
PSCI 2075 – QUANTITATIVE RESEARCH METHODS

Fall 2021

<i>Instructor</i>	<i>Contact</i>	<i>Office Hours</i>
<i>Dr. Sarah Hunter (Ph.D.)</i>	Sarah.hunter@colorado.edu Office: 233 Ketchum	Monday 3:00pm-4:30pm Sign-up Sheet on Canvas

Course Overview:

Course Description: " Introduces quantitative research methods used in political science. Focuses on basic tools of analysis: data collection, processing, and evaluation, with special attention to survey techniques. Includes elite and case study analysis; aggregate, cluster, and content analysis; and the use of computers in political research." (from CU Course Catalog).

Political Science as a field utilizes many methods of statistical analysis. These methods are also growing common in several other fields, both academic and industry. This course teaches the basics of data analytics using R. These skills can be easily transferred to many other fields of study. Data analytics is one of the fastest growing fields of employment. This course seeks to provide a foundation of knowledge for data analysis upon which you can build further.

Course Goals:

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

- Understand the basics of data structures and uses
- Be a better consumer of quantitative information
- Manipulate and analyze data with R
- Present data analytic results effectively

Required Reading:

- Pollock III, Phillip H. and Barry C. Edwards. 2020. *The Essentials of Political Analysis, 6th Ed.* ISBN: 1506379616
- Pollock III, Philip H. and Barry C. Edwards. 2017 *An R Companion to Political Analysis 2nd Edition.* CQ Press. ISBN: 1506368840.
- Other readings are available online, usually by searching the title and author in Google Scholar or through the course Canvas page.

Software:

In this class, we will mainly use R or R Studio. Some of you may be more comfortable with Stata or SPSS, however R and R Studio are both free, open -source software packages. But you can obtain Stata through CU for a student rate. You will need to know R for the purposes of this course. R can take up a lot of room on your computer. If this presents a problem, you can use R through the Cloud. Please contact me for more details.

Assessment Overview:

- Recitation (15%)
- Weekly Quizzes (10%)
- Small Group Projects (40%)
- Midterm Exam (15%)
- Final Exam (20%)

Grade Scale			
A	95 –100	C	74-76
A-	90-94	C-	70-73
B	88-89	D+	67-69
B	84-87	D	64-66
B-	80-83	D-	60-63
C+	77-79	F	<59

Attendance and Participation in Recitation (15%):

The best way to do well in this class is to show up! This is a remote, synchronous class, so we will have class every day at the specified time. However, as this is a very large class, attendance will only be taken during Recitation. 15% of your total grade will come from your attendance and participation in your recitation section. As recitation is only one day a week, you will have 3 free absences before it starts to impact your grade. After 3 absences, you will lose 1 percentage point from your final grade.

Weekly Quizzes (10%)

Most weeks, there will be a weekly quiz due before the end of the week. These quizzes will cover the content you are responsible for reading that week in class. They will be brief quizzes (i.e. 5-10 questions), all on Canvas. The weeks that there will not be a quiz will be the weeks that there is an exam or major assignment. Watch Canvas for due dates.

Small Group Projects (40%):

This term, you will have groups of about 3 people each. In these groups, you will have 4 small in-class group projects that may span 3-4 weeks. These projects will test your use of R and applications of concepts learned in lecture. I expect everyone to share the responsibility equally. One of the best ways to learn R is to use it. Therefore, these assignments are critical to succeeding in this class. The four projects are the following topics:

- Short explanatory article using descriptive statistics and data visualization
- Presenting and Analyzing Polling Results
- Short explanatory article using inferential statistics
- Policy memo

For each assignment, you will be given detailed instructions and a variety of topic options. The work for these projects will be done in your recitation sections under the supervision of your TA. Requests for regrading must come in the form of a written request and you must wait 24 hours after the grade is given. No requests will be accepted until 24 hours after the grade is given.

Exams: 35%

You will have two exams this semester. These exams will all be online (on Canvas) and will be timed. They will have both multiple choice and short answer questions. Some short answer questions might include using R. You will have a midterm exam (worth 15% of your grade) and a cumulative final exam on the scheduled final exam day (per CU's final exam policy). Your final exam is worth 20% of your grade.

