PSC/IR 389: Senior Honors Seminar

Wednesdays 2:00-4:40
Hylan Building Room 101

Syllabus Version 1.1

Instructor

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Overview

The fall semester seminar will teach students how to write an original social scientific research paper. Students enrolled in the class are expected to complete a thesis in the spring. In the fall course, they will choose a research topic and question, find an advisor in the political science department, read the relevant literature, generate hypotheses, begin collecting data, think about strategies for addressing confounding concerns, and at the end of the semester produce a paper of roughly 12-15 pages that constitutes a draft of the final thesis. Along the way, students will read high-quality published articles, learn how to interpret regression tables and how to produce their own, understand pros and cons of various research design techniques, replicate a published research article, and learn how to organize and to write a research paper. This course is primarily geared toward teaching students how to write a statistical empirical research paper.

Prior instructor permission is required for this class, which is worth four credits towards a degree requirement.

Communication

We will use Slack as the default forum for communication; assignments can be submitted via Slack. We will set up a Slack channel in class. You are encouraged to use it to ask your colleagues for help with your work, let them know about things that might be interesting or helpful, and celebrate interesting findings.

I try my best to answer all student communications within a 24-hour turnaround period during the school week. If I have not replied to you within this time period, feel free to follow up with

me, as it is possible that I missed your earlier message. Please note that I am generally away from my computer from Friday afternoon through Saturday evenings.

Readings

All readings will be uploaded to Perusall. Please contact me if there are any difficulties in accessing the document. Although there are no required texts outside of these readings, the following books present regression and related techniques at a level that should be accessible to advanced undergraduates:

- Angrist, Joshua D. and Jorn-Steffen Pischke. 2009. Mostly Harmless Econometrics: An Empiricists' Companion. Princeton: Princeton University Press.

- Angrist, Joshua D. and Jorn-Steffen Pischke. 2014. Mastering 'Metrics: The Path from Cause to Effect. Princeton: Princeton University Press.

- Dunning, Thad. 2012. Natural Experiments in the Social Sciences: A Design-Based Approach. New York: Cambridge University Press.

- Freedman, David, Robert Pisani, and Roger Purves. 1997. Statistics, Third Edition. New York: W. W. Norton and Co. (Although there is a newer fourth edition, I list the third edition because it is cheaper used on Amazon. The material in Sections III, V, and VIII is particularly pertinent for this course.)

- Green, Donald P. and Alan S. Gerber. 2012. Field Experiments: Design, Analysis, and Interpretation. New York: W.W. Norton & Company.

This course will teach students the basics of the statistical software R. R is free and open source. You can (and should/must) download it at https://cran.r-project.org/. RStudio is a popular code editor and is also available for free at https://www.rstudio.com/. Two short tutorials you might want to work through are available here: https://data.princeton.edu/R and https://www.dropbox.com/home/Casey%20Petroff/r_tutorial

Grading

- 33% A replication paper: The first major assignment of the course is a roughly 5-page replication paper, which is due (and is graded) in two stages. In the first stage, you will replicate a descriptive statistics and major results verbatim from an existing article. In the second stage, you will extend the analysis (by improving on the original analysis, adding a new variable, etc.). You are encouraged to explore various datasets and to be creative with how they alter existing empirical setups.

- 34% Fall paper: At the end of the fall semester, students will hand in a 12-15 page paper that constitutes a rough draft of the thesis project. This paper will be jointly graded by myself and by your advisor. While we know that you will have the spring semester to work on this project, we want you to get as far as you can in the first semester of the course.

- 33% Other written assignments and class participation: There will be a series of readings on which you will collaboratively comment using the Perusall platform. The assignments are also necessary for effective class participation, the grade for which will depend not simply on attending, but mainly on your contributions to the discussion. It is particularly important to actively engage your classmates' research ideas and to provide constructive feedback.

All written assignments for class, unless otherwise stated, are due by **5pm on the Tuesday before the class** for which they are assigned. Late reading assignments will not be accepted (i.e., the Perusall system will close the assignment). Replication and research assignments should be submitted on time and may be subject to a lateness penalty. Remember that many of these assignments will be peer-reviewed by your colleagues, and lateness will inconvenience your friends who are going to give you feedback and/or the professors and grad student who are advising you.

Attendance

Attendance is required at all sessions. Please notify me of any known and unavoidable absences (e.g., University-sponsored academic or sporting event) at the beginning of the semester, and any unforeseen circumstances (e.g., death in the family, illness) as soon as possible as they arise. I understand that unforeseen events occur on occasion, but it is your responsibility, not mine, to keep me informed. This course moves quickly, and a handful of absences will likely require dropping the class.

