

# POSC XXX: Quantitative Methods in Political Science

## Department of Political Science

Instructor: Nick Jenkins

Fall 2020

Office Location: Sproul Hall 2228

Classroom: CHASS 1020

Office Hours: W: 4-5pm; TH: 1:30-3:30pm

Class Times: MW: 9-10:15am

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## Course Description

Does the media increase polarization? Do lobbyists change public policy? Are countries with free trade policies less likely to go to war? As more data on political activities becomes readily available, political scientists, government agencies, and policy analysis firms are using data-driven analyses to investigate important questions like these.

Take a minute to think about an issue that you care about. What would you do to fix/improve this issue? How do you know that it would work? In this course, you will learn how to see the world through the lens of a social scientist and answer both of these questions. Most importantly, you will learn how to answer these questions with hands-on practice, not just reading about it or having me tell you.

## Required Materials



Textbooks can be boring and expensive - one of the world's worst combinations! I've tried to mitigate both of these in the selection of our course textbook. I've read a lot of books on research design and quantitative methods and I choose two that offer the best introductory material that will teach you the practical skills you will need for a career in government or politics and will prepare you for more advanced courses on quantitative methods.

To learn the fundamentals of scientific thinking and how to apply it to research problems we will use [The Elements of Social Scientific Thinking](#) (Tenth

Edition). I selected the tenth edition, but both older and newer editions will work. I picked the tenth edition only because it can be bought used on Amazon for less than \$2!

The other book that we'll use will teach you how to use R to process, explore, visualize, and analyze data. It will also help you learn the fundamentals of applied quantitative methods for social science research. This book is a little more expensive (around \$35 used) but it is a great reference book for R code and applied statistics (trust me!) The book is called [Quantitative Social Science: An Introduction](#). Also know that newer versions of either text are acceptable as well.

The software we will be using is [R](#) and [RStudio](#). R is the language and it needs to be installed before you can use it. You can install it here: (<https://www.r-project.org>). RStudio is an [Integrated Development Environment](#) (IDE). You can install it here: (<https://rstudio.com>). An IDE is essentially a program that gives you a lot of tools to make programming easier. Think of it this way, instead of using Microsoft Word to write your papers you could just use Notepad. So why does everyone pay for Microsoft Word when they could use a free program? Because Word gives you a lot of tools to make writing easier. So, we could just write R code without RStudio but that would be like using Notepad. RStudio gives a bunch of awesome tools so we'll take advantage of it. The best news is, both R and RStudio are **completely free** and run on MacOS, Windows, and Linux so everyone can use it!

## Course Promises

In this course, I will make the following promises to you. By the end of the semester, you will be able to:

1. To think scientifically about political and social problems
2. Evaluate the evidence in support of a theory
3. Use R to program and work with data
4. Effectively communicate data and results to an audience

These skills are in high demand by employers in the public and private sectors who are increasingly looking for candidates who can work with data to produce evidence-based analyses.

## Course Expectations

This course will only fulfill these promises if you promise the following in return:

1. **To attend class.** I have designed this class for the readings and lectures to complement one another. As a result, attending lecture will be an essential component for your to develop a mastery of the course material.
2. **To read the assigned materials.** Similar to the lectures, the readings will provide additional details on each topic that may not be covered in lecture. They will also give you an opportunity to practice applying your knowledge of American government to understand real world decisions that have been made.
3. **To be attentive and participate in class.** Participation does not only mean speaking aloud in class. Students should participate by actively following class discussions and engaging with lecture activities.
4. **To complete the required assignments in a timely fashion.** The assignments in this course are designed for you, and me, to measure your progress on meeting the course promises. Each assignment will give you practice at mastering these promises and I will give feedback to help guide you in your journey. Providing feedback is time consuming, however, so you will get the most useful feedback, and therefore the most use out of each assignment, only if you turn in your work on time.