Office Hours:

Office hours this semester will be conducted virtually via Zoom. Every Monday afternoon, I will be logged on to Zoom from 3:00pm to 4:30pm. I will also have a Google Doc posted on Canvas so you can sign up for a 10-minute appointment and find the Zoom link for office hours. I do ask, in the interest of being able to help as many people as possible that you only sign up for one appointment slot at a time. If you need more help and there is no one else in the appointment slot behind you, we can extend the conversation. If that time does not work for you, please feel free to request an appointment outside normal office hours.

Late Work:

Late work will be accepted but will be subject to a penalty of 10 percentage points per business day it is late. After five business days, half credit will be given. Extensions will only be given in extenuating circumstances and you must contact me prior to the due date if at all possible. All of the due dates are on the syllabus, allowing you to plan accordingly. All work will be turned in online to further help anyone that cannot attend in person due to Covid-19. If you are having any troubles (i.e. extenuating circumstances), please contact me before the due date and we can work out an alternative schedule.

Communication:

All communication for this class will be through your official CU email account and Canvas. Note that I cannot discuss your course grades and/or assignments from a non-CU account due to FERPA rules. Please check your CU email accounts and canvas regularly for changes in the course schedule or other announcements. This semester, communication will be doubly important. Feel free to email questions/concerns. I will try to respond to all emails within 48 hours. If I have not responded in that window, feel free to email again. However, the night before exams or other assignments are due, there is a distinct possibility that I will be unable to respond within an hour. Please be patient with me. There are many of you and one of me. Also, my responses will become increasingly terse with the volume of emails. This is not personal; it is just me trying to answer as many emails as quickly as possible. Bottom line: do not hesitate to email me, but also make sure to give me time to respond.

Course Schedule (subject to change):

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

Key for readings:

- EPA -- *The Essentials of Political Analysis*
- RCPA -- *And R Companion to Political Analysis*.

Day	Topics	Reading
WEEK 1 (8/23- 8/27)		
Monday	Lecture: <ul style="list-style-type: none">• Intro to the Course	- The Syllabus

Wednesday	Lecture: <ul style="list-style-type: none"> • Introduction to R • Introduction to Data 	- EPA Ch. 1 - RCPA Intro, Ch. 1
Recitation Section	Activity: <ul style="list-style-type: none"> • Downloading R • Downloading R Studio 	
WEEK 2 (8/30 - 9/3)		
Monday	Lecture: <ul style="list-style-type: none"> • Intro to the Descriptive Statistics 	- EPA Ch. 2 - RCPA Ch. 2
Wednesday	Activity: <ul style="list-style-type: none"> • Loading Data in R • Descriptive Statistics in R 	
Recitation Section	Starting Group Project 1: Choosing a Topic	
WEEK 3 (9/6 - 9/10)		
Monday	NO CLASS (LABOR DAY)	
Wednesday	Lecture: <ul style="list-style-type: none"> • What to learn from Descriptive Statistics 	- EPA Ch.3 - RCPA Ch. 3
Recitation Section	Working on Group Project 1	
WEEK 4 (9/13 - 9/17)		
Monday	Lecture: <ul style="list-style-type: none"> • Graphical Presentations of data 	- Review RCPA Ch. 3 - "Basic Plots" pdf
Wednesday	Activity: <ul style="list-style-type: none"> • Making figures in R with base R • The basics of GGplot 	- "Basic Plots" pdf - "GGplot Basics" pdf
Recitation Section	Working on Group Project 1	
WEEK 5 (9/20 - 9/24)		
Monday	Lecture: <ul style="list-style-type: none"> • Controlled Comparisons 	- EPA Ch. 5 - RCPA Ch. 4-5 - Chapter posted on Canvas
Wednesday	Activity: <ul style="list-style-type: none"> • Bivariate Statistics and Graphical Presentations 	
Recitation Section	Finish Group Project 1	
WEEK 6 (9/27 - 10/1)		
Monday	Lecture: <ul style="list-style-type: none"> • Inference and Statistical Significance Part I 	- EPA Ch. 6 (pp. 167-188) - RCPA Ch. 6
Wednesday	Activity: <ul style="list-style-type: none"> • Confidence Intervals 	
Recitation Section	Start Group Project 2	
WEEK 7 (10/4 - 10/8)		
Monday	Lecture: <ul style="list-style-type: none"> • Inference and Statistical Significance Part II • 	- EPA Ch. 6 (pp. 188-197) - EPA Ch. 7 (pp. 199-215) - RCPA Ch. 6
Wednesday	<ul style="list-style-type: none"> • Midterm Exam on Canvas 	
Recitation Section	Working on Group Project 2	
WEEK 8 (10/ 11 - 10/15)		
Monday	Lecture: <ul style="list-style-type: none"> • Measures of Association 	- EPA Ch. 7 - RCPA Ch. 6-7
Wednesday	Activity:	

