POL SCI 701 – Techniques of Political Science Research
Fall 2021

Mondays, 4:30 pm – 7:00 pm
Bolton 293

Instructor Information

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Office hours:	Mondays, 2:00 pm – 4:00 pm, or by appointment

I Overview

This is a graduate-level introductory course in political methodology. You will learn the nuts and bolts of probability theory, causal inference, and statistical programming. Ultimately, our goal is to prepare you for subsequent courses in our methods sequence (POL SCI 702 and POL SCI 935), where you will learn more advanced models and applications. The topics we will discuss here include:

1. Programming with R
2. R Markdown & LaTeX
3. Probability theory
4. Statistical inference
5. Introduction to OLS
6. Data visualization.

II Textbook and Required Material

There is one required textbook for the course and it is available at the bookstore:
Imai, Kosuke. 2017. *Quantitative Social Science: An Introduction*. Princeton University Press

In addition, we are going to use the following resources that are available online:

- The Plain Person's Guide to Plain Text Social Science: `http://plain-text.co`
- Math Prefresher for Political Scientists: `https://iqss.github.io/prefresher`
- R for Data Science (Wickham and Grolemund, 2016): `https://r4ds.had.co.nz`
- Data Visualization (Healy, 2018): `https://socviz.co`
- Introduction to Modern Statistics: `https://openintro.org/book/ims/`

We will be using RStudio Cloud for the programming portion of the course. Get started by creating your own (free) account at `https://rstudio.cloud` and work through their first primer called "The Basics." This interactive tutorial that will help you familiarize yourself with basic programming concepts and R. On Canvas, you will find more information about how to join our shared RStudio Cloud workspace for the course.

III Schedule

Date	Topics	Readings
09/13	Course Logistics	The Plain Person's Guide to Plain Text Social Science
09/20	Introduction	Imai 2017, ch. 1
09/27		Buffer Week — Math Prefresher for Political Scientists
10/04	Causality	Imai 2017, ch. 2
10/11	Measurement	Imai 2017, ch. 3
10/18	Prediction	Imai 2017, ch. 4
10/25		Buffer Week — More on Prediction
11/01	Deriving OLS	Fox 2015, chs. 5 & 7
11/08	Discovery	Imai 2017, ch. 5
11/15	Probability	Imai 2017, ch. 6
11/22	Uncertainty	Imai 2017, chs. 7 & 8
11/29		Buffer Week — More on Uncertainty
12/06	Into the Tidyverse!	Wickham and Grolemund 2016, chs. 5, 10, 11, 12
12/13		Buffer Week — Wrap-up & Final Exam Questions

Note: Schedule may be subject to change depending on our progress during the semester.

IV Additional Resources

As we work through the course material, some of you may want additional information on the underlying mathematical concepts, while others want to dig deeper into programming. Here is a list of additional textbooks that you might find helpful in either case:

	Mathematics / Statistics	*Programming / R*
Recommended	Gill (2006) Gailmard (2014)	Verzani (2014) Urdinez and Cruz (2020)
Optional	Angrist and Pischke (2008) Wooldridge (2013)	Teetor (2011) Fox and Weisberg (2018)

Furthermore, our textbook (Imai, 2017) provides a free set of review exercises that you can work on directly by loading the `swirl` package in RStudio Cloud. I will show you how to access these exercises as part of our first lecture.

There are countless other resources available online, but I want to highlight two great sets of YouTube videos in case you want to learn more about specific topics covered in our course. You'll find links to these videos on Canvas as well:

- Gary King's lecture videos on quantitative social science methods:
  `https://www.youtube.com/channel/UCtrwX29xpuWc9y0-0PKrHSQ/playlists`
  `https://projects.iq.harvard.edu/gov2001`
- David Siegel's lecture videos on mathematics for political and social research:
  `https://www.youtube.com/channel/UCrA2SLUKnV6yjdgIfDwFeGg/playlists`
  `https://people.duke.edu/~das76/moosiebook.html`.

V Grading and Work Load

Your final grade will be determined based on the following three components:

1. **Weekly problem sets ($60\% = 10 * 6\%$):** The main focus of this course will be your weekly assignments. I strongly encourage you to work in groups and discuss each question with your peers. However, each student must write up and submit their own original solution. Problem sets have to be submitted via Canvas by the end of the specified due date (usually by midnight on Mondays). *Of the 12 problem sets, I will take the average of the 10 highest grades*, meaning that you can do poorly on 2 assignments without it impacting your grade.
2. **Final exam (30%):** The final exam will test you on materials from the entire course. It will be a take-home exam similar to the weekly problem sets. The only difference is that it will cover more material and that you are not allowed to collaborate with your peers.
3. **Class participation (10%):** Learning is a collaborative process, so I encourage you to engage with each other throughout the course. Note that quality is more important than quantity.

I am planning to use the following grading scheme. Adjustments may only be made to improve grades:

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

Percentages ending in a decimal of .5 or greater will be rounded up to the next whole number.

Pass/Fail: Students who take this course under the Pass/Fail option must receive a grade of C or higher in order to obtain a Pass on their final grade. A final grade of "Incomplete" will only be given under exceptional circumstances and is solely at the discretion of Professor Kraft.

