

POLI 395: Applied Research Methods

Dogus Aktan

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TBD

TR // 9:25AM - 10:40AM

Contact Information

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Office Hours: Monday 10:00-11:30 // Thursday: 2:30-4:00

Course Overview and Learning Outcomes

This course introduces students to foundational ideas in designing and conducting research in social sciences. It will provide a structured setting for students to develop a research project on a topic of their own choice. The class will also equip students with fundamental skills necessary to evaluate social science research in order to prepare them for more advanced classes.

Throughout the course, students work in groups to create a research paper and a poster, which will be presented at a symposium at the end of the semester. The class structure and schedule have a number of built-in checkpoints to provide students with regular feedback and assistance.

Students who apply themselves will have:

- **Substantive knowledge:** Students will have foundational knowledge in the scientific study of social phenomena. They will also acquire a good overview of key findings in the area of their research project.
- **Empirical analysis:** Students will learn how to interpret, conduct and evaluate political science research, including data collection and data analysis techniques and

statistical software. They will also recognize and understand key challenges to conducting empirical research in social sciences.

- **Communication:** Students will develop key data visualization, written and oral presentation skills to effectively communicate political science research, including their own, to broader audiences.

Course Readings and Software

Course Readings

There are no required books to buy for this course. There will be some readings assigned from academic journals and from several different textbooks. All readings will be made available on Canvas. If you want to have a text book in hand to follow through, I am happy to recommend a few.

For R labs and related exercises, we will primarily be referring to R for Data Science (2e) which is available for free [here](#).

The reading load is relatively light and lightens even more as the semester progresses. The goal of this class is to give you essential skills to critically consume and produce research. Therefore, the readings assigned are aimed to provide you useful tips, good examples, and guidelines from social scientists.

That being said, some readings might require you to spend some time with it to be able to digest them completely. Don't be discouraged. I will provide you specific instructions and guidance when this is the case.

Course Software

For data analysis and visualization, we will be using R through its Graphical User Interface RStudio. Both are open source and free to use.

Download and install R first and then RStudio. You should have RStudio up and running before your first lab session.

Class Format and Policy

The class has two components: First is two in-person meetings each week with me. The other is an R lab with the TA, who will help you learn R throughout the semester.

The course will be organized and run as a research workshop rather than as a typical lecture or discussion course (e.g., a freshman seminar). Thus, the main activity of in-person

meetings will be crafting your research projects. While there will be some lecturing and instruction on my part, the key focus will be work-shopping your projects, answering your questions, and providing feedback to your peers' projects. This means that active participation and engagement, both with me and your peers, are essential for your success.

I also expect you to communicate and meet regularly with the members of your groups outside the class. I suggest that your group meet at least once per week at a designated, regular time (that you will choose with your other group members) to make sure your research project is progressing well. Do not underestimate the time commitment involved in conducting original research.

Policy on Student Questions and Emails

I am always happy to answer student questions during office hours or over e-mail. I will generally reply to e-mails within 24 hours but make sure you send your questions in a timely manner. If I don't respond to your email within 2 days, please feel free to remind me in person or send a reminder email.

Keep in mind that most questions you may have (about assignments, policies, etc. . .) can be answered by simply taking a close look at the syllabus. Every student should read the entire syllabus carefully at the beginning of the class and before sending me a question. When you have finished reading the syllabus for the first time, send me an e-mail, telling me what your favorite animal is.

Assignments and Grades

Assignments

Participation

This course is designed as a **research workshop**, not a passive lecture course. As such, attendance and active engagement are core components of the course. Students are expected to attend all class sessions, including R labs.

I expect you to come to class prepared, having completed assigned readings or materials, and to engage actively and constructively by:

- asking substantive questions,
- answering questions posed by the instructor or peers,
- offering constructive feedback on classmates' projects,

- participating in group discussions and in-class exercises.

Participation is evaluated holistically over the semester and includes both the **quality** and **consistency** of engagement.

Perfect or near-perfect attendance combined with sustained engagement—across lectures, workshops, and R labs—is expected for top grades (A/A+). Simply being physically present without contributing does not constitute participation.

Occasional absences or quieter participation will not automatically harm a student's grade, but chronic absence, lack of preparation, or disengagement will limit the highest grade a student can earn, regardless of the quality of submitted work.

R lab exercises

R labs will have graded exercises. Some submissions will be individual and some may be group-based, depending on the assignment. Instructions will clearly state which format applies. During lab, you may work collaboratively, but submitted work must reflect genuine understanding of the code and concepts.