Disability Accommodation

If you require accommodations due to the impact of a disability, please contact the Office of Disability Resources. The access coordinators in the Office of Disability Resources can meet with you to discuss the barriers you are experiencing and explain the eligibility process for establishing academic accommodations. You can reach the Office of Disability Resources at: disability@rochester.edu; see also www.rochester.edu/college/disability.

Political Science Advisor

Each student will choose an advisor for their senior honors project. You are required to meet with your advisor at least three times during the fall semester. The schedule of classes below provides benchmarks for when these meetings should occur. As discussed more below, your advisor will be your main contact person in the spring. The following lists every full-time faculty member in the political science department that is not on leave in either Fall 2024 or Spring 2025, and constitutes

the exhaustive list of possible advisors: Dan Alexander, Kevin Clarke, Jamie Druckman, John Duggan, Mark Fey, Anderson Frey, Gerald Gamm, Hein Goemans, Gretchen Helmke, James Johnson, Tasos Kalandrakis, Mayya Komisarchik, Bethany Lacina, Alexander Lee, Bonnie Meguid, Sergio Montero, David Primo, Larry Rothenberg, Curt Signorino, Randy Stone, Scott Tyson, and Sidak Yntiso. UR's political science website provides information about their research/teaching interests and office hours. Ideally, the student will have taken a course related to their topic with their advisor, although this is not required. Any professor will advise no more than one honors thesis in a given year.

Division of Labor

You have many contact points in the honors program: me, your advisor, the TA, and your fellow students. In addition to the instruction in class, my and the advisors' role are to provide direction on the paper and to provide feedback on the broad ideas, writing, etc. You must meet with your advisor at least three times during the fall semester, and I will be in touch with them to make sure the relationship is proving productive. The main role of the TA is to help with data details: creating a dataset, code for running regressions, inputting statistical results into your papers, etc. If you have a question on what statistical technique to use, myself or your advisor is probably your best bet, whereas if you have a question on how to implement a statistical technique, please see the TA first. You also have each other to talk to and from whom to receive feedback both during and outside of class. If you have trouble finding data or want to know if a dataset exists (or if the university can help you purchase a dataset), in addition to talking with myself and your advisor, you can also contact UR's social science librarian (http://libguides.lib.rochester.edu/prf.php?account_id=66013), who will be happy to help.

Advice for Research

There is no magic formula for identifying a viable research topic. Some students will begin the semester with an idea that works, and others will take more than a month to figure it out. The purpose of the fall course is to provide structure for students as (for most) you embark upon your first independent research project. In addition to the material for the course, I would strongly recommend consulting/reading approximately five articles per week that pertain to your topic. This is already incentivized given the various assignments—plus, the assigned reading load in the early weeks is intentionally light—but having a concrete benchmark to think about may help. This does not necessarily mean knowing every fine detail of each article, but at least reading the intro and skimming the rest to get a sense of what has already been researched and what could be interesting to pursue. The only way to discover what needs to be done is by learning what has already been done!

Writing a thesis is a difficult endeavor. Even the most accomplished students will find this process difficult at times (my job requires writing original research papers and I still find it difficult). So, normal bouts of discouragement are inevitable, although hopefully the excitement of

new discoveries outweighs the frustration. However, some students may find during the fall course that research simply isn't for them. Such students may choose to take the fall course without finishing the program in the spring (see the end of the syllabus for the spring timeline). Although the fall course is prep for the spring, the two parts of the honors sequence carry distinct grades and therefore not continuing in the spring does not affect the fall grade. Related, for students who face considerable difficulty identifying viable projects, your advisor and I may recommend that you not continue the program in the spring. In such cases, I will do my best to bring any concerns to your attention sooner rather than later. Despite this caveat, I hope that this course provides a unique and valuable experience for every student.

A major mistake researchers make is to shy away from potential sources of failure instead of confronting them as soon as possible. If your idea doesn't work – for instance, if your data isn't available, or the first-cut analysis reveals a fatal flaw in your theory – you want to know about it as soon as possible so you can adjust. To borrow a phrase from tech, you want to *fail faster*.

Academic Honesty

All assignments and activities associated with this course must be performed in accordance with the University of Rochester's Academic Honesty Policy. More information is available at: www. rochester.edu/college/honesty.

You may use generative AI with caution, but you are fully responsible for the recalling and defending the substantive content of any assignment you turn in. Furthermore, you are responsible for correct attribution of ideas (i.e., citations). Incorrect or missing citations will hurt your grade and may, depending on the circumstances, constitute evidence of academic misconduct.

