Political Science 508: Theoretical Implications of Empirical Models
Room: Harkness 329
University of Rochester Spring 2024
Instructor: Scott A. Tyson
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Office Hours: T 3:30-5

Course Description: Implicit in all research designs are (traditionally under-appreciated) strategic interactions relevant to the interpretation and validity of empirical work. Recently, social scientists across several sub-disciplines, and especially political scientists, have begun to analyze these theoretical implications of empirical models (TIEM). This course surveys the work being done in this nascent field of scholarship and, necessarily, the dominant empirical methodologies employed in political science and economics. For context and guidance, we will also draw upon work from adjacent lines of research, such as the decision-theoretic underpinnings of empirical models, the rationalization of behavioral regularities, and the evolutionary grounding of preferences, as well as upon philosophical perspectives on the interplay between theory and empirics.

Prerequisites: A familiarity with Nash equilibrium, Perfect Bayesian equilibrium, the potential outcomes model, as well as key concepts of research design such as the selection and use of an instrument will be helpful but is not required.

Structure of the Course: Each week will be comprised of 1-3 presentations from students based on the weeks assigned readings. I suggest that students work out which papers they might find most helpful and then seek out other students with a similar interest.

There will also be a final project comprised of the proposal of a research paper. I do not necessarily expect every student to complete a fully polished research paper by the end of the course. I do, however, expect students to be able to complete a detailed, yet brief (about 20 pages), proposal of a research project. For example, the student might present an argument in words, situate their argument within the existing literature, provide a detailed description of their empirical strategy or model, and finally, describe how their potential findings would contribute to the literature.

Grades: Your grade in the course will ultimately be determined by performance in (1) class presentations, (2) class discussions, and (3) a final project. The grading scheme is as follows:

Presentations (35%)

Class Discussion (25%)

Final project (40%)

Books: There are four required books for this course:

- Ian Hacking. *Representing and intervening: Introductory topics in the philosophy of natural science*. Cambridge university press, 1983

- Francesco Guala. *The methodology of experimental economics*. Cambridge University Press, 2005

- Ronald N Giere. *Scientific perspectivism*. University of Chicago Press, 2010

- Hasok Chang. *Inventing temperature: Measurement and scientific progress*. Oxford University Press, 2004

Methodological Background: This course will rely on concepts from game theory as well as causal inference and statistics. Useful background references are:

- Game Theory: Robert Gibbons. An introduction to applicable game theory. 11(1):127–149, 1997

- Research Design: Joshua D Angrist and Alan B Krueger. Empirical strategies in labor economics. *Handbook of labor economics*, 3:1277–1366, 1999

Schedule:

- Introduction (January 17, 2024)

- Philosophy of Science I — Background (January 24, 2024):

  (a) Willard V Quine. Main trends in recent philosophy: Two dogmas of empiricism. *The philosophical review*, pages 20–43, 1951

  (b) Wilfrid Sellars. Empiricism and the philosophy of mind. *Minnesota studies in the philosophy of science*, 1(19):253–329, 1956

  (c) Ian Hacking. *Representing and intervening: Introductory topics in the philosophy of natural science*. Cambridge university press, 1983, Intro & Part A

- Philosophy of Science II — Key Concepts (January 31, 2024):

  (a) Ian Hacking. *Representing and intervening: Introductory topics in the philosophy of natural science*. Cambridge university press, 1983, Part B

  (b) Nancy Cartwright. *How the laws of physics lie*. Clarendon Paperbacks, Oxford: Oxford University Press, 1983, Essays 4, 5, 7, 8

  (c) James Bogen and James Woodward. Saving the phenomena. *The philosophical review*, 97(3):303–352, 1988

- Measurement (February 7, 2024):

  (a) Hasok Chang. *Inventing temperature: Measurement and scientific progress*. Oxford University Press, 2004

  (b) Tara Slough and Scott A Tyson. *External Validity and Evidence Accumulation*. Cambridge University Press, 2024, Ch. 2

  (c) Christopher J Fariss. Respect for human rights has improved over time: Modeling the changing standard of accountability. *American Political Science Review*, pages 297–318, 2014

- Causality (February 14, 2024):

(a) John L Mackie. Causes and conditions. *American philosophical quarterly*, 2(4):245–264, 1965

(b) James Woodward. Experimentation, causal inference, and instrumental realism. In Hans Radder, editor, *The Philosophy of Scientific Experimentation*, pages 87–118. University of Pittsburgh Press, 2003

(c) Paul W Holland. Statistics and causal inference. *Journal of the American statistical Association*, 81(396):945–960, 1986

(d) Guido W Imbens and Joshua D Angrist. Identification and estimation of local average treatment effects. *Econometrica: Journal of the Econometric Society*, pages 467–475, 1994