Individual and Group assignments:

Each student will select into a research group depending on their research interests. The group will focus on a specific research question work together on their research project to answer the question. Throughout the semester there will be group assignments and exercises designed to guide you to write sections of your paper. I will provide feedback on each segment. The segments are:

- Research question and introduction
- Literature review
- Finding Data
- Theory and hypotheses
- Research design and DAGs
- Data analysis and visualization

Final Paper:

Each group will provide a draft of their research paper describing their project and the results. I will provide feedback on that draft, so students will have a chance to revise before the end of the semester. Each of the individual assignments is a building block towards the final paper. When the final paper is due, you will not write it from scratch but largely refine what you have already written.

Poster and Presentation

At the end of the semester each group will present a poster detailing its project. After completing the draft of your research papers, you will learn the basics of turning that note into a scientific poster and will present your poster at our symposium.

Assignment Calendar

	Assigned	Due
Research question and introduction	January 22	February 3
Literature review	February 5	February 17
Data Sources	February 17	March 3
Theory and hypotheses	February 12	February 24
Research design and DAGs	March 5	March 17
Data analysis and visualization	March 26	April 14
Final Paper Draft	April 23	April 30
Poster and Presentation		April 23
Final Paper		

Grades

Grade Policies

All assignments and exams must be completed on time in order to pass this course. Make ups will only be granted under extraordinary circumstances such as documented and verified medical or family emergencies. All documentation corresponding to such emergencies should be forwarded to the professor. Personal reasons are insufficient excuses for making up missed assignments, exams, or quizzes.

All assignments must be submitted via Canvas. I do NOT accept assignments via e-mail.

Students must complete ALL mandatory assignments to be able to receive a passing grade.

Grading Group Work

For most core project milestones, each group will submit a single product and receive a single shared grade for that submission. However, a shared grade on a group submission does **not** imply that every member of the group will necessarily receive the same **individual course grade**. I also track contribution patterns using:

- Group memos,
- peer evaluations,
- in-class participation and presentations,
- and observed patterns of engagement.

If it becomes clear that a student is not contributing at a level comparable to the rest of the group, I reserve the right to request additional individual work or a supplementary submission to ensure fairness and engagement with the relevant material.

These adjustments are not meant as punishment. They exist to ensure fairness, maintain accountability, and ensure that every student develops competence in the core skills of the course.

In cases of persistent non-contribution or disengagement, individual final grades will be adjusted downward relative to the group's shared submission grades.

Grade Bundles

This course uses specifications ("specs") grading. All assignments are evaluated as Satisfactory / Unsatisfactory based on clear checklists or rubrics. Students may revise and resubmit unsatisfactory work once.

Final grades are determined by the bundle of assignments completed satisfactorily, combined with the quality and consistency of individual engagement in the course.

Bundle 4: A+ Grade

The A+ reflects exceptional and sustained engagement with the course. To earn an A+, students must demonstrate:

- Satisfactory rating on all six core assignments (Research Question, Literature Review, Finding Data, Theory & Hypotheses, Research Design & DAGs, Data Analysis & Visualization)

- Satisfactory completion of **all** R Lab exercises
- Satisfactory Final Paper and Poster/Presentation
- **Consistently excellent participation** across lectures, workshops, and R labs (prepared, engaged, constructive)
- High-quality contributions to group work, as evidenced by group memos and peer evaluations

Bundle 4: A Grade

The A reflects strong and consistent mastery of the research process and active engagement with the course. To earn an A, students must demonstrate:

- Satisfactory rating on all six core assignments
- Satisfactory completion of **all** R Lab exercises
- Satisfactory Final Paper and Poster/Presentation
- **Regular and constructive participation** across lectures, workshops, and R labs
- Solid contributions to group work, as evidenced by group memos and peer evaluations

Bundle 4-: A- Grade

The A- reflects strong written and technical work, but less consistent engagement throughout the semester. To earn an A-, students must demonstrate:

- Satisfactory rating on all six core assignments
- Satisfactory completion of **most** R Lab exercises
- Satisfactory Final Paper and Poster/Presentation
- Uneven participation or preparation across lectures, workshops, and/or R labs
- Adequate contributions to group work, as evidenced by group memos and peer evaluations

Bundle 3: B Grade

The B bundle reflects solid engagement with course content and successful completion of the full research process. Students meet all core requirements but may show limited revision or engagement beyond the minimum.

- Satisfactory on all six core assignments
- Satisfactory on most R Lab exercises
- Satisfactory Final Paper and Poster/Presentation
- Generally active participation in class and group work
- Satisfactory peer evaluations and group memos, with no major concerns

Bundle 2: C Grade

The C bundle represents minimum acceptable mastery of course concepts. Students complete the core components of the project, but may show weaker participation, group contributions, or follow-through on feedback.