If you use generative AI in any way, you are required to write a short statement (1-2 sentences) explaining how you used it and may be required to provide information such as why you think it improved your output, what prompts you used, etc. You may not simply outsource most or all of any assignment to generative AI. Doing so constitutes academic misconduct, as does mischaracterizing how you used AI, and in such cases I will turn over proceedings to the Board on Academic Honesty.

Class Schedule

Aug 28: Introduction

In class: Introductions. Go over syllabus and discuss structure of course. Discuss basic goals of a senior thesis, basics of social science research (positive vs. normative research, approaches to research design, sourcing data, etc.). Discuss your interests and/or initial project ideas. Discuss replication paper.

Assigned for next week:

- Friedman (2006) and Ramsay (2011) (on Perusall – default spot for reading assignments)
- Submit two candidates for replication paper (on Blackboard)

Sept 4: Introduction to Applied Social Science Research

In class: Discuss basic structure of an applied paper (theory, positioning contribution, analysis, etc.) and of empirical analysis (descriptive statistics, outcome, explanatory variables). Review basic statistical concepts. Select choice for replication papers.

Assigned for next week:

- Reading assignments: Tomz (2007), Huber et al. (2012)
- Replication assignment: Submit evidence that replication files are accessible

Sept 11: Experiments and the Experimental Mindset

In class: The fundamental problem of causal inference, experiments, randomization, difference in means, inference.

Assigned for next week:

- Reading assignments: Hainmueller and Hangartner (2013)
- Replication assignment: replication of descriptive statistics

Recommended resources for students interested in experiments (not required reading):

- Green, Donald P. and Alan S. Gerber. 2012. Field Experiments: Design, Analysis, and Interpretation. New York: W.W. Norton & Company.
- Glennerster, Rachel and Kudzai Takavarasha. 2013. Running Randomized Evaluations: A Practical Guide. Princeton: Princeton University Press.
- Chapter 2 of Mostly Harmless and chapter 1 of Mastering 'Metrics
- Be mindful of ethical issues when running experiments: http://www.nytimes.com/2014/10/29/upshot/professors-research-project-stirs-political-outrage-in-montana.html?_r=0

Sept 18: Regressions Part II, Covariate Adjustment, and Selection on Observables

In Class: Interpreting regressions with continuous RHS variables, controlling for observables, selecting on observable variables (blocking, matching, weighting, etc.), write-up of a project plan (500 words, addresses one or two possible projects)

Assigned for next week:

- Reading assignments: Abramson (2024) and McDermott (2011)
- Replication assignment: Confirm main result you will be replicating with Jefferson

Sept 25: Natural Experiments & External Validity

In Class: Moving from experimental to observational data, sources of bias, generating descriptive statistics, external validity

Assigned for next week:

- Reading assignments: Card and Krueger (1994), Ager et al. (2022)
- Replication assignment: Replicate main result

Oct 2: Differences in Differences: Exploiting Change Over Time

In Class: Difference-in-difference regressions: intuition, required assumptions, modern approaches. Present replication results and plans for extension.

Assigned for next week:

- Dell and Querubin (2018)
- Research assignment: Submit two research ideas and peer review someone else's submission. Confirm that you have selected an advisor by sending me an email and copying them on it.

Recommended resources if you want to know more (not required): Pgs. 178-208 of Mastering Metrics

Oct 9: Regression Discontinuity and Replication #1

In Class: Regression discontinuity. Discuss research ideas and finalize choices.

Assigned for next week:

- Reading assignments: Angrist (1990), Caprettini and Voth (2023)
- Replication assignment: Submit analysis extension

Oct 16: Instrument Variables and Literature Review

In Class: Discuss literature reviews and students' projects.

Assigned for next week: First draft of paper proposal

Oct 23: How to Organize a Paper

In Class: How to organize a paper. Discuss students' paper proposals.

Assigned for next week: Peer review of paper proposal

Oct 30: Mechanisms and Moderators

In Class: Identifying mechanisms, linking theory to data.

Assigned for next week: Initial summary statistics (for observational papers) or pre-analysis plan (for experimental papers – including exact language of survey questions if applicable, budget, and preferred survey platform)

Nov 6: Topic TBD In class: Discuss initial summary statistics and/or pre-analysis plans

  Assigned for next week: Outline of fall paper, including survey of literature

Nov 13: Topic TBD

  In class: Topic TBD depending on what will be most helpful for your projects

  Assigned for next week: Nothing, tentatively (work on your papers!)

