Course	EE BIOL C177	Instructor	Chuliang Song
Lecture Location	W.G. Young Hall CS76	Lecture Time	Tuesday & Thursday, 10:00–10:50 AM
Office Hours	Tuesday, 3:30–4:30 PM Botany Building 210H	Email	chuliang.song@ucla.edu
Teaching Assistant	Zhiru Guoli		
Lab 1A (C177)	Wednesdays, 12:00–12:50 PM, Public Affairs Building 2317		
Lab 1B (C177)	Wednesdays, 1:00–1:50 PM, Public Affairs Building 2317		
Course Website	https://clsong.github.io/EEB_C234/		

Course Description

Computational skills are essential for answering ecological and evolutionary questions with data. This course teaches you to build a complete, reproducible workflow: import and organize biological datasets, explore patterns, create effective figures, and communicate findings in a scientific report. Using R, the tidyverse, ggplot2, and Quarto, you will develop the judgment to choose appropriate tools, diagnose errors, and explain what your results support. Guided exercises and an independent project connect these skills to research practice, while critical evaluation of AI assistance keeps you responsible for the scientific reasoning behind your work.

Learning Outcomes

By the end of the course, you should be able to:

- Write, run, and debug R scripts using vectors, data frames, and functions.
- Import, clean, join, summarize, and reshape biological data with the tidyverse.
- Choose suitable plots and create readable, informative figures with ggplot2.
- Explain what an analysis supports and identify limitations or confounding factors.
- Produce a Quarto report integrating code, figures, interpretation, and citations.
- Check computational results and critically evaluate AI assistance.

Preparation and Practice

Prior R experience is helpful but is not assumed. Bring a laptop to class and follow the software setup guidance in the course notes. The course website above is the primary source for lecture notes, exercises, and assignment instructions. Practice in short sessions, run the examples yourself, and start graded work early.

Course Schedule

This tentative plan groups the current lecture chapters into a ten-week sequence. Read the relevant notes and complete the accompanying exercises each week. Topic pacing may change; check the course website for updates.

Week	Class dates	Topics and chapter numbers
0	Sep 24	Course introduction; software setup and workflow (1).
1	Sep 29, Oct 1	R basics and data structures (2–3).
2	Oct 6, 8	Grammar of graphics, plot organization, and figure design (4–6).

Week	Class dates	Topics and chapter numbers
3	Oct 13, 15	R Projects and scripts, data manipulation, reshaping, and import (7–10). **PSet 1 released Oct 13.**
4	Oct 20, 22	Amounts, distributions, and trends (11–13). **PSet 1 due Oct 25.**
5	Oct 27, 29	Associations, other plot types, color, and advanced figures (14–17).
6	Nov 3, 5	Quarto and scholarly writing (18–19). **PSet 2 released Nov 3.**
7	Nov 10, 12	Vectorization, nested data, and functions (20–22). **PSet 2 due Nov 15.**
8	Nov 17, 19	Iteration, faster code, and simulation (23–25). **Final project released Nov 17.**
9	Nov 24	Local AI and GitHub workflows (26–27). **No class Nov 26 for Thanksgiving.**
10	Dec 1, 3	Agentic AI and verification (28); project troubleshooting and synthesis.
Final	Sun Dec 6	**Final project due at 11:59 PM Pacific Time.**

Academic calendar

UCLA instruction begins September 24 and ends December 4. Thanksgiving is November 26–27. The final examination period is December 7–11.

`UCLA Registrar · Annual Academic Calendar 2026–27`

Assignments and Grading

Your grade comes from two problem sets and a final project. Weekly practice is ungraded and prepares you for these assessments.

Assessment	Weight	Released	Due
Problem Set 1	**30%**	Tue Oct 13	Sun Oct 25
Problem Set 2	**30%**	Tue Nov 3	Sun Nov 15
Final project	**40%**	Tue Nov 17	Sun Dec 6

All graded work is due at 11:59 PM Pacific Time. Each component is scored out of 100; the overall percentage is 0.30 × PSet 1 + 0.30 × PSet 2 + 0.40 × final project.

The problem sets develop data visualization and data-wrangling skills. The final project brings these skills together in a reproducible analysis of a biological question. Detailed instructions, submission requirements, and rubrics are provided on the course website.

Policies and Support

Participation and communication

Bring your laptop and work through the class examples. Check the website regularly and use office hours for questions and debugging. When asking for help, include a small code example, the error message, and the result you expected. Email the instructor if a technical or access problem prevents participation.

Collaboration and academic integrity
You may discuss concepts and approaches with classmates, but each student must write and understand the work they submit. Acknowledge substantive help and cite reused code and data. Do not submit another person's solution or fabricate data, results, or references. Follow UCLA's applicable academic integrity rules.

AI assistance
AI tools may help you understand course materials, lecture examples, and concepts. **Do not use AI for either problem set or the final project**, including assignment-related coding, debugging, analysis, figures, or writing.

Submission and extensions
Submit both problem sets and the final project on Bruin Learn. Follow the submission requirements in each assignment. Check that scripts run and reports render using the files in your submitted folder. Any extension or late-work rules will be specified with the assignments.

Accessibility and a respectful classroom
Students who need disability-related academic accommodations should register with UCLA's Center for Accessible Education (CAE). If already registered, request your Letter of Accommodation through the CAE Student Portal. Start early and contact the instructor to coordinate approved accommodations. CAE is in A255 Murphy Hall; telephone (310) 825-1501.

Treat classmates respectfully and give constructive feedback. Contact the instructor about barriers to software, equipment, or materials.