Course: POLS 4150 Applied Politics
Title: Research Methods in Political Science
In-person Class Meetings: T/Th, 2:20pm - 3:35pm
Location: Baldwin Hall 101D
Term: Fall 2025
Professor: Dr. David Cottrell
Email: david.cottrell@uga.edu
Office Hours: Thursday, from 3:35pm-4:35pm or by appointment @ Baldwin Hall 380D.

Course Description & Details

COURSE DESCRIPTION:

Scholars in political science and in disciplines across the social sciences are increasingly relying on quantitative, data-driven methods to answer important questions in their field. This course introduces students to the study of politics through quantitative reasoning and data analysis. We will cover the fundamentals of empirical research in political science including causal inference, summary statistics, data visualization, and regression. However, unlike a traditional research methods course, this course places a particular emphasis on developing technical skills used to conduct real world data analysis. Therefore, a significant amount of the coursework will be dedicated to learning how to program in the statistical computing environment, R. The goal is for you to gain a valuable skillset in data analysis which you can use in your political science classes and, more importantly, in your future careers.

COURSE LEARNING OUTCOMES:

Upon completion of the course, you should be able to:

- Read, interpret, and evaluate research in political science with a critical eye toward inference and method.
- Design and conduct original research on your own, from formulating research questions to testing hypotheses with statistical models using real-world data.
- Leverage the R programming language to apply data science techniques for making predictions and statistical inferences.

PREREQUISITES:

You do not need any prior experience with coding. The class is designed to help you develop these skills without such experience. Nevertheless, you should be aware that there is a steep learning curve to coding. It will require time, effort, practice, and patience.

METHOD OF INSTRUCTION:

This course will be taught face-to-face. Instruction will consist of lectures and in-class assignments. You must attend class in-person, as there is no online alternative.

Required Course materials

TEXTBOOK:

Llaudet, E., & Imai, K. (2022). *Data analysis for social science: A friendly and practical introduction*. Princeton University Press.

Chapter 1…	Introduction
Chapter 2…	Estimating Causal Effects with Randomized Experiments
Chapter 3…	Inferring Population Characteristics via Survey Research
Chapter 4…	Predicting Outcomes Using Linear Regression
Chapter 5…	Estimating Causal Effects with Observational Data
Chapter 6…	Probability
Chapter 7…	Quantifying Uncertainty

Data for the textbook can be found on ELC or at http://qss.princeton.press/DSS/ .

LAPTOP:

We will be conducting data analysis in class so that you can practice the skills that you've learned. To conduct data analysis, we will be using the R statistical computing environment on your computer. Please bring your laptops with R installed to every class.

STATISTICAL SOFTWARE

For data analysis, we will be using R, which is an open-source (free!) statistical computing environment widely used for manipulating data, performing statistics, and producing graphics. To run R, we will take advantage of a commonly used integrated development environment (IDE) called RStudio. RStudio provides a user-friendly interface for accessing and computing in R. Complete the following steps:

1) First, go to https://cran.r-project.org and follow the links to download R. Be careful to download the correct R package for your system's platform. Pay close attention to your system's operating system and processor. Once you've downloaded the proper R package to your computer, open it and follow the instructions to install.

2) Second, go to this website to download RStudio Desktop by clicking on the big blue button listed under the second step. Follow the instructions to install

Assessment and Grading

EVALUATION:

(10%) **Attendance/Participation –** You are expected to attend every class having read the assigned readings. You are also expected to participate in classroom discussions. Your presence is not only beneficial to you individually, but it also improves the classroom learning environment. You will be graded based on your attendance record and quality of contributions.

(40%) **In-class data assignments** – You will complete ten in-class data assignments over the course of semester. These assignments are designed to help you apply the concepts discussed in the readings and lectures by analyzing real-world data using R. There will be dedicated time in class for you to work on the assignments, allowing you the opportunity to ask questions and receive guidance. However, you may need to allocate additional time outside of class to complete the work. All assignments must be submitted to ELC by the specified due date.

(15%) **Midterm 1 –** The first midterm exam will be online and will be made available in eLC on Friday, September 12th. You will have four days to begin the exam and 2 hours to complete it exam once you have begun. The midterm will cover chapters 1–3.

(15%) **Midterm 2 –** The second midterm exam will be online and will be made available in eLC on Friday, October 10th. You will have four days to begin the exam and 2 hours to complete the exam once you have begun. The midterm will cover chapters 1–5.

(20%) **Final –** Like the midterms, the final exam will be made available online on December 4th. You will have four days to begin the exam and 2 hours to complete it once you have begun. The midterm will cover chapters 1–7, but will emphasize concepts learned in chapters 6 and 7.

GRADE SCALE:

A	94.0000 and above
A-	93.9999 to 90.0000
B+	89.9999 to 87.0000
B	86.9999 to 83.0000
B-	82.9999 to 80.0000
C+	77.0000 to 79.9999
C	76.9999 to 70.0000
D	69.9999 to 50.0000
F	49.9999 and below

Course Statements & Policies

UGA STUDENT HONOR CODE

Please adhere to the university's standards for academic honesty and integrity. Procedures for handling cases of suspected dishonesty, can be found at www.uga.edu/ovpi.

