Course: POLS 4150
Title: Research Methods in Political Science
In-person Class Meetings: TBD
Location: TBD
Term: TBD
Professor: David Cottrell, Ph.D.
Email: david.cottrell@uga.edu
Office Hours: Baldwin Hall 380D.

Course Description & Details

COURSE DESCRIPTION:

The qualitative and quantitative techniques for measurement, analysis, and inference of political data. Recommended for majors, especially those planning to attend graduate school.

COURSE DETAILS:

This course introduces students to the quantitative study of politics, covering core concepts in empirical research such as causal inference, statistical inference, prediction, and data visualization, while developing the statistical computing skills needed for empirical analysis.

COURSE LEARNING OUTCOMES:

- Students will be introduced to the political research process.
- Students will develop an understanding of the relationship between theory and political inquiry.
- Students will examine issues in conceptualization and operationalization in political science by examining previous research.
- Students will formulate a research question, collect and analyze data to test that question, and write up results.
- Students will learn real world data analysis through the development of technical skills.
- Students will learn how to program in the statistical computing environment, R.

PREREQUISITES:

POLS 1101 or equivalent. 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:

Instruction will consist of lectures and in-class assignments. You must attend class in-person.

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, you will need access to a laptop with the R statistical computing environment installed and you must bring it 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 will be made available in eLC. It will be similar to an in-class assignment, except you will complete it independently. The first midterm will cover chapters 1–3.

(15%) **Midterm 2 –** The second midterm will be made available in eLC. It will be similar to an in-class assignment, except you will complete it independently. The second midterm will cover chapters 1–5, but will emphasize concepts learned in chapters 4 and 5.

(20%) **Final –** The final exam will be completed in-class during finals week. It will be similar to an in-class assignment, except you will complete it independently. 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

"I will be academically honest in all of my academic work and will not tolerate academic dishonesty of others." A Culture of Honesty, the University's policy and procedures for handling cases of suspected dishonesty, can be found at honesty.uga.edu.

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.***

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

DISCLAIMER

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

Course Outline

DAY	DATE	AGENDA	TOPIC
1		Syllabus	Getting started
2		Read Ch. 1	Introduction to RStudio and programming in R
3		In-class Assignment 1	
3		Read Ch. 2	Fundamental problem of causal inference and estimating treatment effects
4		In-class Assignment 2	
5		Read Ch. 3	Statistical inference, descriptive statistics, histograms, correlation
6		In-class Assignment 3	
7		Review	
8		Practice Midterm 1	
9		Read Ch. 4	Linear regression for predicting outcomes
10		In-class Assignment 4	
11		Read Ch. 5.1 - 5.3	Linear regression for estimating treatment effects
12		In-class Assignment 5	
13		Read Ch. 5.4 - End	Controlling for confounders
14		In-class Assignment 6	
15		Review	
16		Practice Midterm 2	
17		Read Ch. 6.0 - 6.4	Random variables and prob. distributions
18		In-class Assignment 7	
19		Read Ch. 6.5 – End	Population parameters and sample statistics
20		In-class Assignment 8	
21		Read Ch. 7.0 - 7.2	Confidence Intervals
22		In-class Assignment 9	
23		Read Ch. 7.3.0 – 7.3.1	Hypothesis testing
24		In-class Assignment 10	
25		Read Ch. 7.3.2 – End	Hypothesis testing with regression
26		In-class Assignment 11	
27		Review	
28		Practice Final 10	
29		Review	
30		Review	