EEB 201: Introduction to R for Ecology and Evolutionary Biology
Wednesdays 9-9:50am, La Kretz Hall 101

Instructor:
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Office: Botany 110D
Office Hours: Monday 3:30-4:30pm

Course Communication:

- Our private Slack channel within the UCLA Campus Community Workspace will be the primary form of communication for the course (#eeb201-fall2025).
- The course website is on GitHub: https://github.com/stepfanie-aguillon/eeb201-R-course

Course Description:

From data analysis to visualization to simulations, coding has become essential to communicate scientific research. This course introduces students to reproducible and collaborative coding practices in the R programming language. It is specifically designed with EEB graduate students in mind, with the goal of building good coding practices for your independent data analysis needs. So, no prior coding experience is required!

We will emphasize hands-on skill development primarily using `tidyverse` R packages, which allow you to explore data and create compelling figures. Additionally, we will implement version control using GitHub and Quarto throughout the course. Upon completion of this course, you will have a solid foundation in R programming to build upon during your graduate research.

Learning Outcomes:

- Demonstrate best practices for coding and reproducibility in R
- Become comfortable using Quarto documents and version control in RStudio
- Import and tidy complex datasets using the `tidyverse`
- Create compelling visuals using `ggplot2`
- Write simple functions and other code to automate repeated analyses

Tentative Schedule:

Week	Date	Topic
1	10/1	Introduction to RStudio and GitHub
2	10/8	Making figures with `ggplot2`
3	10/15	Data types and structures
4	10/22	Data wrangling with `dplyr` part 1
5	10/29	Data wrangling with `dplyr` part 2
6	11/5	Solving problems and getting help
7	11/12	Tidy data and data joins
8	11/19	Strings, factors, and dates
9	11/26	Design principles for making figures
10	12/3	Iterations, conditionals, and functions

Course Format and Grading:

Each lecture will introduce a new topic and provide time for hands-on practice. These topics will be paired with short, required pre-class reading assignments (so we can make the most of our in-class time) and a post-class problem set (to allow you to apply the concepts learned). Problem sets will be due the following **Wednesday at 10pm.**

This course is graded on an S/U basis. For a grade of "satisfactory," students are expected **to attend 9 of 10 lectures** and **submit 7 of 10 problem sets on time**. As I am most interested in you practicing coding skills, problem sets will not be graded on "correctness," but instead on if you demonstrated an effort in completing all questions. If you need to miss a class or are unable to submit a problem set on time, please message Stepfanie at least 24 hours in advance.

The most important way to acquire coding skills is to practice, practice, practice. Thus, the course is designed to give you ample opportunity to implement your coding skills in a variety of ways. I ask that you do your best to keep up with course material, as weekly concepts will build upon each other making it increasingly difficult to catch up if you fall behind.

Use of LLMs/AI:

Large language models (LLMs) and generative AI now seem to be everywhere in coding. Yet, these tools can easily be used to replace your own critical thinking and impede (rather than promote) your development. **As the goal of our course is for you to practice your coding skills and build a solid foundation in R programming, I ask that you do not use LLMs/AI for any aspect of this course.** This includes ChatGPT, Claude, GitHub CoPilot, Bard, DeepSeek, and any others I have not named. I want you to come out of this course feeling confident that you can rise to any and all coding challenges that you will face during your academic career and that is not possible if you are reliant upon LLMs/AI when building the foundation of your coding skills. **If you feel you are unable to follow this guidance, then I ask that you reconsider taking this course at this time.**

Course Materials:

This course requires access to a laptop during each class session and for problem sets. If you do not have access to your own laptop, you should plan to borrow one from the library.

All course readings will be from freely available online sources. In particular, we will draw heavily from R for Data Science, ggplot2: Elegant Graphics for Data Analysis, and the Data Analysis and Visualization in R for Ecologists Data Carpentry course. Similar courses, by Jenny Bryan (STAT 545) and Nina Therkildsen (NTRES 6100) are also great resources and have been used to develop content for this course.

Installation Guide:

It's crucial that you come to the first class with all required software installed on the laptop you will be using for this course! Please follow this installation guide: https://github.com/stepfanie-aguillon/eeb201-R-course/blob/main/install-guide.md.

Message about Academic Integrity to all UCLA Students from UCLA Dean of Students: UCLA is a community of scholars. In this community, all members including faculty, staff and students alike are responsible for maintaining standards of academic honesty. As a student and member of the University community, you are here to get an education and are, therefore, expected to demonstrate integrity in your academic endeavors. You are evaluated on your own merits. Cheating, plagiarism, collaborative work, multiple submissions without the permission of the professor, or other kinds of academic dishonesty are considered unacceptable behavior and will result in formal disciplinary proceedings usually resulting in **suspension** or **dismissal**.

Forms of Academic Dishonesty: As specified in the UCLA Student Conduct Code, violations or attempted violations of academic dishonesty include, but are not limited to, cheating, fabrication, plagiarism, multiple submissions or facilitating academic dishonesty:

Cheating: Unauthorized acquiring of knowledge of an examination or part of an examination

- Allowing another person to take a quiz, exam, or similar evaluation for you
- Using unauthorized material, information, or study aids in any academic exercise or examination – textbook, notes, formula list, calculator, etc.
- Unauthorized collaboration in providing or requesting assistance, such as sharing information
- Unauthorized use of someone else's data in completing a computer exercise
- Altering a graded exam or assignment and requesting that it be regraded

Plagiarism: Presenting another's words or ideas as if they were one's own

- Submitting as your own through purchase or otherwise, part of or an entire work produced verbatim by someone else
- Paraphrasing ideas, data or writing without properly acknowledging the source
- Unauthorized transfer and use of someone else's computer file as your own
- Unauthorized use of someone else's data in completing a computer exercise

Multiple Submissions: Submitting the same work (with exact or similar content) in more than one class without permission from the instructor to do so. This includes courses you are currently taking, as well as courses you might take in another quarter

Facilitating Academic Dishonesty: Participating in any action that compromises the integrity if the academic standards of the University; assisting another to commit an act of academic dishonesty

- Taking a quiz, exam, or similar evaluation in place of another person
- Allowing another student to copy from you
- Providing material or other information to another student with knowledge that such assistance could be used in any of the violations stated above (e.g., giving test information to students in other discussion sections of the same course)

Fabrication: Falsification or invention of any information in an academic exercise

- Altering data to support research
- Presenting results from research that was not performed
- Crediting source material that was not used for research