PSCI-3075: Applied Political Science Research

University of Colorado Boulder

Maymester 2022

Dates: May 9 - May 26
Location: Online (i.e., asynchronous); see Canvas website

Instructor: Dr. Andrew Q. Philips
Office: Online
Email: andrew.philips@colorado.edu
Office hours: Tuesday and Thursday, 12:00-1:30 or by appointment

COURSE DESCRIPTION: This course is designed to introduce you to the types of research design and quantitative methodology used in applied political science research. This course directly builds on the data analysis performed in Quantitative Research Methods (PSCI 2075). In this class we will cover topics such as building theories, hypothesis testing, measurement, and causation. Some of the class will be spent analyzing, understanding and critiquing the research design of actual political science articles. This course will provide an overview of some of the most popular approaches to social science research, such as multivariate regression and experiments, as well as relatively new approaches, such as "text-as-data" and machine learning. Any statistics and data analysis conducted will utilize the free open-source statistical package R.

By the end of this course you should be able to:

- Understand the major approaches to research design in political science.

- Be able to create and critique research in the social sciences.

- Be a savvy consumer of data and statistics in the news, media, web, etc.

PREREQUISITES: We will use some R and RStudio in this course, which should be familiar to you from PSCI 2075 (the required prerequisite course). Early in the course we will review R.

GRADES: Course grades will be based on the following. Participation (via Canvas) is worth 20% of the final grade. Each day's topic will contain a quiz to help you assess how well you are grasping various concepts; these are worth 35% of the final grade. There will be three exams held throughout the semester which will cumulatively be worth 45% of the final grade.

Grade Breakdown

Participation	20%
Topic Quizzes	35%
Exam I	15%
Exam II	15%
Exam III	15%

The following scale will be used to turn numerical grades into letter ones. Note that I will round up a letter should your grade fall on the number (but on or above 0.5) between two letters (e.g., 89.5 up to 90 rounds up to an A-). There may be opportunities for extra credit.

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Grade Scale

A	95-100
A-	90-94
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D+	67-69
D	64-66
D-	60-63
F	0-59

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Participation: Participation is an integral component of undergraduate courses. While this is an asynchronous course, participation will be evaluated through Canvas using the following:

- Engagement with Canvas (i.e., watching the lectures)

- Discussion posts which will occur for each topic (post at least twice a week)

- Asking questions (via Canvas) and/or going to office hours

Some of the course material covers difficult topics, so please come to office hours if you have any questions. *Office hours are for your benefit.*

Topic Quizzes: Each topic will have a small quiz to take after watching the lectures. These open-book open-note quizzes are designed to help you gauge your understanding of that week's topic.

Exams: There will be three exams throughout the semester. You should only take Exam I after completing topics 1-5, Exam II after completing 6-10, and Exam III after 11-14. While you may take the exam at any time, there are hard deadlines in which you much take the exam before the following deadlines:

- Exam I: due by 11:59PM on Sunday, May 15

- Exam II: due by 11:59PM on Sunday, May 22

- Exam III: due by 11:59PM on Friday, May 27

Class Format, Office Hours: This course is asynchronous. You can complete it at your own pace, although you will still need to engage with the discussion posts throughout the semester, and are hard deadlines for the three exams (i.e., you'll need to take an exam each week). Since this is a short course, office hours are flexible, so we can schedule a time to meet over Zoom.

If you send me an email you can generally expect a response within 24 hours on business days. My email is: andrew.philips@colorado.edu.

Any assignments are due on the day listed in the syllabus (if eligible). Late assignments will be assessed a 10 point penalty per day (i.e., a paper scoring a 95 would receive an 85 if turned in one day late, 75 if two days,...). Assignments not turned in after 3 days will receive a score of zero.

Required Texts: There is one required text for this course. Any additional readings will be made available to you as needed. I will put all additional readings on the Canvas course website.

- Kellstedt, Paul and Guy D. Whitten. 2018. *The fundamentals of political science research*. Cambridge University Press. 3rd edition. ISBN: 1316642674.

Topics: Below is the ordering of topics for the semester. Note that this is subject to change (see the "Syllabus Changes" section)

Topic 1:

Syllabus and course overview, how do we study politics, and what is a theory?

Required Readings:

- *The fundamentals of political science research* (henceforth FPSR), Chapters 1 and 2

Topic 2:

Review of R, probability and statistics

Required Readings:

- FPSR Ch. 6

Suggested Readings:

- Venables, W. N., D. M. Smith, and the R Core Team. 2017. "An introduction to R."
- Philips, Andrew Q. 2017. "R: A brief introduction"

Topic 3:

Causality and the four causal hurdles, research design, and measurement

Required Readings:

- FPSR Ch. 3-5
- *The Economist*. "Is pregnancy in America much deadlier than in other rich countries?"

Suggested Readings:

- Geddes, Barbara. 1991. "How the cases you choose affect the answers you get: Selection bias in comparative politics." *Political Analysis* 2: 131-150.

Topic 4:

Statistical significance and hypothesis testing

Required Readings:

- FPSR Ch. 7
- Gelman, Andrew and Hal Stern. 2006. "The difference between 'significant' and 'not significant' is not itself statistically significant." *The American Statistician* 60(4): 328-331.

Recommended Readings:

- *The Economist*. "Are results in top journals to be trusted?"

Topic 5:

Bivariate and multivariate regression and interpretation

Required Readings:

- FPSR Ch. 8 and 9

EXAM I

Exam I due by 11:59PM on Sunday, May 15

Topic 6:

Regression diagnostics and violations of the regression assumptions

Required Readings:

- FPSR Ch. 10 (pp. 232-244)

Topic 7:

Dichotomous and categorical variables and interactions.