(e) Joshua D Angrist and Jörn-Steffen Pischke. *Mostly harmless econometrics: An empiricist's companion*. Princeton university press, 2008, Ch. 1

- Models (February 21, 2024):

  (a) Ronald N Giere. *Scientific perspectivism*. University of Chicago Press, 2010

  (b) James Johnson. Models among the political theorists. *American Journal of Political Science*, 58(3):547–560, 2014

  (c) Kevin A Clarke and David M Primo. Modernizing political science: A model-based approach. *Perspectives on Politics*, pages 741–753, 2007

  (d) Ariel Rubinstein. Dilemmas of an economic theorist. *Econometrica*, pages 865–883, 2006

  (e) Michael Weisberg. Three kinds of idealization. *The journal of Philosophy*, 104(12):639–659, 2007

- Experiments (February 28, 2024):

  (a) Francesco Guala. *The methodology of experimental economics*. Cambridge University Press, 2005, Part I

  (b) Ariel Rubinstein. A theorist's view of experiments. *European Economic Review*, 45(4-6):615–628, 2001

  (c) Deborah G Mayo. *Error and the growth of experimental knowledge*. University of Chicago Press, 1996, Ch. 3, 6, 12, 13

- Theory & Experimentalism I (March 20, 2024):

  (a) Scott Ashworth, Christopher Berry, and Ethan Bueno De Mesquita. All else equal in theory and data (big or small). *PS: Political Science and Politics*, 48(1):89–94, 2015

  (b) Jack Paine and Scott A Tyson. Uses and abuses of formal models in political science. In *The SAGE Handbook of Political Science*, pages 188–. SAGE, 2020

  (c) Kieran Healy. Fuck nuance. *Sociological Theory*, 35(2):118–127, 2017

  (d) Erik Gartzke. War is in the error term. *International Organization*, pages 567–587, 1999

(e) Elliott Sober. Equilibrium explanation. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition*, 43 (2):201–210, 1983

- Theory & Experimentalism II (March 27, 2024):

  (a) Trygve Haavelmo. The probability approach in econometrics. *Econometrica: Journal of the Econometric Society*, pages iii–115, 1944, Ch. 1-2

  (b) Tjalling C Koopmans and Olav Reiersol. The identification of structural characteristics. *The Annals of Mathematical Statistics*, 21(2): 165–181, 1950

  (c) Angus Deaton. Instruments, randomization, and learning about development. *Journal of economic literature*, 48(2):424–55, 2010

  (d) Ethan Bueno de Mesquita and Scott A. Tyson. The commensurability problem: Conceptual difficulties in estimating the effect of behavior on behavior. *American Political Science Review*, 114(2):375–391, 2020

- External Validity (April 10, 2024):

  (a) Francesco Guala. *The methodology of experimental economics.* Cambridge University Press, 2005, Part II

  (b) Tara Slough and Scott A Tyson. *External Validity and Evidence Accumulation.* Cambridge University Press, 2024, Ch. 3,4

  (c) Michael G Findley, Kyosuke Kikuta, and Michael Denly. External validity. *Annual Review of Political Science*, 24:365–393, 2021

  (d) Tara Slough and Scott A Tyson. External validity and meta-analysis. *American Journal of Political Science*, 67(2):440–455, 2023

- TIEM Themes (April 17, 2024):

  (a) Curtis S Signorino. Structure and uncertainty in discrete choice models. *Political Analysis*, 11(4):316–344, 2003

  (b) Sanford C Gordon and Hannah K Simpson. Causes, theories, and the past in political science. *Public choice*, 185(3):315–333, 2020

  (c) Federica Izzo, Torun Dewan, and Stephane Wolton. Cumulative knowledge in the social sciences: The case of improving voters' information. *Mimeo*, 2020

  (d) Angus Deaton and Nancy Cartwright. Understanding and misunderstanding randomized controlled trials. *Social Science & Medicine*, 210:2–21, 2018

- TIEM in papers (April 24, 2024):

  (a) Arduino Tomasi. Machiavellian fair play: Electoral incentives to implement programmatic transfers. *Available at SSRN 3646289*, 2020

  (b) Stephane Wolton. Are biased media bad for democracy? *American Journal of Political Science*, 63(3):548–562, 2019

(c) Andrew C Eggers. Quality-based explanations of incumbency effects. *The Journal of Politics*, 79(4):1315–1328, 2017

(d) Scott Ashworth and Ethan Bueno De Mesquita. Is voter competence good for voters?: Information, rationality, and democratic performance. *American Political Science Review*, pages 565–587, 2014

(e) Scott Ashworth, Ethan Bueno de Mesquita, and Amanda Friedenberg. Learning about voter rationality. *American Journal of Political Science*, 62(1):37–54, 2018

