

FISH 554 Beautiful Graphics in R

Learn how to create beautiful graphics in R using ggplot. The course covers the theory of visualization, examines what makes a good and a bad graphic, and teaches students how to translate their data into publication quality graphics. Participants should have taken FISH552 Introduction to R Programming and FISH553 Advanced R Programming (or have equivalent R programming experience), or should correspond with the instructor to obtain permission.

Instructor: Trevor A. Branch, FSH322B, tbranch@uw.edu

Class location: FSH136

Lectures: Monday 11:30-1:20pm.

Office hours: after the lecture in the small seminar room down the hallway, or as needed by appointment

Credits: 2, CR/NC

LECTURE PLAN

Week 1: Graphical principles, the data:ink ratio, introduction to R and RStudio, basic plots in ggplot; reading in data from csv files.

Week 2: More advanced plots, customization of plots.

Week 3: NO LECTURE, Martin Luther King Junior Day.

Week 4: Simple multipanel plots, small multiples.

Week 5: Advanced multipanel plots differing in size and location, using cowplot and patchwork.

Week 6: Colors, palettes, custom palettes, transparent colors; graphical output types (.pdf, .png, .tiff); customizing plots for journals and presentations.

Week 7: NO LECTURE, Presidents' Day.

Week 8: Tips for preparing tables; including mathematical expressions, subscripts, superscripts in plots; customizing legends, axes labels; adding text annotations.

Week 9: Creating maps; adding figures and annotations to maps.

Week 10: Animated gifs and videos. Complete **draft project figures (all four figures)** in class **Monday 9 March** for small-group peer-review.

Week 11: Exam week **11:30am-1:20pm Monday 16 March** PowerPoint presentation to entire class of **two best figures**. Electronic hand in of this PowerPoint figure is

due **Sunday 5pm on 15 March**, to allow time to compile all the presentations into one file for class.

5pm Friday 20 March, electronic hand in of **final four figures** in pdf form, including complete captions for all figures.

GRADING

This class is intended to provide useful skills for your ongoing research. It is a 2-credit class that is graded pass/fail. Given the limited in-class time, I expect active participation in all lectures. Credit is awarded when your four draft figures have been peer-reviewed, your two best figures have been presented in class, and your four final figures have been handed in electronically.

NOTES

1. I will hand out hard copies of the pdf handout at the start of each lecture (there is no need to print them out).
2. This course involves a considerable amount of programming in R. You should already be familiar with data structures, for-loops, creating functions, and basic plotting. I'll give a basic review in Lecture 1. If the first lecture leaves you feeling completely lost, you will struggle in the class and should consider withdrawing, taking a course in R (e.g. FISH552 and FISH553) and signing up the following year.
3. The class is intended to help students to create complex, beautiful, publication-quality figures from your graduate work. Students in their second or later year of graduate school who are preparing papers for publication will benefit most from this class. You need to have one or more datasets available to analyze; if you do not, you should ask your advisor for a suitable dataset for plotting.

ACADEMIC INTEGRITY

Plagiarism, cheating, and other misconduct are serious violations of your contract as a student. I expect that you will know and follow the University's policies on cheating and plagiarism. Any suspected cases of academic misconduct will be handled according to University regulations. More information can be found at: <https://depts.washington.edu/grading/pdf/AcademicResponsibility.pdf>

For this course, plagiarism is defined as figures and legends that are identical or eerily similar to those of other students. You should absolutely work together, get advice and tips from other students, and help each other (this is the essence of being a successful and helpful scientist), but the final project must be your own work.

RELIGIOUS ACCOMMODATION POLICY

Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW's policy, including more information about how to request an accommodation, is available at [Religious Accommodations Policy](#). Accommodations

must be requested within the first two weeks of this course using the [Religious Accommodations Request form](#).