

**POLS G4371**

**LABORATORY EXPERIMENTS AND  
FORMAL THEORIES IN POLITICAL SCIENCE**

**Tuesday 10:10a-12:00p  
International Affairs Building 711**

**Professor:** Salvatore Nunnari  
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**Office Hours:** Tuesday 1:30-3:30p  
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**Course Overview:** This course provides an overview of experimental methods in Economics and Political Science, with a strong foundation in microeconomics and formal political theory. Covered topics will include public goods provision, repeated games and cooperation, bilateral and multilateral bargaining, and behavioral economics (heuristics and biases in individual decision making, imperfect best response, and limited strategic thinking). Emphasis will be placed on the methodological issues concerning the design and implementation of laboratory experiments, and on recent applications of interests to political scientists. The pre-requisite for this course is at least one term of graduate game theory (for Political Science PhD students, W4209 or W4210).

**Course Requirements:** I expect students to attend class and the tutorials. Cell phones, laptops, and other electronic devices must be turned off and put away during class. The main component of your grade (80%) will be a final paper (12-25 pages) presenting a fully worked out design for an experiment. I expect the paper to be well motivated and carefully written, with a thoughtful connection to an organizing piece of theory and relevant previous experimental literature. The experimental design should be fairly complete: it should include specific numeric parameters, specific treatments, experimental instructions, and the screenshots of the software interface. The paper should also describe of how each of the model's hypotheses will be tested with reference to appropriate statistical tests (possibly, with the analysis of simulated data). The final paper is due on Tuesday May 5<sup>th</sup>. You are not required to collect experimental data but are required to submit an application for a CELSS grant and for IRB approval at Columbia. The remainder of your grade will be determined by class participation (10%) and by two presentations (10%): you will present your research idea on Tuesday February 24<sup>th</sup> and your final research project on April 28<sup>th</sup>.

## **General References on Laboratory Experiments in the Social Sciences:**

Kagel, John, and Alvin E. Roth (Eds.), 1995, *The Handbook of Experimental Economics Vol. I*, Princeton University Press: Princeton.

Plott, Charles R., and Vernon L. Smith (Eds.), 2008, *The Handbook of Experimental Economics Results*, North Holland: Amsterdam.

Camerer, Colin, 2003, *Behavioral Game Theory*, Princeton University Press: Princeton.

Morton, Rebecca B., and Kenneth C. Williams, 2010, *Experimental Political Science and the Study of Causality: From Nature to the Lab*, Cambridge University Press: Cambridge.

Druckman, James N., Donald P. Green, James Kuklinski, and Arthur Lupia (Eds.), 2011, *The Handbook of Experimental Political Science*, Cambridge University Press: Cambridge.

Kagel, John, and Alvin E. Roth (Eds.), Forthcoming, *The Handbook of Experimental Economics Vol. II*, Princeton University Press: Princeton, some chapters available at <http://web.stanford.edu/~alroth/alroth.html#Handbook>.

Palfrey, Thomas R., Forthcoming, "Experiments in Political Economy," in Kagel, John and Alvin Roth (Eds.), *The Handbook of Experimental Economics Vol. II*, Princeton University Press: Princeton, [http://people.hss.caltech.edu/~trp/HEE\\_political\\_economy\\_051414.pdf](http://people.hss.caltech.edu/~trp/HEE_political_economy_051414.pdf).

## **COURSE OUTLINE**

The course will be chronologically organized around the topics below. In addition to lectures on these topics, Anselm Rink will hold two tutorials in the laboratory (IAB 505): one on the experimental software Z-Tree (tentatively, on Tuesday February 10<sup>th</sup> 10:10-12:00), and one on the recruiting software ORSEE, on the IRB application process, and on the generation of simulated data with R (tentatively, on Tuesday March 24<sup>th</sup> 10:10-12:00).

### **1. Introduction to Laboratory Experiments and Laboratory Methodology**

Crosen, Rachel, 2002, "Why and How to Experiment: Methodologies from Experimental Economics," *University of Illinois Law Review* 2002, 921-945.

Falk, Armin, and James Heckman, 2009, "Lab Experiments Are a Major Source of Knowledge in the Social Sciences," *Science*, 326(5952): 535-538.

