

Instructor: Noah Gade
Office: Halsey Hall 123
Email: ndg5e@virginia.edu
Class Meeting Time: MWF 1:00 - 1:50pm ET
Class Meeting Location: Nau Hall 101

Office Hours: TBD Halsey Hall 120
or by appointment

Course Overview: This course introduces methods for presenting data graphically and in tabular form, including the use of software to create visualizations. Students will learn how to effectively display, interpret, and critique data visualizations in real world applications. Students who aim for a systematic and more in-depth course about database systems are recommended to take CS 4750 or another similar course instead.

Prerequisite(s): A prior course in statistics and a prior course in programming.

Textbook(s): We will follow a significant portions of the two textbooks:

1. *Data Visualization with R* by Rob Kabacoff,
<https://rkabacoff.github.io/datavis/>
2. *ggplot2: Elegant Graphics for Data Analysis* by Hadley Wickham,
<https://ggplot2-book.org/index.html>

Assignments: Assignments will be made available at least one week before the due date, and all are due at 5:00pm ET on the specified date. Late homework will not be accepted unless special circumstances require alteration of the course policies. Students will submit via Gradescope (<https://www.gradescope.com/>). Enroll with course entry code **DJPEBP**.

Project: One project will be assigned in the semester. Students will be able to work in small groups of up to 4 people. The due date is listed below, and more details will be released in class.

Friday, November 18, 5:00pm ET

Honor: I trust every student in this course to fully comply with all of the provisions of the University's Honor Code. By enrolling in this course, you have agreed to abide by and uphold the Honor System of the University of Virginia, as well as the following policies specific to this course.

- All graded assignments must be pledged.
- Collaboration is encouraged on assignments, but the final copy must be your own work.
- All suspected violations will be forwarded to the Honor Committee, and you may, at my discretion, receive an immediate zero on that assignment regardless of any action taken by the Honor Committee.

Grading: Graphics and visualizations created by students will be graded with the following rubric:

<i>Category</i>	Excellent 3	Satisfactory 2	Marginal 1	Poor 0
Message	Clearly communicates desired message and represents the data faithfully. Requires no accompanying information.	Communicates desired message but with minor flaws. Requires minimal accompanying information.	Misleading, distorted, or inaccurate representation of data. Graphic may require explanation.	Fails to communicate message or answer question at hand.
Design & Clarity	Appropriate visual aid with no clutter and good use of contrast and balance.	Appropriate visual aid with some clutter or minor problems with presentation.	Major problems or inappropriate visual aid.	Fundamental errors in visual aid selection.
Creativity	Compelling and creative presentation that captures the eye.	Appropriate presentation of data.	Boring or unimaginative data presentation.	Inappropriate or fundamental errors with presentation.
Total	Graphics using base R code receive 0 credit from above. +1 for submission, Total Points Possible = 10			

Course Grade: The course grade is based on assignments, projects, and participation. Weights will be assigned to individual grades as shown:

Assignments: 60%
Project: 30%
Participation: 10%

Grade cutoffs will be no higher than shown below. A grade may be curved up at the instructor's discretion at the end of the term.

A+ 100%
A 93% - 99.9%
A- 90% - 92.9%
B+ 87% - 89.9%
B 83% - 86.9%
B- 80% - 82.9%
C+ 77% - 79.9%
C 73% - 76.9%
C- 70% - 72.9%
D+ 67% - 69.9%
D 63% - 66.9%
D- 60% - 62.9%
F less than 60%

Note: *The instructor reserves the right to alter the syllabus based on course needs as the semester progresses.*

Fall 2022 Tentative Course Schedule

Date	Topics	Book Section(s)	Due Dates & Notes
Aug 24	Syllabus & Graphics Demo		
Aug 26	ggplot2 & The Grammar of Graphics I	(1) Ch 1-2; (2) Ch 1-2	HW 0 Due, 5:00pm ET
Aug 29	ggplot2 & The Grammar of Graphics II	(1) Ch 1-2; (2) Ch 1-2	
Aug 31	Univariate Graphs I	(1) Ch 3; (2) Ch 3	
Sep 2	Univariate Graphs II	(1) Ch 3; (2) Ch 3	
Sep 5	Bivariate Graphs I	(1) Ch 4; (2) Ch 3-5	
Sep 7	Bivariate Graphs II	(1) Ch 4; (2) Ch 3-5	
Sep 9	Bivariate Graphs III	(1) Ch 4; (2) Ch 3-5	HW 1 Due, 5:00pm ET
Sep 12	Multivariate Graphs I	(1) Ch 5; (2) Ch 3-5	
Sep 14	Multivariate Graphs II	(1) Ch 5; (2) Ch 3-5	
Sep 16	Temporal Data I	(1) Ch 7; (2), Ch 3-5	
Sep 19	Temporal Data II	(1) Ch 7; (2), Ch 3-5	
Sep 21	Geographic Data I	(1) Ch 6; (2) Ch 6	HW 2 Due, 5:00pm ET
Sep 23	Geographic Data II	(1) Ch 6; (2) Ch 6	
Sep 26	Statistical Models I	(1) Ch 8; (2) Ch 3-5	
Sep 28	Statistical Models II	(1) Ch 8; (2) Ch 3-5	
Sep 30	Network Data I	(1) - ; (2) Ch 7	HW 3 Due, 5:00pm ET
Oct 3	No Class - Fall Break		
Oct 5	Network Data II	(1) - ; (2) Ch 7	
Oct 7	Other Graphs I	(1) Ch 9; (2) Ch 3-5	
Oct 10	Other Graphs II	(1) Ch 9; (2) Ch 3-5	
Oct 12	Other Graphs III	(1) Ch 9; (2) Ch 3-5	HW 4 Due, 5:00pm ET
Oct 14	No Class		
Oct 17	No Class		
Oct 19	Graph Customization & Themes	(1) Ch 10, 13; (2) Ch 10-18	
Oct 21	No Class		HW 5 Due, 5:00pm ET
Oct 24	Graph Scales & Presentation	(1) Ch 10, 13; (2) Ch 10-18	
Oct 26	Data Manipulation & Transformation	(1) Ch 10, 13; (2) Ch 10-18	
Oct 28	No Class		
Oct 31	Color & Graph Presentation	(1) Ch 10, 13; (2) Ch 10-18	
Nov 2	Interactive Graphs I	(1) Ch 12; (2) -	
Nov 4	Interactive Graphs II	(1) Ch 12; (2) -	
Nov 7	Manipulating Data in SQL		HW 6 Due, 5:00pm ET
Nov 9	Reading Data from SQL		
Nov 11	tourr & Rtsne Visuals		
Nov 14	Case Study I		
Nov 16	Case Study II		HW 7 Due, 5:00pm ET
Nov 18	No Class		Project Due, 5:00pm ET
Nov 21	No Class		
Nov 23	No Class - Thanksgiving Break		
Nov 25	No Class - Thanksgiving Break		
Nov 28	Project Presentations I		
Nov 30	Project Presentations II		
Dec 2	No Class		HW 8 Due, 5:00pm ET
Dec 5	No Class		HW 9 Due 12/14, 5:00pm ET

Office hours will not be held on the following dates:

TBD