about this course // syllabus

See the schedule for topics by week and links to slides.

Description of the course

This two-quarter graduate course aims to provide students with an understanding of the core concepts and approaches for the analysis of biological data, particularly large data sets. This is meant as a first, foundational course for graduate students. It is advanced in that we will move through the material quickly with the goal of covering all major topics in univariate data analysis, forming a foundation for subsequent learning. Students will learn to use the powerful statistical programming language R, and the flexible modeling package Stan.

Instructors:

- Peter Ralph, plr@uoregon.edu
  - office hours: Monday 2-3pm or by appointment, 270 Onyx Bridge
- Bill Cresko, wcresko@uoregon.edu
  - office hours: TBA or by appointment, 312 Pacific Hall
- Matt Lukac, mlukac@uoregon.edu
  - office hours: TBA or by appointment, 270 Onyx Bridge

Course Information

- *Schedule:* Tue/Thur 10:00 AM - 11:50 AM, 40 Science Library
- *Websites:* besides the page you are looking at, assignments and announcements will be distributed on the Bi 610 canvas page

Textbooks

- Kruschke, J. 2018. *Doing Bayesian Data Analysis, 2nd ed.* Academic Press. (website with data and code)
- Wickham, H. & G. Grolemund. 2016. *R for Data Science.* O'Reilly Publishers. (web version)
- Quinn, G. & M. Keough. 2002. *Experimental Design and Data Analysis for Biologists.* Cambridge Univ. Press.

- Logan, M. 2010. *Biostatistical Design and Analysis Using R.* Wiley-Blackwell.
- *(recommended)* Wickham, H. 2009. *GGPlot2: Elegant Graphics for Data Analysis.* Springer. (text on github)
- *(recommended)* Haddock, S. and C. Dunn. 2011. *Practical Computing for Biologists.* Sinauer and Associates.
- *(recommended)* Logan, M. 2010. *Biostatistical Design and Analysis Using R.* Wiley-Blackwell.

Software:

- Latest version of R (install here)
- A working version of RStan
- An R scripting environment such as RStudio & TextWrangler (free version of BBEdit)
- Git and a GitHub account
- A good code editor like Atom

Prerequisites:

None, but students should be comfortable with algebra and the basics of calculus, and either have some experience with programming or be ready to jump in with both feet.

Inclusion and accessibility

Please tell us your preferred pronouns and/or name, especially if it differs from the class roster. We take seriously our responsibility to create inclusive learning environments. Please notify us if there are aspects of the instruction or design of this course that result in barriers to your participation! You are also encouraged to contact the Accessible Education Center in 164 Oregon Hall at 541-346-1155 or uoaec@uoregon.edu.

We are committed to making our classroom an inclusive and respectful learning space. Being respectful includes using preferred pronouns for your classmates. Your classmates come from a diverse set of backgrounds and experiences; please avoid assumptions or stereotypes, and aim for inclusivity. Let us know if there are classroom dynamics that impede your (or someone else's) full engagement.

Please see this page for more information on campus resources, academic integrity, discrimination, and harassment (and reporting of it).