Nov 20: Work On Papers

  In class: No agenda – work on papers with me available to help

  Assigned for last class (post-Thanksgiving): Final draft of fall papers

Nov 27: Thanksgiving Recess

Dec 4: Final fall papers

  In class: Presentation and peer discussion of fall papers

Quick Summary of Fall Deadlines

Note: Deadlines may be subject to adjustments. Detailed descriptions of each task can be found in the "Class Schedule" section above.

Table 1: Main Deadlines - Fall 2024

Date	Weekday	Task
2024-08-28	Wednesday	In Class: Discuss research ideas
2024-09-03	Tuesday	Due Date: Submit two paper options for replication
2024-09-04	Wednesday	In Class: Select paper for replication
2024-09-10	Tuesday	Due Date: Submit evidence that replication files are accessible
2024-09-17	Tuesday	Due Date: Replication summary statistics
2024-09-24	Tuesday	Due Date: Confirm with TA the main result you will replicate
2024-10-01	Tuesday	Due Date: Replicate main result
2024-10-02	Wednesday	In Class: Present replication results and plans for extension
2024-10-08	Tuesday	Due Date: Submit two research ideas; Peer-review 1 idea; E-mail advisor
2024-10-09	Wednesday	In Class: Decide research idea
2024-10-15	Tuesday	Due Date: Submit final version of replication
2024-10-22	Tuesday	Due Date: First draft of paper proposal
2024-10-29	Tuesday	Due Date: Peer review of paper proposal
2024-11-05	Tuesday	Due Date: Paper summary statistics or experimental pre-register plan (PRP)
2024-11-06	Wednesday	In Class: Discuss Paper summary statistics or PRP
2024-11-12	Tuesday	Due Date: Outline of fall paper + literature review
2024-11-19	Tuesday	In Class: Work on papers
2024-12-04	Wednesday	In Class: Final Paper Due + Presentations

Overview of Spring Semester

The spring semester is, intentionally, less structured than the fall. You can set a schedule with your advisor that works for both of you. However, you should plan to meet with your advisor every week or every other week, and should rarely go more than two weeks without being in contact with your advisor. You can, of course, also talk to me in the spring, but your advisor should be your main contact point. The TA will also still be available throughout the spring semester to help with any dataset and statistical issues. The only hard deadlines in the spring are as follows. I will check in with your advisors to ensure these deadlines are met.

- January 24th: This is the Friday of the first full week of courses. You should have spoken to your advisor sometime this week, and no later than the next week, to construct a plan of action for finishing the thesis within the next three months.

- February 24th: Students are highly encouraged to have finalized their datasets by this point. In my experience from previous years, the consistent criticism even of very good theses is that the students kept changing their data late enough that their advisors did not have time to review the final statistical analyses. You want your paper to go through at least two major rounds of comments with largely the same statistical analysis (or at least the same dataset) to ensure that your paper analyzes the data properly.

- April 11th: Penultimate draft of paper due to advisors. This will provide enough time to incorporate their feedback prior to the final thesis draft due three weeks later.

- May 2nd: Final theses due by 5pm via email. Please include me, your advisor, and your fellow students on the email. This deadline cannot be amended. Otherwise, we will not have enough time prior to graduation to assign and process the honors distinctions.

Grading Standards for Final Thesis

These apply only to the final thesis, not to the paper due at the end of the fall semester.

Honors: Meets standards for an A-/A undergraduate paper that contains an original research component. The paper should be well-written, clearly organized, with an appropriate research design, and with findings that contribute to knowledge on the topic. We anticipate this grade being awarded to most students, perhaps three in four students, with most of the remainder receiving either High Honors or Highest Honors. We recognize that, on rare occasions, papers will not meet the standard for Honors. When that happens, the paper should receive a grade of "No Honors." Bear in mind that students receiving "No Honors" can still get credit for PSC 393W, but with a course grade no higher than B+.

High Honors: Meets all standards for Honors, plus (a) outstanding writing, organization, and description of results, (b) high quality execution of empirical tests, where appropriate (criteria include but are not limited to clever research design, significant data collection component, and/or

thoroughness of statistical tests), and (c) significant contribution to knowledge about the topic. We anticipate this grade being awarded to perhaps one in four students.

Highest Honors: Meets all standards for High Honors, plus with a level of accomplishment truly unusual for an undergraduate. This should be a paper that would be regarded as an excellent paper for a second-year graduate student, bearing in mind that we do not expect undergraduates to have the advantage of two years of graduate training in methods and formal theory. May be a candidate for publication with appropriate revisions. We anticipate this grade being awarded rarely, perhaps once for every 10-15 students.