Late submission policy: Problem sets submitted after their respective due dates will only be graded for partial credit. For each day after the deadline, I will reduce the score by one grade point. I will make exceptions to this policy only in the most severe and rare circumstances (severe illness, etc.).

Campus network or Canvas outage: Due dates for assignments will be changed to the next day (due by midnight) if access to Canvas is not available for an extended period of time (greater than one entire evening, i.e., 6pm – 11pm).

Work Load: This is a full credit course (3 credits), so the expected time commitment from students is 144 hours throughout the semester, which amounts to approximately 10 hours per week. Students will spend 40% of their time reviewing the course material (completing assigned readings, taking notes, etc.). 50% will be spent working on coding assignments and problem sets. A further 10% will be spent preparing for the final exam.

Activity	**Estimated Time Commitment**
Reviewing course material	58 hours
Completing weekly problem sets	72 hours
Preparing for final exam	14 hours

VI Acknowledgements

I have adapted the ideas and language from the work of several educators for this syllabus and the course material. For example, I have borrowed liberally from other courses on social science research methods and statistics, as taught by Kosuke Imai, Gary King, Michael Peress, Thomas Gschwend, and others. I appreciate their contributions to the discipline and thank all educators who make their teaching material available to others. To pay it forward, I will share my own material with anyone who is interested.

VII COVID Policies

Panther Community Health and Safety Standards

UWM has implemented reasonable health and safety protocols, taking into account recommendations by local, state and national public health authorities, in response to the COVID-19 pandemic. As a member of our campus community, you are expected to abide by the Panther Interim COVID-Related Health & Safety Rules, which were developed in accordance with public health guidelines. These standards apply to anyone who is physically present on campus, UWM grounds, or participating in a UWM-sponsored activity:

- All individuals visiting UWM facilities must wear face coverings while indoors;
- Unvaccinated students coming to campus are required to test weekly for COVID-19; and,
- You should check daily for COVID-19 symptoms and not come to campus if you are feeling sick.

Additional details about student and staff expectations can be found on the UWM COVID-19 webpage as well as in the full online version of the COVID-19 syllabus statements.

VIII University Policies

Drop and Add dates

Please see the following website for full details on the types of withdrawals that are available:
https://uwm.edu/onestop/dates-and-deadlines/interactive-adddrop-calendar/

Academic Integrity

No form of academic dishonesty will be tolerated. The University of Wisconsin-Milwaukee has detailed its policies on academic integrity (http://uwm.edu/academicaffairs/facultystaff/policies/academic-misconduct/). You should acquaint yourself with policies concerning cheating, fabrication, plagiarism, and academic interference. Any submission of work in this course constitutes a certificate that the work complies with university policies on academic integrity.

Student Disabilities

The University of Wisconsin-Milwaukee supports the right of all enrolled students to a full and equal educational opportunity. The Americans with Disabilities Act (ADA), Wisconsin State Statute (36.12) require that students with disabilities be reasonably accommodated in instruction and campus life. Reasonable accommodations for students with disabilities is a shared faculty and student responsibility. Students are expected to inform me of their need for instructional accommodations by the end of the third week of the semester, or as soon as possible after a disability has been incurred or recognized. I, will work either directly with you or in coordination with the Accessibility Resource Center to identify

and provide reasonable instructional accommodations. Disability information, including instructional accommodations as part of a student's educational record, is confidential and protected under FERPA. Please also see http://uwm.edu/arc/ for further information.

Other Policies

The University of Wisconsin-Milwaukee has several additional policies concerning issues such as accommodations for religious observances, students called to active military duty, discriminatory conduct, or sexual harassment available for you here: https://uwm.edu/secu/syllabus-links/. I strongly encourage you to access this link and familiarize yourself with these policies and procedures.

References

Angrist, Joshua D, and Jörn-Steffen Pischke. 2008. *Mostly harmless econometrics: An empiricist's companion*. Princeton University Press.

Fox, John. 2015. *Applied regression analysis and generalized linear models*. 3 ed. Sage Publications.

Fox, John, and Sanford Weisberg. 2018. *An R companion to applied regression*. 3 ed. Sage Publications.

Gailmard, Sean. 2014. *Statistical modeling and inference for social science*. Cambridge University Press.

Gill, Jeff. 2006. *Essential mathematics for political and social research*. Cambridge University Press.

Healy, Kieran. 2018. *Data visualization: a practical introduction*. Princeton University Press.

Imai, Kosuke. 2017. *Quantitative Social Science: An Introduction*. Princeton University Press.

Teetor, Paul. 2011. *R cookbook*. O'Reilly Media, Inc.

Urdinez, Francisco, and Andres Cruz. 2020. *R for Political Data Science: A Practical Guide*. CRC Press.

Verzani, John. 2014. *Using R for introductory statistics*. CRC Press.

Wickham, Hadley, and Garrett Grolemund. 2016. *R for data science: import, tidy, transform, visualize, and model data*. O'Reilly Media, Inc.

Wooldridge, Jeffrey M. 2013. *Introductory econometrics: a modern approach*. Cengage Learning.