	<ul style="list-style-type: none"> • Difference of Means Test in R • Chi-squared Tests in R 	
Recitation Section	Finish Group Project 2	
WEEK 9 (10/18 - 10/ 22)		
Monday	Lecture: <ul style="list-style-type: none"> • Bivariate Regression and Correlation • 	- EPA Ch. 8 (pp. 239-249) - RCPA Ch. 8
Wednesday	Lecture: <ul style="list-style-type: none"> • Bivariate Regression Results • 	- EPA Ch. 8 (pp. 249-256) - RCPA Ch. 9
Recitation Section	Start Group Project 3	
WEEK 10 (10/25 - 10/ 29)		
Monday	Activity: <ul style="list-style-type: none"> • Bivariate Regression in R • Correlations in R • Making Tables in R 	
Wednesday	Lecture: <ul style="list-style-type: none"> • Multiple Regression 	- EPA Ch. 8 (pp. 257-267) - RCPA Ch. 8-9
Recitation Section	Work on Group Project 3	
WEEK 11 (11/1 - 11/5)		
Monday	Lecture: <ul style="list-style-type: none"> • Dichotomous and Categorical Variables in Regression 	- EPA Ch. 8 (pp. 260-263)
Wednesday	Activity: <ul style="list-style-type: none"> • Practicing Regression with Dichotomous Variables 	
Recitation Section	Finish Group Project 3	
WEEK 12 (11/8 - 11/12)		
Monday	Lecture: <ul style="list-style-type: none"> • Interactive Models 	- EPA Ch. 8 (pp. 263-267)
Wednesday	Activity: <ul style="list-style-type: none"> • Interactions in R 	
Recitation Section	Start Group Project 4	
WEEK 13 (11/15 - 11/19)		
Monday	Lecture: <ul style="list-style-type: none"> • Post-estimation Diagnostics 	- EPA Ch. 8 (pp. 267-276) - "Regression Diagnostics"
Wednesday	Activity: Post-estimation Diagnostics in R	
Recitation Section	Work on Group Project 4	
WEEK 14 (11/22 - 11/26)		
Monday	NO CLASS (FALL BREAK)	
Wednesday	NO CLASS (FALL BREAK)	
Recitation Section	NO CLASS (FALL BREAK)	
WEEK 15 (11/29 - 12/3)		
Monday	Lecture:	- EPA Ch. 9 (pp. 279-309)

	<ul style="list-style-type: none"> Logistic Regression and Predicted Probabilities 	
Wednesday	Activity: <ul style="list-style-type: none"> Logistic Regression and Predicted Probabilities in R 	- RCPA Ch. 10
Friday	Work on Group Project 4	
WEEK 16 (12/6 - 12/9)		
Monday	Finish Group Project 4	
Wednesday	Final Exam Review	
Recitation Section	Finish Group Project 4 if needed	

CU Syllabus 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 due to the pandemic, 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. Students who fail to adhere to these 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.

As of Aug. 13, 2021, CU Boulder has returned to requiring masks in classrooms and laboratories regardless of vaccination status. This requirement is a temporary precaution during the delta surge to supplement CU Boulder’s COVID-19 vaccine requirement. Exemptions include individuals who cannot medically tolerate a face covering, as well as those who are hearing-impaired or otherwise disabled or who are communicating with someone who is hearing-impaired or otherwise disabled and where the ability to see the mouth is essential to communication. If you qualify for a mask-related accommodation, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus. In addition, vaccinated instructional faculty who are engaged in an indoor instructional activity and are separated by at least 6 feet from the nearest person are exempt from wearing masks if they so choose.

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home. In this class, if you are sick or quarantined, please let your TA know before the next class, and accommodations can be made.

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

The University of Colorado Boulder (CU Boulder) is committed to fostering an inclusive and welcoming learning, working, and living environment. CU Boulder 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 OIEC, university policies, [reporting options](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and graduate instructors have a responsibility to inform OIEC when 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.

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, please let your TA know in advance so we can make arrangements.

See the [campus policy regarding religious observances](#) for full details.