Required Readings:

- FPSR Ch. 10 (pp. 220-229)
- Brambor, Thomas, William Roberts Clark and Matt Golder. 2006. "Understanding interaction models: Improving empirical analyses." *Political Analysis* 14: 63-82.

Topic 8:

Limited dependent variables and the visual display of information.

Required Readings:

- FPSR Ch. 11 (pp. 247-254)
- Kastellec, Jonathan P. and Eduardo L. Leoni. 2007. "Using graphs instead of tables in political science." *Perspectives on Politics* 5(4):755-771.

Recommended Readings:

- *Skim:* Wickham, Hadley. 2010. "A layered grammar of graphics." *Journal of Computational and Graphical Statistics* 19(1):3-28.

Topic 9:

Datasets, cleaning and working with data

Required Readings:

- Herrera, Yoshiko and Devesh Kapur. 2007. "Improving data quality: Actors, incentives, and capabilities." *Political Analysis* 15(4): 365-386.

Topic 10:

Writing a research paper

Required Readings:

- FPSR Ch. 12
- George Orwell, "Politics and the English Language"
- McCloskey, Donald. 1985. "Economical writing." *Economic Inquiry* 24(2): 187-222.
- *The Economist*. "Signifying nothing?"

EXAM II

Exam II due by 11:59PM on Sunday, May 22

Topic 11:

Time series and experiments

Required Readings:

- FPSR Ch 11 (pp. 256-272)
- Gerber, Alan S. and Donald P. Green. 2000. "The effects of canvassing, telephone calls, and direct mail on voter turnout: A field experiment." *American Political Science Review* 94(3): 653-663.

Recommended Readings:

- You may also want to browse through this free e-book on time series analysis in R: https://a-little-book-of-r-for-time-series.readthedocs.io/en/latest/index.html
- Olken, Benjamin A. 2007. "Monitoring corruption: Evidence from a field experiment in Indonesia." *Journal of Political Economy* 115(2): 200-249.

Topic 12:

Potential outcomes framework and causal inference

Required Readings:

- http://egap.org/methods-guides/10-things-you-need-know-about-causal-inference
- Pearce, Neil and Debbie A. Lawlor. 2016. "Causal inference-so much more than statistics." *International Journal of Epidemiology*: 1895-1903.

Suggested Readings:

- Stuart, Elizabeth A. 2010. "Matching methods for causal inference: A review and a look forward." *Statistical Science* 25(1): 1-21.
- Angrist, Joshua D. 1990. "Lifetime earnings and the Vietnam era draft lottery: Evidence from Social Security administrative records." *The American Economic Review* 80(3): 313-336.

Topic 13:

Machine learning

Required Readings:

- Hindman, Matthew. 2015. "Building better models: Prediction, replication, and machine learning in the social sciences." *The Annals of the American Academy of Political and Social Science* 659(1):48-62.
- *The Economist.* "Of prediction and policy."

Suggested Readings:

- Grimmer, Justin. 2015. "We are all social scientists now: How big data, machine learning, and causal inference work together" *PS*: 80-83.

Topic 14:

Text-as-data

Required Readings:

- Monroe, Burt L., and Philip A. Schrodt. 2008 "Introduction to the special issue: The statistical analysis of political text." *Political Analysis* 16: 351-355.

EXAM III

Exam III due by 11:59PM on Friday, May 27

STATEMENT ABOUT STUDENTS WITH DISABILITIES

To best accommodate students who may require alternative services, it is crucial that you contact me *early in the semester* if you need such accommodations (i.e., within the first two days).

SYLLABUS CHANGES

I reserve the right to make changes to the syllabus during the course of the semester as needed and will make the most updated copy available to you and announce said changes during class.

Last updated: May 8, 2022

UNIVERSITY-MANDATED STATEMENTS

CLASSROOM BEHAVIOR

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the policies on classroom behavior and the Student Conduct & Conflict Resolution policies.

REQUIREMENTS FOR COVID-19

As a matter of public health and safety, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements and all public health orders in place to reduce the risk of spreading infectious disease. CU Boulder currently requires COVID-19 vaccination and boosters for all faculty, staff and students. Students, faculty and staff must upload proof of vaccination and boosters or file for an exemption based on medical, ethical or moral grounds through the MyCUHealth portal.

The CU Boulder campus is currently mask-optional. However, if public health conditions change and masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policy on classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these safety measures, please follow the steps in the "Accommodation for Disabilities" statement on this syllabus.

If you feel ill and think you might have COVID-19, if you have tested positive for COVID-19, or if you are unvaccinated or partially vaccinated and have been in close contact with someone who has COVID-19, you should stay home and follow the further guidance of the Public Health Office (contacttracing@colorado.edu). If you are fully vaccinated and have been in close contact with someone who has COVID-19, you do not need to stay home; rather, you should self-monitor for symptoms and follow the further guidance of the Public Health Office (contacttracing@colorado.edu).

ACCOMMODATION FOR DISABILITIES

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see Temporary Medical Conditions on the Disability Services website.

PREFERRED STUDENT NAMES AND PRONOUNS

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

HONOR CODE

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code academic integrity policy. Violations of the Honor Code may include, but are not limited to: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to the Honor Code (honor@colorado.edu); 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found on the Honor Code website.

SEXUAL MISCONDUCT, DISCRIMINATION, HARASSMENT AND/OR RELATED RETALIATION

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. The university will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, or protected-class discrimination or harassment by or against members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and the support resources can be found on the OIEC website.

Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about their rights, support resources, and reporting options. To learn more about reporting and support options for a variety of concerns, visit Don't Ignore It.

RELIGIOUS HOLIDAYS

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance.

See the campus policy regarding religious observances for full details.