- Satisfactory on at least five of the six core assignments
- Satisfactory on at least five R Lab exercises
- Final Paper and Poster submitted
- Inconsistent participation or group collaboration
- Peer evaluations or group memos indicate minimal contribution
- Little to no revision or engagement with feedback

Bundle 1: D Grade

The D bundle indicates that only partial course expectations were met. Students demonstrated some effort but did not consistently engage with course materials or complete core project components.

- Satisfactory on four or fewer core assignments
- Fewer than five R Lab exercises submitted satisfactorily
- Final Paper or Poster missing or incomplete
- Limited participation or peer feedback suggests chronic disengagement
- Group work memos or evaluations indicate poor contribution

Absence Policies

I expect you to attend all scheduled classes. An absence will be considered unexcused unless you give me documentation of the absence. You should also check out the Rice University absence policies [here](#).

AI Policies

Students are not allowed to use advanced automated tools (artificial intelligence or machine learning tools, such as ChatGPT) on assignments in this course. Each student is expected to complete each assignment without substantive assistance from others, including automated tools. If you are found to have used AI for an assignment, this will be treated as a violation of the Rice Honor Code. In my experience, automated tools are not great at writing political science papers. They can make up sources that don't exist and produce relatively low quality analysis. Using AI will not only result in a poor assignment, but it also undermines the whole reason why you are taking this course – to build writing and analytical skills that will help you understand and critically evaluate current events!

Rice Honor Code

In this course, all students will be held to the standards of the Rice Honor Code, a code that you pledged to honor when you matriculated at this institution. If you are unfamiliar with the details of this code and how it is administered, you should consult the Honor System Handbook at <http://honor.rice.edu/honor-system-handbook/>. This handbook outlines the University's expectations for the integrity of your academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process.

Disability Resource Center

If you have a documented disability or other condition that may affect academic performance you should: 1) make sure this documentation is on file with the Disability Resource Center (Allen Center, Room 111 / adarice@rice.edu / x5841) to determine the accommodations you need; and 2) talk with me to discuss your accommodation needs.

Mental Health Statement

If you are having trouble completing your coursework, please reach out to the Wellbeing and Counseling Center. Rice University provides cost-free mental health services through the Wellbeing and Counseling Center to help you manage personal challenges that threaten your personal or academic well-being. If you believe you are experiencing unusual amounts of stress, sadness, or anxiety, the Student Wellbeing Office or the Rice Counseling Center may be able to assist you. The Wellbeing and Counseling Center is located in the Gibbs Wellness Center and can be reached at 713-348-3311 (available 24/7).

Title IX Responsible Employee Notification

Rice University cares about your wellbeing and safety. Rice encourages any student who has experienced an incident of harassment, pregnancy discrimination or gender discrimination or relationship, sexual, or other forms interpersonal violence to seek support through The SAFE Office. Students should be aware when seeking support on campus that most employees, including myself, as the instructor/TA, are required by Title IX to disclose all incidents of non-consensual interpersonal behaviors to Title IX professionals on campus who can act to support that student and meet their needs. For more information, please visit safe.rice.edu or email titleixsupport@rice.edu.

Syllabus Change Policy

This syllabus is only a guide for the course and is subject to change with advanced notice.

Course Schedule

Module 1: Introduction to the Course and Overview

Week 1: Introduction, Overview

- Tuesday, January 13: Introduction and Overview
 - Syllabus
- Thursday, January 15: Example Research Paper
 - **Read:** Brian T. Hamel and Derek E. Holliday, “Unequal Responsiveness in City Service Delivery: Evidence from 42 Million 311 Calls”, *Quarterly Journal of Political Science*
 - **Listen:** Not Another Politics Podcast Episode Discussing the Same Paper [here](#) or [here](#)
- Thursday, January 15: Lab Session: Basics of R and RStudio
 - Grolemund and Wickham, Chapter 2 - 4

Week 2: Foundations of Political Science Research

- Tuesday, January 20: Causality and Experiments
 - Elena Llaudet and Kosuke Imai, *Data Analysis for Social Science* (Chapter 2)
 - Ethan Bueno de Mesquita and Anthony Fowler, *Thinking Clearly with Data* (Chapter 3)
- Thursday, January 22: Crafting a Research Question
 - Nick Huntington-Klein, *The Effect*, (Chapter 2) [here](#)
 - Cyrus Samii, “Methodologies for “Political Science as Problem Solving”” [here](#)
 - **Recommended:** Judea Pearl and Dana Mackenzie *Book of Why* (Chapters 1 & 2)
- Thursday, January 22: Lab Session: R Graphics
 - Grolemund and Wickham, Chapter 1 & 9