(f) Scott Ashworth, Ethan Bueno de Mesquita, and Amanda Friedenberg. Accountability and information in elections. *American Economic Journal: Microeconomics*, 9(2):95–138, 2017

(g) Sylvain Chassang, Gerard Padró i Miquel, and Erik Snowberg. Selective trials: A principal-agent approach to randomized controlled experiments. *American Economic Review*, 102(4):1279–1309, 2012

(h) Abhijit V Banerjee, Sylvain Chassang, Sergio Montero, and Erik Snowberg. A theory of experimenters: Robustness, randomization, and balance. *American Economic Review*, 110(4):1206–30, 2020

(i) Scott F Abramson, Korhan Koçak, and Asya Magazinnik. What do we learn about voter preferences from conjoint experiments? *American Journal of Political Science*, 66(4):1008–1020, 2022

(j) Tara Slough. Phantom counterfactuals. *American Journal of Political Science*, 67(1):137–153, 2023

Accommodations for Students with Disabilities: If you think you need an accommodation for a disability, please let me know at your earliest convenience. Some aspects of this course, the assignments, the in-class activities, and the way the course is usually taught may be modified to facilitate your participation and progress. As soon as you make me aware of your needs, we can work with the Services for Students with Disabilities (SSD) office to help us determine appropriate academic accommodations.

Religious and Academic Conflicts: Although the University of Rochester, as an institution, does not observe religious holidays, it has long been the University's policy that every reasonable effort should be made to help students avoid negative academic consequences when their religious obligations conflict with academic requirements. Absence from classes or examinations for religious reasons does not relieve students from responsibility for any part of the course work required during the period of absence. Students who expect to miss classes, examinations, or other assignments as a consequence of their religious observance shall be provided with a reasonable alternative opportunity to complete such academic responsibilities.

It is the obligation of students to provide faculty with reasonable notice of the dates of religious holidays on which they will be absent. Such notice must be given by the drop/add deadline of the given term. Students who are absent on days of examinations or class assignments shall be offered an opportunity to make up the work, without penalty, unless it can be demonstrated that a make-up opportunity would interfere unreasonably with the delivery of

the course. Should disagreement arise over any aspect of this policy, the parties involved should contact the Director of Undergraduate Studies/Director of Graduate Studies. Final appeals will be resolved by the Provost.

Students Representing the University of Rochester: There may be instances when students must miss class due to their commitment to officially represent the University. These students may be involved in the performing arts, scientific or artistic endeavors, or intercollegiate athletics. Absence from classes while representing the University does not relieve students from responsibility for any part of the course missed during the period of absence. Students should provide reasonable notice for dates of anticipated absences and submit an individualized class excuse form.

Student Mental Health and Wellbeing: University of Rochester is committed to advancing the mental health and wellbeing of its students. If you or someone you know is feeling overwhelmed, depressed, and/or in need of support, services are available. For help, contact the University Counseling Center at UHS at (585) 275-3113 and http://www.rochester.edu/uhs/ucc/ during and after hours, on weekends and holidays, or through its counselors physically located in schools on River Campus.

Academic Integrity: General University policies and guidelines regarding academic honesty apply. The academic community, like all communities, functions best when its members treat one another with honesty, fairness, respect, and trust. The University holds all members of its community to high standards of scholarship and integrity. To accomplish its mission of providing an optimal educational environment and developing leaders of society, the University promotes the assumption of personal responsibility and integrity and prohibits all forms of academic dishonesty and misconduct. Academic dishonesty may be understood as any action or attempted action that may result in creating an unfair academic advantage for oneself or an unfair academic advantage or disadvantage for any other member or members of the academic community. Conduct, without regard to motive, that violates the academic integrity and ethical standards of the College community cannot be tolerated. The College seeks vigorously to achieve compliance with its community standards of academic integrity. Violations of the standards will not be tolerated and will result in serious consequences and disciplinary action.

Grade Grievances: If you believe a grade you have received is unfair or in error, you will need to do the following:

1. Wait 24 hours after receiving the grade before approaching your instructor.

2. Provide an explanation in writing for why the grade you received was unfair or in error.

3. If you believe the instructor's response fails to address your claim of unfairness or error, you may petition the department's Director of Undergraduate Studies at the latest within the first five weeks of classes following the completion of the course. You must convey in writing the basis for the complaint, with specific evidence in support of the argument that the

grade either was given in error or was unfairly determined. This formal complaint also should summarize the outcome of the initial inquiry to the course instructor, indicating which aspects are in dispute. Within three weeks of the receipt of the petition, the DUS will determine whether to convene the Undergraduate Affairs Committee, the student, and the instructor(s) for a formal hearing. Further details on this process are included on the department website under Advising $\rightarrow$ Contesting a Grade.