Fréchette, Guillaume R., 2009, "Laboratory Experiments: Professionals versus Students," Unpublished Manuscript, [https://files.nyu.edu/gf35/public/print/Frechette\\_2009b.pdf](https://files.nyu.edu/gf35/public/print/Frechette_2009b.pdf)

Kessler, Judd and Lise Vesterlund, 2012, "The External Validity of Laboratory Experiments: Qualitative rather than Quantitative Effects," Unpublished Manuscript, [http://www.pitt.edu/~vester/External\\_Validity.pdf](http://www.pitt.edu/~vester/External_Validity.pdf)

Schotter, Andrew, 2009, "On the Relationship between Economic Theory and Experiments," Unpublished Manuscript, <http://cess.nyu.edu/conferences/8-2009/papers/Schotter.pdf>

## **2. Voluntary Provision of Public Goods**

Ledyard, John O., 1995, "Public Goods: Some Experimental Results," in J. Kagel & A. Roth (Eds.), *Handbook of Experimental Economics Volume 1*. Princeton: Princeton University Press, <https://dl.dropboxusercontent.com/u/3962525/PublicGoods-Ledyard-1995.pdf>

Palfrey, Thomas R., and Jeffrey E. Prisbrey, 1997, "Anomalous Behavior in Public Goods Experiments: How Much and Why?" *The American Economic Review*, 87(5): 829-846.

Chaudhuri, Ananish, 2011, "Sustaining Cooperation in Laboratory Public Goods Experiments: A Selective Survey of the Literature," *Experimental Economics* 14.1 (2011): 47-83.

Isaac, Mark R., and James M. Walker, 1988, "Group Size Effects in Public Goods Provision: The Voluntary Contributions Mechanism," *The Quarterly Journal of Economics*, 103(1): 179-199.

Vesterlund, Lise, Forthcoming, "Voluntary Giving to Public Goods: Moving Beyond the Linear Voluntary Contribution Mechanism", in John Kagel and Alvin Roth (Eds.), *Handbook of Experimental Economics Vol. II*, Princeton: Princeton University Press, <http://isites.harvard.edu/fs/docs/icb.topic1002778.files/LVchapter.pdf>

## **3. Finitely and Infinitely Repeated Games and Cooperation**

Andreoni, James, and John H. Miller, 1993, "Rational Cooperation in the Finitely Repeated Prisoner's Dilemma: Experimental Evidence," *The Economic Journal* 103(418): 570-585.

Dal Bó, Pedro, 2005, "Cooperation under the Shadow of the Future: Experimental Evidence from Infinitely Repeated Games." *The American Economic Review* 95(5): 1591-1604.

Dal Bó, Pedro, and Guillaume R. Fréchette, 2011, "The Evolution of Cooperation in Infinitely Repeated Games: Experimental Evidence," *The American Economic Review* 101(1): 411-429.

Dal Bó, Pedro, and Guillaume R. Fréchette, 2013, "Strategy Choice in the Infinitely Repeated Prisoners Dilemma," Unpublished Manuscript, [https://files.nyu.edu/gf35/public/print/Dal\\_Bo\\_2013b.pdf](https://files.nyu.edu/gf35/public/print/Dal_Bo_2013b.pdf)

Embrey, Matthew, Guillaume R. Fréchette, and Sevgi Yuksel, 2014, "Cooperation in the Finitely Repeated Prisoner's Dilemma," Unpublished Manuscript, <https://files.nyu.edu/sy683/public/jmp2.pdf>

## **4. Bargaining**

### **Simple Models of Bilateral Bargaining**

Güth, Werner, Rolf Schmittberger, and Bernd Schwarze, 1982, "An Experimental Analysis of Ultimatum Bargaining," *Journal of Economic Behavior & Organization* 3(4): 367-388.

Binmore, Ken, Avner Shaked, and John Sutton, 1985, "Testing Noncooperative Bargaining Theory: A Preliminary Study," *The American Economic Review*, 75(5): 1178-1180.

Roth, Alvin E., Vesna Prasnikar, Masahiro Okuno-Fujiwara, and Shmuel Zamir, 1991, "Bargaining and Market Behavior in Jerusalem, Ljubljana, Pittsburgh, and Tokyo: An Experimental Study," *The American Economic Review*, 81(5): 1068-1095.

McKelvey, Richard D., and Thomas R. Palfrey, 1992, "An Experimental Study of the Centipede Game," *Econometrica*, 60(4): 803-836.

Palacios-Huerta, Ignacio, and Oscar Volij, 2008, "Field Centipedes," *The American Economic Review*, 99(4): 1619-1635.