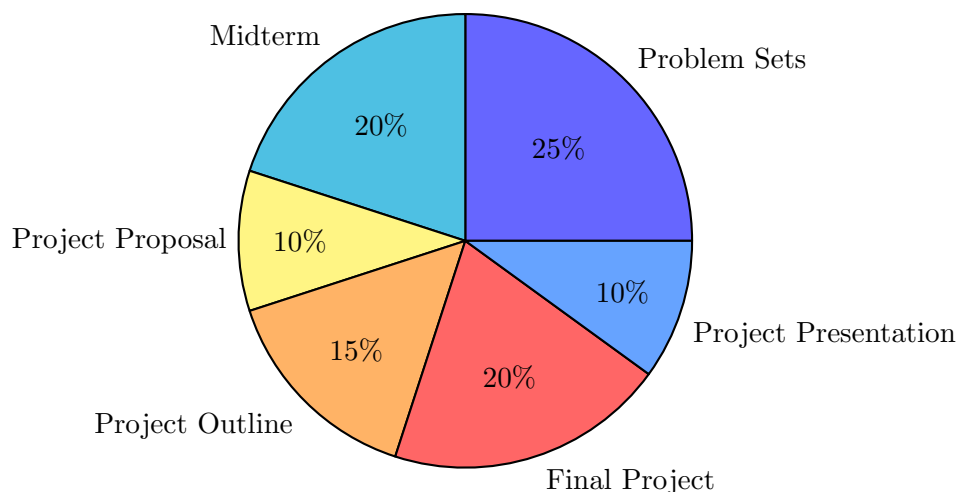
## Assignments and Evaluation

The class will prioritize learning-by-doing and all of the assignments that we will completed are designed to develop the skills you need to conduct social science research and policy analysis. You won't be asked to use formulas and make calculations. Instead, you will test real questions with real data in R, evaluate your results, and present them in a clear fashion. I that these skills are new for the majority of students so we will have lots of practice and opportunities to succeed. Below is a list of the assignments that we will complete in the course and their requirements.

1. **3 Problem Sets:** Throughout the course, we will have a series of problem sets that ask you to use R to manipulate data and answer questions with that data. These assignments will be graded in two stages. First, on completeness then on the correction of mistakes. On the day a problem set is due, you will submit it online and I will review them to make sure that they were completed with an honest effort and in their entirety. If so, you will receive full credit. The next class after the due date, we will review the answers and you will need to correct all of your mistakes. Then you will turn you submit your corrected problem set online. If you complete both of these steps you will receive full credit. Only completing one step will get you partial credit. The details about each problem set will be posted to iLearn. These problem sets will contribute the course promise number three.

2. **Midterm Assessment:** For the midterm, you will be given a research problem that will require you propose a study to answer the problem. You will need to think about what variables your study would need and how you would measure them, develop a theory that would explain the problem, develop testable hypotheses from your theory, and explain what would count as good evidence in support of your theory and why. This will be an in-class assessment and will be held on **November 11th**. This assignment will contribute to the 1st and 2nd course promises.
3. **Research Proposal:** The final in the course will be a proposal for an original research project of a **maximum of 4 pages double-spaced**. This assignment will be completed in stages that mimic how a social scientist or policy analyst study important questions. We'll go use this guide in class to learn how to write a research paper: <https://politicalscienceguide.com/home/research-papers/>. This project will be completed in the following 3 stages:
  - Project Abstract: you will submit a project proposal that explains what question you will be researching and what your theory is in **250 words or less**. An essential aspect of any research project is identifying what puzzle you want to solve (the research question), as well as a theory and prediction about the answer based on your knowledge of the topic. **This is due in-class on October 7th.**
  - Project Outline: In a **maximum of 2 double-spaced page**, you will create an outline of your paper. This outline should contain your research question, your theory, and the hypotheses that you would like to test. You will also need to describe the variables that you will need and how you will measure them. Make sure that the variables you propose to use are actually realistic! **your project outlines will be submitted via iLearn on November 18th.**
  - Project Presentations: In the last week of class, you will have **5 minutes present** your research proposal. You will need to explain your research question, the question's importance, your theory, your hypotheses, your variables, and how you will test your hypotheses.
  - Final Project: Write your most convince case for why your answer to your research question is the right one in a **maximum of 6 double-spaced pages**. If you have done the previous stages correctly, this will involve transforming your outline into a complete paper. Make sure your theory is supported by prior research! **The final project will be submitted via iLearn on December 16th.**

