

Course Syllabus

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Learn how to create beautiful graphics in R. 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, have equivalent R programming experience, or may request permission from the instructor.

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

Instructor website: <http://www.fish.washington.edu/people/branch/index.html> (<http://www.fish.washington.edu/people/branch/index.html>)

Class location: FSH136

Lectures: Monday 9:30-11:20pm.

Office hours: after the lecture in the small seminar room down the hallway

Credits: 2, CR/NC

LECTURE PLAN

Week 1: Edward Tufte, the data:ink ratio, introduction to RStudio, recap of R, basic plots in R: plot, barplot, hist, boxplot, pie, image; reading in data from csv files.

Week 2: reading in data; customizing graphics with “par”; bubbleplots; empty plots; points, lines, arrows; pairs; overplotting solutions; hexbin; sparklines; abline; cluster plots.

Week 3: Combining plots; small multiples; multipanel plots, mfrow, aspect ratio, layout, split.screen.

Week 4: Multipanel plots differing in size and location using layout and split.screen.

Week 5: Colors; palettes; custom palettes; shading; transparent colors; symbol types; graphical output types (pdf, gif, eps, tiff, etc.); customizing plots for journals or presentations

Week 6: Presenting tables; mathematical expressions, subscripts, superscripts; legends; axes labels; text annotations; custom axes; plotting outside plot bounds; reading in complex data.

Week 7: NO LECTURE (holiday), self-study by Marilyn Ostergren on how to use Adobe Illustrator to improve and enhance R graphical output.

Week 8: Guest lecturer Alan Hicks, on plotting maps and adding figures to maps.

Week 9: ggplot2 based on lecture notes by by Sean Anderson.

Week 10: Animated gifs and videos. Complete **draft project figures (all four figures)** in class **Monday 3**

December for small-group peer-review.

Week 11: EXAM WEEK **9:30-11:20 Monday 10 December** PowerPoint presentation to entire class of **two best best figures**. Electronic hand in of this PowerPoint figure is due **Sunday 5pm on 9 December**, to allow time to compile all the presentations into one file for class.

****5:00pm Friday 14 December**, electronic handin 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. I expect full participation in lectures and completion of the Illustrator self-study. Credit is awarded when your two best figures have been presented in class, four draft figures have been peer-reviewed, 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 this makes you feel completely lost, you will struggle in the class too, and should consider withdrawing, taking a course in R (e.g. FISH 552 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 analyse; 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: <http://www.washington.edu/uaa/advising/help/academichonesty.php> (<http://www.washington.edu/uaa/advising/help/academichonesty.php>)

For this course, plagiarism is defined as figures and legends that are identical or eerily similar to those of other students. You should definitely work together and ask others for help, but the final project must be your own work.

Course Summary:

Date

Details

Date	Details	
Mon Dec 3, 2018	 Four draft figures for in-class review (https://canvas.uw.edu/courses/1220990/assignments/4444371)	due by 9pm
Sun Dec 9, 2018	 Oral presentation of two best figures to entire class (https://canvas.uw.edu/courses/1220990/assignments/4444372)	due by 5pm
Fri Dec 14, 2018	 Final four figures (https://canvas.uw.edu/courses/1220990/assignments/4444370)	due by 5:00pm

