

Spring 2022 | Tuesday and Thursday 1:20 – 3:00pm | Classroom: Zageir Hall 237

## POLS 396: Quantitative Reasoning

Peter Haschke

Office: Zageir Hall 207

Office Hours:

Monday: 11:00 – 12:00 PM

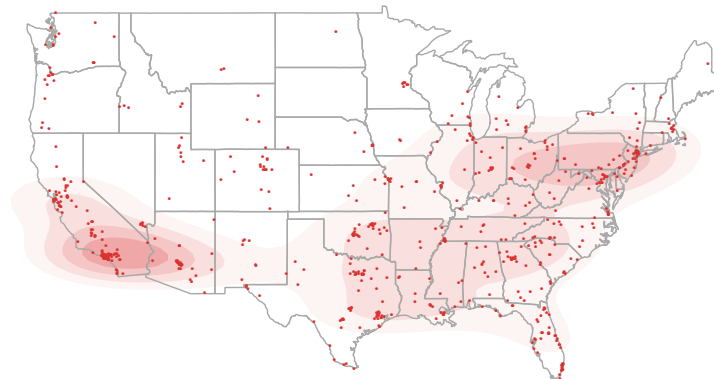
Thursday: 4:00 – 5:00 PM

(or by appointment)

Email: [phaschke@unca.edu](mailto:phaschke@unca.edu)

*Grown-ups love figures. When you tell them that you have made a new friend, they never ask you any questions about essential matters. They never say to you “What does his voice sound like? What games does he love best? Does he collect butterflies?” Instead they demand: “How old is he? How many brothers has he? How much does he weigh? How much money does his father make?” Only from these figures do they think they have learned anything about him.*

– The Little Prince<sup>1</sup>



*“At their best, graphics are instruments for reasoning about quantitative information. Often the most effective way to describe, explore, and summarize a set of numbers – even a very large set – is to look at pictures of those numbers.”*

– Edward R. Tufte

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<sup>1</sup>By Antoine de St. Exupéry.

## General Information

In this course, we will explore and illustrate compelling stories hidden in data. Part art, programming, and statistical reasoning, data description and visualization are critical tools for anyone who seeks to explore and analyze data. In recent years, data analysis skills have become essential for those pursuing careers in policy advocacy and evaluation, business consulting and management, or academic research in the fields of education, health, medicine, and the social sciences. This course introduces students to the powerful programming language R and the fundamentals of creating data-analysis graphics in R. We will use real datasets exploring “political” phenomena. No prior background in statistics or programming is required or expected.

## Books & Readings

As our main “text” we will use *An Introduction to R*. It can be found on our course web-page on my website: <http://www.unca-pols.org>. This “tutorial” will serve as a rough outline for the course. Additionally but not required, I recommend Freedman, Pisani, and Purves: *Statistics* (Fourth Edition) and Tufte’s *The Visual Display of Quantitative Information* (Second Edition).

## Course Format

We will meet every Tuesday and Thursday from 1:20pm – 3:00pm. We will move quickly through a variety of sometimes complex topics and it is imperative that you immerse yourself in the material and master it. I will try my best not to lecture too much and instead we shall explore and apply the course material as a group. To make this possible, however, you are expected to attend class. Missing class will be extremely costly, as each class builds on material covered previously. It necessitates that you carefully work through problem sets and prepare all assignments prior to class.<sup>2</sup>

## Grading

Your grade is primarily determined by weekly assignments (70 percent). I will drop the lowest three grades. The remainder of your grade is composed of a comprehensive final examination (20 percent) and a final presentation (10 percent).

## Final Presentation

During our exam period (11:30am on April 28) you will give a 5–10 minute presentation on a data graphic you will have produced. I will announce specifics in class.

## Late Policy

If you turn in an assignment late, you will receive a 25% deduction in the grade on that assignment! If you submit the assignment more than 48 hours after the due date, you will receive no credit at all. No exceptions. All assignments must be submitted via email. I expect file attachments in .pdf, .html, and/or .R format unless otherwise specified.

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<sup>2</sup>This goes without saying but respectful attention toward your fellow classmates is expected.

## Attendance

Class attendance is absolutely crucial. It is vital and mandatory. Each and every class will build on the previous meeting. If you do miss a meeting for whatever reason, please have the courtesy to inform me prior to class. No “excuse” will be required! If you missed a class, make sure you are up to speed (come visit my office hours, share notes with your peers, etc). Please arrive for class on time. Setting things up will take a few minutes and I do not want you to distract your peers by arriving late. If you arrive more than 5 minutes late you will be counted as absent. Any student missing 4 or more classes will automatically receive a failing grade for the course.

## Use of Electronic Devices

Mobile phones are not needed during class and I ask that you turn these devices off and store them in your bags. The purpose of this policy is to promote better comprehension of course material. Laptop use, however, is of course permitted as we will use them to work through course material and to learn R.

## Accommodations for Students with Disabilities

UNC-Asheville values the diversity of our student body as a strength and a critical component of our dynamic community. Students with disabilities or temporary injuries/conditions may require accommodations due to barriers in the structure of facilities, course design, technology used for curricular purposes, or other campus resources.

Students who experience a barrier to full access to this class should let the professor know, and/or make an appointment to meet with the Office of Academic Accessibility as soon as possible. To make an appointment, call (828) 232-5050; email [academicaccess@unca.edu](mailto:academicaccess@unca.edu); use this link <https://universityofncasheville.setmore.com/>; or drop by the Academic Accessibility Office in the Academic Success Center (lower level of Ramsey Library). Learn more about the process of registering, and the services available through the Office of Academic Accessibility here: <https://oaa.unca.edu/>

While students may disclose disability at any point in the semester, students who receive Letters of Accommodation are strongly encouraged to request, obtain and present these to their professors as early in the semester as possible so that accommodations can be made in a timely manner. It is the student’s responsibility to follow this process each semester.

## Collaboration & Academic Honesty

You may discuss homeworks and assignments in pairs or as a group, however, all work must be individually written unless otherwise instructed. You are allowed to give each other advice but in the end you must complete assignments yourself. You may not exchange papers or drafts of your assignment with other people in class! If you simply copy text or code from a friend’s work into your own paper or program, both of you will be cited for academic honesty violations. In all cases of academic dishonesty or plagiarism, I am required to report these cases, without exception. You will receive the grade of F for the plagiarized assignment but at the Provost’s discretion the penalty for cheating or plagiarism may include cancellation of scholarships, suspension, and expulsion. Please familiarize yourself with the University’s policy on academic honesty. Details can be found here: <http://www2.unca.edu/aa/handbook/8.htm>.

## Course Outline

The course will follow very roughly our text: *An Introduction to R*. We will begin with some fundamentals about operating and file systems, and file formats before we delve into R and R-programming. I will keep you informed about any changes and updates about what we will cover and when.