These assignments will constitute your grade in the course and the weight of each of assignment are as follows:



The letter grades will be assigned according to these percentages:

A+	97-100%	B+	87-89%	C+	77-79%	D+	67-69%	F	0-59%
A	93-96%	B	83-86%	C	73-76%	D	63-66%		
A-	90-92%	B-	80-82%	C-	70-72%	D-	60-62%		

## Classroom Decorum and Academic Discourse

For everyone to have the best possible learning experience, we will strive to create a classroom environment that supports respectful, critical inquiry through the free exchange of ideas. As part of learning, it is essential to discuss topics with individual who have different viewpoints than your own and the only way we can better understand one another is if we can carry on a collegial discussion of the topic. Remember, the goal is to become better critical thinkers. To do so we must learn to listen to others and articulate our views in respectful ways. As such, the following principles will guide our discussions:

- Treat every member of the class with respect, even if you disagree with their opinion;
- Bring light, not heat;
- Reasonable minds can differ on any number of perspectives, opinions, and conclusions;
- Because constructive disagreement sharpens thinking, deepens understanding, and reveals novel insights, it is not just encouraged, it is expected;
- No ideas are immune from scrutiny and debate;

- You will not be graded on your opinions;
- Arguments and evidence should be judged *independently* of who offers such arguments and evidence.

Additionally, to build a classroom environment that maximizes everyone's ability to master the course material please be mindful to not distract your fellow learners with your phone, tablet, or computer. It's perfectly fine if you would like to use these devices to take notes during class, but don't use them to distract yourself or your peers! Similarly, if you come late (or must leave early) please to enter/depart the classroom in the least disruptive manner possible. This includes sitting near the door if you anticipate leaving early or taking a seat as near to the door as possible if you arrive late.

## Academic Honesty

I expect that all work you produce for this course will be your own. If you plagiarize any material from outside sources for your written work or presentation in this course, or on the final exam, **it will result in a failure of the entire course.** There are no exceptions to this, and no second chances. Please refer to the university's [Academic Integrity Policies & Procedures](#) if you have questions about these standards.

## Special Accommodations

If you need particular accommodations to help you succeed in mastering this course's material, please contact the [Student Disability Resource Center](#) on campus in Costo Hall 125 to get a personalized accommodation plan.

## Course Outline

This syllabus is a working document. I reserve the right to make changes to the assigned readings (additions or deletions) or to the order of topics we cover as I deem necessary. Announcements regarding schedule changes will be made in class, in discussion sections, or on iLearn.

Also note that this schedule lists the topics of discussion for each class. To master the course material, you should finish each meeting's readings before we discuss them in class. When I was in your shoes learning quantitative methods, I had to read every assigned chapter at least twice before I really understood what it was talking about. Don't neglect the readings! This schedule also indicates which course promise(s) each class contributes to. They are listed as **CP** followed

by the specific promise's number (listed above).

### Tentative Schedule:

MONDAY	WEDNESDAY
<div>Aug 31st</div> <div>1</div> <p><b>CP 1</b> Course Introduction; How would you fix a policy issue?</p>	<div>Sep 2nd</div> <div>2</div> <p><b>CP 1 &amp; 3</b> Elements of Social Scientific Thinking Ch. 1: How should you think about problems?; Getting started in R</p>
<div>7th</div> <div>Labor Day - No Class :(</div>	<div>9th</div> <div>3</div> <p><b>CP 1</b> Elements of Social Scientific Thinking Ch. 2: How do you measure concepts? Wait, what is a concept? I heard machines will replace researchers...</p>
<div>14th</div> <div>4</div> <p><b>CP 3</b> Quantitative Social Science Ch. 1: Learning the basics of R (R will soon be your favorite letter.)</p>	<div>16th</div> <div>5</div> <p><b>CP 3</b> Quantitative Social Science Ch. 1: Learning the basics of R (R will soon be your favorite letter.)</p>
<div>21st</div> <div>6</div> <p><b>CP 1</b> Elements of Social Scientific Thinking Ch. 3: Forming testable questions and building studies.</p>	<div>23rd</div> <div>7</div> <p><b>CP 1 &amp; 2</b> <b>Problem Set 1 Due via iLearn</b> Elements of Social Scientific Thinking Ch. 3: Are my results...good?</p>
<div>28th</div> <div>8</div> <p><b>CP 1</b> Elements of Social Scientific Thinking Ch. 4 Pages 58-70: Refining our hypotheses to test them.</p>	<div>30th</div> <div>9</div> <p><b>CP 1</b> Elements of Social Scientific Thinking Ch. 4 Pages 70-77: What's their relationship status? You need to know your variables!</p>