ACCOMMODATION FOR DISABILITIES

If you plan to request accommodations for a disability, please register with the *Accessibility & Testing*. They can be reached by visiting Clark Howell Hall, calling 706-542-8719 (voice) or 706-542-8778 (TTY), or by visiting https://accessibility.uga.edu/.

PREFERRED NAMES/PRONOUNS

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I am eager to address you by your preferred name and/or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

UGA WELL-BEING RESOURCES

UGA Well-being Resources promote student success by cultivating a culture that supports a more active, healthy, and engaged student community. Anyone needing assistance is encouraged to contact Student Care & Outreach (SCO) in the Division of Student Affairs at 706-542-8479 or visit sco.uga.edu. Student Care & Outreach helps students navigate difficult circumstances by connecting them with the most appropriate resources or services. They also administer the Embark@UGA program which supports students experiencing, or who have experienced, homelessness, foster care, or housing insecurity. UGA provides both clinical and non-clinical options to support student well-being and mental health, any time, any place. Whether on campus, or studying from home or abroad, UGA Well-being Resources are here to help.

- Well-being Resources: well-being.uga.edu
- Student Care and Outreach: sco.uga.edu
- University Health Center: healthcenter.uga.edu
- Counseling and Psychiatric Services: caps.uga.edu or CAPS 24/7 crisis support at 706-542-2273
- Health Promotion/ Fontaine Center: healthpromotion.uga.edu
- Accessibility & Testing: https://accessibility.uga.edu/

Additional information, including free digital well-being resources, can be accessed through the UGA app or by visiting https://well-being.uga.edu.

PROHIBITION ON RECORDING LECTURES

In the absence of written authorization from the UGA Disability Resource Center, students may not make a visual or audio recording of any aspect of this course. Students who have a recording accommodation agree in writing that they:

- Will use the records only for personal academic use during the specific course.
- Understand that faculty members have copyright interest in their class lectures and that they agree not to infringe on this right in any way.
- Understand that the faculty member and students in the class have privacy rights and agree not to violate those rights by using recordings for any reason other than their own personal study.
- Will not release, digitally upload, broadcast, transcribe, or otherwise share all or any part of the recordings. They also agree that they will not profit financially and will not allow others to benefit personally or financially from lecture recordings or other course materials.
- Will erase/delete all recordings at the end of the semester.
- Understand that violation of these terms may subject them to discipline under the Student Code of Conduct or subject them to liability under copyright laws.

ARTIFICIAL INTELLIGENCE

UGA's policy is that the use of AI for coursework is not permitted unless explicitly authorized by me ahead of time. In this class, the use of AI assistance to complete assignments or exams is strictly prohibited.

DISCLAIMER

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Course Schedule

DAY	DATE	AGENDA	TOPIC
Th	14-Aug	Syllabus	Getting started
Tu	19-Aug	Read Ch. 1	Introduction to RStudio and programming in R
Th	21-Aug	In-class Assignment 1	
Tu	26-Aug	Read Ch. 2	Fundamental problem of causal inference and estimating treatment effects
Th	28-Aug	In-class Assignment 2	
Tu	2-Sep	Read Ch. 3	Statistical inference, descriptive statistics, histograms, correlation
Th	4-Sep	In-class Assignment 3	
Tu	9-Sep	Practice Midterm 1	
Th	11-Sep	Review	
Tu	16-Sep	Read Ch. 4 (skip: 4.4.2)	Linear regression for predicting outcomes
Th	18-Sep	In-class Assignment 4	
Tu	23-Sep	Read Ch. 5.1 - 5.3	Linear regression for estimating treatment effects
Th	25-Sep	In-class Assignment 5	
Tu	30-Sep	Read Ch. 5.4 - 5.6	Controlling for confounders
Th	2-Oct	In-class Assignment 6	
Tu	7-Oct	Practice Midterm 2	
Th	9-Oct	Review	
Tu	14-Oct	Read Ch. 6.0 - 6.4	Random variables and prob. distributions
Th	16-Oct	In-class Assignment 7	
Tu	21-Oct	Read Ch. 7.0 - 7.2	Confidence Intervals
Th	23-Oct	In-class Assignment 8	
Tu	28-Oct	Read Ch. 7.3.0 – 7.3.1	Hypothesis testing
Th	30-Oct	In-class Assignment 9	
Tu	4-Nov	NO CLASS	
Th	6-Nov	NO CLASS	
Tu	11-Nov	Read Ch. 7.3.2	Hypothesis testing using regression
Th	12-Nov	In-class Assignment 10	
Tu	18-Nov	Practice Final 10	
Th	20-Nov	Review	
Tu	25-Nov	Review	
Th	28-Nov	THANKSGIVING	