

# PSCI-3075: Applied Political Science Research

University of Colorado Boulder

Maymester 2020

**Time:** Monday-Friday, 12:30-3:30PM  
**Location:** Virtual  
  
**Instructor:** Dr. Andrew Q. Philips  
**Office:** Virtual  
**Email:** andrew.philips@colorado.edu  
**Office hours:** 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 is worth 15% of the final grade. Quizzes will be held regularly to assess how well you are grasping various concepts (held roughly every other day); these are worth 30% of the final grade. Individual and group assignments will be worth 35% of the final grade. A final exam will also be held at the end of the course, and is worth 20% of the final grade.

## Grade Breakdown

Participation	15%
Quizzes	30%
Individual and Group Assignments	35%
Final Exam	20%

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 are no opportunities for extra credit.

## 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

**Participation:** Participation is an integral component of undergraduate courses. Students are expected to come to every class *having already read the assigned readings for that day*, and should be prepared to discuss them. Some of the course material covers difficult topics, so please stop me if you have any questions.

**Class Format, Office Hours:** This course will be held daily over Zoom. Since this is a short course, we do not have formal office hours, but 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.

**Attendance and Late Policy:** Attendance is a key component of succeeding as an undergraduate. Attendance is mandatory, with the exception of university-excused absences. This course is semi-asynchronous; if you cannot commit to the scheduled class time you can still take this course, although you will be expected to watch the lectures and complete any assignments due that day on your own.

Assignments are due on the day listed in the syllabus. 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. 3<sup>rd</sup> edition. ISBN: 1316642674.

Note that it is expected to read the day's required readings *before* coming to class.

**Tentative Schedule:** Below is the tentative 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?" Available at: <https://www.economist.com/news/united-states/21725832-question-harder-answer-you-might-think-pregnancy-america-much-deadlier>.

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?" Available at: <https://www.economist.com/blogs/freeexchange/2016/01/fudging-hell>.

## Topic 5:

Bivariate and multivariate regression and interpretation

Required Readings:

- FPSR Ch. 8 and 9

## 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?" Available at: <http://www.economist.com/node/2384590>.

## 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>
- 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.

Suggested Readings:

- Stuart, Elizabeth A. 2010. "Matching methods for causal inference: A review and a look forward." *Statistical Science* 25(1): 1-21.

## Topic 13:

Machine learning

Required Readings:

- Grimmer, Justin. 2015. "We are all social scientists now: How big data, machine learning, and causal inference work together" *PS*: 80-83.
- *The Economist*. "Of prediction and policy." Available at <https://www.economist.com/finance-and-economics/2016/08/20/of-prediction-and-policy>

## 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.

## 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:** April 13, 2022

## **UNIVERSITY-MANDATED STATEMENTS**

### **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](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition or injury, see Temporary Medical Conditions under the Students tab on the Disability Services website.

### **Classroom behavior**

Students and faculty each have responsibility for maintaining an appropriate learning environment. 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. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on classroom behavior and the Student Code of Conduct.

### **Honor code**

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the policy may include: 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](mailto:honor@colorado.edu); 303-492-5550). Students who are 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 at the Honor Code Office website.

### **Sexual misconduct, discrimination, harassment and/or related retaliation**

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (including sexual assault, exploitation, harassment, dating or domestic violence, and stalking), discrimination, and harassment by 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 [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about the OIEC, university policies, anonymous reporting, and the campus resources can be found on the OIEC website. Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

### **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. In this class, I will try to accommodate your requests, but you must contact me early in the semester. See the campus policy regarding religious observances for full details.