MONDAY	WEDNESDAY
<div>Oct 5th</div> <div>10</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 7.2-7.2.3: How do you <i>actually</i> test a hypothesis? (General approach and one-sample tests)</p>	<div>7th</div> <div>11</div> <p><b>CP 3</b></p> <p><b>Project Abstract Due In-Class</b></p> <p>Quantitative Social Science Ch. 7.2.4-7.2.6: Still <i>actually</i> testing a hypothesis? (Two-sample tests, downfalls, and power)</p>
<div>12th</div> <div>12</div> <p><b>CP 1</b></p> <p>Elements of Social Scientific Thinking Ch. 5 Pages 78-84: Ways to measure things.</p>	<div>14th</div> <div>13</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 2.2-2.2.5: Variables in R and manipulating them muahahaha...</p>
<div>19th</div> <div>14</div> <p><b>CP 1</b></p> <p><b>Problem Set 2 Due via iLearn</b></p> <p>Elements of Social Scientific Thinking Ch. 5 Pages 84-92: Sampling (like booths at Costco) and randomization (like if you picked something from the booth with a blindfold)</p>	<div>21st</div> <div>15</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 3.4-3.4.2: Dealing with real survey data <a href="#">How to write a research paper.</a></p>
<div>26th</div> <div>16</div> <p><b>CP 1 &amp; 2</b></p> <p>Elements of Social Scientific Thinking Ch. 5 Pages 92-106: How strong is a relationship and regression analysis (the return of <math>y = mx + b</math>!!)</p>	<div>28th</div> <div>17</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 3.3-3.3.4 &amp; 3.6-3.6.3: Visualizing variables and relationships between variables</p>
<div>Nov 2nd</div> <div>18</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 4.2-4.2.6: Testing relationships with real data</p>	<div>4th</div> <div>19</div> <p><b>CP 1 &amp; 2</b></p> <p>Elements of Social Scientific Thinking Ch. 5 Pages 106-114: Multiple m's and x's!</p>
<div>9th</div> <div>20</div> <p><b>CP 3</b></p> <p>Quantitative Social Science Ch. 4.3.2: Testing even more relationships with real data!</p>	<div>11th</div> <div>21</div> <p><b>CP 1 &amp; 2</b></p> <p><b>Midterm</b></p>



MONDAY	WEDNESDAY
16th <b>22</b> <b>CP 2 &amp; 3</b> Quantitative Social Science Ch. 2.3-2.4.2: On the hunt for causality	18th <b>23</b> <b>CP 2 &amp; 3</b> <b>Project Outline Due via iLearn</b> Quantitative Social Science Ch. 7-7.1.2: Are you certain about that?
23rd <b>Thanksgiving Break! - No Class :(</b>	25th <b>Thanksgiving Break! - No Class :(</b>
30th <b>24</b> <b>CP 2 &amp; 3</b> <b>Problem Set 3 Due via iLearn</b> Quantitative Social Science Ch. 7.1.3-7.1.5: Ok, but how confident are you?	<div>Dec 2nd</div> <b>25</b> <b>CP 4</b> Tools to summarize and present findings
7th <b>26</b> <b>CP 1, 2, &amp; 4</b> <b>Class Presentations</b>	9th <b>27</b> <b>CP 1, 2, &amp; 4</b> <b>Class Presentations</b>
14th <b>28</b> <b>Final Project Due on iLearn (CP 5 &amp; 6)</b> <b>Participation Self-assessment Due</b>	16th <b>29</b>