and that the class activities are not at the expense of anyone in the space.

****Please note:** This syllabus is subject to change, particularly because of COVID-19. Any schedule changes will be posted on Canvas. Make sure to frequently check Canvas to keep updated.

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](#)

Accessibility

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.

<http://disabilities.ucsd.edu>, osd@ucsd.edu, 858-534-4382

Resources for Support and Learning

<p>Learning and Academic Support</p>	
<p><u>Ask a Librarian: Library Support</u> <i>Chat or make an appointment with a librarian to focus on your research needs</i></p> <p><u>Course Reserves, Connecting from Off-Campus and Research Support</u> <i>Find supplemental course materials</i></p> <p><u>First Gen Student Success Coaching Program</u> <i>Peer mentor program that provides students with information, resources, and support in meeting their goals</i></p> <p><u>Office of Academic Support & Instructional Services (OASIS)</u> <i>Intellectual and personal development support</i></p>	<p><u>Writing Hub Services in the Teaching + Learning Commons</u> <i>One-on-one online writing tutoring and workshops on key writing topics</i></p> <p><u>Supplemental Instruction</u> <i>Peer-assisted study sessions through the Academic Achievement Hub to improve success in historically challenging courses</i></p> <p><u>Tutoring – Content</u> <i>Drop-in and online tutoring through the Academic Achievement Hub</i></p> <p><u>Tutoring – Learning Strategies</u> <i>Address learning challenges with a metacognitive approach</i></p>
<p>Support for Well-being and Inclusion</p>	
<p><u>Basic Needs at UCSD</u> <i>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</i></p> <p><u>Counseling and Psychological Services</u> <i>Confidential counseling and consultations for psychiatric service and mental health programming</i></p> <p><u>Triton Concern Line</u> <i>Report students of concern: (858) 246-1111</i></p> <p><u>Office for Students with Disabilities (OSD)</u> <i>Supports students with disabilities and accessibility across campus</i></p>	<p><u>Community and Resource Centers Office of Equity, Diversity, and Inclusion</u> <i>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</i></p> <p><u>Get Involved</u> <i>Student organizations, clubs, service opportunities, and many other ways to connect with others on campus</i></p> <p><u>Undocumented Student Services</u> <i>Programs and services are designed to help students overcome obstacles that arise from their immigration status and support them through personal and academic excellence</i></p>

SCHEDULE OF LECTURES, ASSIGNMENTS, QUIZZES, READINGS: (schedule is subject to change)

W	Day	Dates	Topic	Readings: Campbell chapters	Readings: OpenStax chapters
1	T	Jan. 9	Introduction; Course logistics; History of evolutionary thought	Read the Syllabus	Read the Syllabus
	R	Jan. 11	Natural Selection pt.1	22.1 (optional)	
2	T	Jan. 16	Evidence of evolution *Due: Journal 1 by Monday, end of day 11:59pm PT	22.2, 22.3	18.1
	R	Jan. 18	Genetics of populations	23.1, 23.2	19.1
3	T	Jan. 23	Genetics of populations *Due: Quiz 1 by Monday, end of day 11:59pm PT	23.3	19.2
	R	Jan. 15	Natural selection pt. 2; Sexual Selection	23.4	19.3
4	T	Jan. 30	Phylogenetic trees *Due: Quiz 2 – by Monday, end of day 11:59pm PT	26.1, 26.2, 26.3	20.1, 20.2
	R	Feb. 1	Species and speciation	24.1, 24.2	18
5	T	Feb. 6	History of life on Earth *Due: Quiz 3 – Monday, end of day 11:59pm PT	24.3, 24.4	
	R	Feb. 8	Human evolution	25	47.1
6	T	Feb. 13	**MIDTERM** (Exam opens Wednesday at 4pm, due by Friday end of day 11:59pm)		
	R	Feb. 15	Organismal diversity (bacteria, archaea, protists)	34.7	29.7
7	T	Feb. 20	Organismal diversity (plants, fungi) *Due: Journal 2 by Monday, end of day 11:59pm PT	27-29	22, 23
	R	Feb. 22	Organismal diversity (animals: invertebrates, vertebrates)	30, 31	24.1, 24.2, 24.3
8	T	Feb. 27	NO CLASS *Due: Quiz 4 – by Monday, end of day 11:59pm PT	32-34	27-29
	R	Feb. 29	Population ecology	52, 53	44.1- 44.4
9	T	Mar. 5	Population ecology, Community ecology *Due: Quiz 5 – by Monday, end of day 11:59pm PT	54	
	R	Mar. 7	Community ecology, Ecosystem ecology	55, 56	45
10	T	Mar. 12	Global change *Due: Journal 3 by Monday, end of day 11:59pm PT		46
	R	Mar. 14	Global change		44.5
	R	Mar. 21	**Final Exam, due by 6pm PST** (exam will open on Tuesday, Mar. 19 at 3pm in Canvas)		

DISCUSSION SECTION SCHEDULE

Week	Topic/Activity
1	Introduction to Discussion; Q&A
2	Population genetics exercise
3	Genetic drift exercise
4	Phylogenetics exercise
5	Group midterm
6	*NO discussion this week

*Syllabus is subject to change

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7	Biodiversity exercise
8	*NO discussion this week
9	Food Web exercise; Ecology reading discussion
10	Global Change reading discussion

Section	Day	Time	IA	Section locations
TBD				