Module 2: Evaluating and Thinking Political Science

Week 3: Regression and Questions

- Tuesday, January 27: Introduction (Refresher) to OLS Regression

- Nick Huntington-Klein, *The Effect*, (Chapter on Statistical Adjustment) here
- Thursday, January 29: Research Question Workshop
 - Andrew Little “Three Templates for Introductions to Political Science Articles”
- Thursday, January 29: Lab Session: Understanding Data Structures in R
 - Grolemund and Wickham, Chapters 12 to 18

Week 4: Literature Review

- Tuesday, February 3: How to Read and Use Previous Research
 - Jeffrey Knopf, “Doing a Literature Review”, *PS: Political Science and Politics*
 - Paul M. Kellstedt and Guy D. Whitten, *The Fundamentals of Political Science Research*, Pages 38-39
- Thursday, February 5: Sample Literature Reviews (Read only Introductions and Literature Reviews)
 - Emily Ritter and Courtney Conrad, “Preventing and Responding to Dissent...”
 - Devorah Manekin and Tamar Mitts, “Effective for Whom?”
 - Adrienne Lebas and Lauren E. Young, “Repression and Dissent in Moments of Uncertainty...”
- Thursday, February 5: Lab Session: Exploring Data in R
 - Grolemund and Wickham, Chapters 9-11

Week 5: Theory and Hypotheses

- Tuesday, February 10: The Purpose of Theories
 - Dimiter Toshkov, *Research Design in Political Science* (Chapter 3)
 - Stephen Van Evera, *Guide to Methods...* (Chapter 1)
- Thursday, February 12: NO CLASS

Week 6: From Theory to Research Design

- Tuesday, February 17: Multivariate OLS: Good Controls and Statistical Adjustment
 - Pearl and Mackenzie, *Book of Why* (Chapter 7)
- Thursday, February 19: Multivariate OLS: Collider and Post-treatment Bias
 - Huntington-Klein, *The Effect* (Chapters 6–8)
- Thursday, February 19: Lab Session: Importing and Wrangling Data

Module 3: Research Design and Data

Week 7: Research Design: Researcher Choices and Constraints

- Tuesday, February 24: Dummy Variables, Transforming Variables
 - Huntington-Klein, *The Effect* (Chapter 13)
- Thursday, February 26: Interaction Effects
 - Huntington-Klein, *The Effect* (Chapter 13)
- Thursday, February 26: Lab Session: Importing and Wrangling Data 2

Week 8: Concepts, Measurements, and Data

- Tuesday, March 3: Fixed Effects
 - Huntington-Klein, *The Effect* (Chapter 16)
- Thursday, March 5: Measurements and Operationalizations
 - W. Philips Shively, *The Craft of Political Research* (Chapters 4 & 5)
 - Cullen Hendrix, “Measuring state capacity: Theoretical and empirical implications for the study of civil conflict”, *Journal of Peace Research*
- Thursday, March 5: Lab Session: Working with Models
 - Kieran Healy, *Data Visualization A Practical Introduction*, Chapter 6

Week 9: Data Analysis, Cleaning, and Visualization

- Tuesday, March 10: Binary and Ordinal Outcomes
 - Huntington-Klein, *The Effect* (Chapters 4 & 13)
- Thursday, March 12: Data Visualization and Cleaning Practice
 - No Readings
- Thursday, March 12: Lab Session: Working with your data in R

Week 10: Data Analysis

- Tuesday, March 17: NO CLASS
- Thursday, March 19 : NO CLASS

Week 11: Data Analysis Workshops

- Tuesday, March 24:
 - No Readings
- Thursday, March 26:
 - No Readings
- Thursday, March 26: Lab Session: Data Analysis in R cont.

Module 4: Polishing and Presenting Your Project

Week 12: Presentation Preparation and Discussion

- Tuesday, March 31
 - Slantchev, “Talk on Talks”; Meager, “Public Speaking for Academics”
- Thursday, April 2
 - No Readings
- Thursday, April 2: Lab Session: Data Visualization for Poster Presentation

Week 13: Finishing Your First Draft

- Tuesday, April 7
- Thursday, April 9
- Thursday, April 9: Lab Session: Q & A and Review

Week 14: Practice Presentations

- Tuesday, April 14
- Thursday, April 16

Week 15: Poster Presentations and Wrap Up

- Tuesday, April 21
- Thursday, April 23: Poster Presentations