### **Multilateral Bargaining (Alternating Offer Bargaining and Demand Bargaining)**

McKelvey, Richard D., 1991, "An Experimental Test of a Stochastic Game Model of Committee Bargaining," in *Laboratory Research in Political Economy*, T. Palfrey ed. University of Michigan Press: Ann Arbor, 139-69.

Fréchette, Guillaume R., John H. Kagel, and Steven F. Lehrer, 2003, "Bargaining in Legislatures: An Experimental Investigation of Open versus Closed Amendment rules," *American Political Science Review*, 97(2): 221-232.

Fréchette, Guillaume R., John H. Kagel, and Massimo Morelli, 2005a, "Nominal Bargaining Power, Selection Protocol, and Discounting in Legislative Bargaining," *Journal of Public Economics*, 89(8): 1497-1517.

Fréchette, Guillaume R., John H. Kagel, and Massimo Morelli, 2005b, "Behavioral Identification in Coalitional Bargaining: An Experimental Analysis of Demand Bargaining and Alternating Offers," *Econometrica*, 73(6): 1893-1937.

Agranov, Marina, and Chloe Tergiman, Forthcoming, "Communication in Multilateral Bargaining," *Journal of Public Economics*, <http://people.hss.caltech.edu/~magranov/documents/ChatBargaining.pdf>

## 5. Elections and Candidate Competition

Collier, Kenneth E., McKelvey, Richard D., Ordeshook, Peter C., and Williams, Kenneth C., 1987, "Retrospective Voting: An Experimental Study," *Public Choice* 53: 101-130.

McKelvey, Richard D. and Peter C. Ordeshook, 1982, "Two-Candidate Elections Without Majority Rule Equilibria: An Experimental Study," *Simulation and Games*, 13:311-35.

McKelvey, Richard D. and Peter C. Ordeshook, 1985a, "Rational Expectations in Elections: Some Experimental Results Based on a Multidimensional Model," *Public Choice*, 44: 61-102.

McKelvey, Richard D. and Peter C. Ordeshook, 1985b, "Elections with Limited Information: A Fulfilled Expectations Model Using Contemporaneous Poll and Endorsement Data as Information Sources," *Journal of Economic Theory*, 36, 55-85.

McKelvey, Richard D. and Peter C. Ordeshook, 1990, "A Decade of Experimental Research on Spatial Models of Elections and Committees," in *Government, Democracy, and Social Choice*, Melvin J. Hinich and James Enelow (Eds.), Cambridge University Press: Cambridge, <http://dlc.dlib.indiana.edu/dlc/bitstream/handle/10535/5845/A%20decade%20of%20experimental%20research.pdf>

## 6. Behavioral Economics

### Heuristics and Biases in Individual Decision Making

Camerer, Colin, 1995, "Individual Decision Making," in Kagel, John, and Alvin Roth (eds.), *The Handbook of Experimental Economics, Vol. I*, Princeton University Press: Princeton, [http://personal.anderson.ucla.edu/policy.area/faculty/fox/individual\\_dec\\_mkg.pdf](http://personal.anderson.ucla.edu/policy.area/faculty/fox/individual_dec_mkg.pdf)

Kahneman Daniel, Jack L. Knetsch, Richard H. Thaler, 1991, "Anomalies: The Endowment Effect, Loss Aversion, and Status Quo Bias," *The Journal of Economic Perspectives*, 5(1): 193-206.

### Imperfect Best Response (Quantal Response Equilibrium)

Goeree, Jacob K., and Charles A. Holt, 2000, "Asymmetric Inequality Aversion and Noisy Behavior in Alternating-Offer Bargaining Games." *European Economic Review* 44(4): 1079-1089.

Goeree Jacob, Charles Holt, and Thomas R. Palfrey, 2008, "Quantal Response Equilibrium," in *The New Palgrave Dictionary of Economics*, Palgrave Macmillan, Basingstoke, <http://www.hss.caltech.edu/~jkg/QRE%20Palgrave.pdf>

### **Limited Strategic Thinking (Level-k and Cognitive Hierarchy Models)**

Crawford Vincent, Miguel A. Costa-Gomes, and Nagore Iriberri, 2013, "Structural Models of Nonequilibrium Strategic Thinking: Theory, Evidence, and Applications," *Journal of Economic Literature*, 51(1): 5-62. <http://weber.ucsd.edu/~vcrawfor/CGCIJEL4April12>

Camerer, Colin, Teck-Hua Ho, and Juin-Kuan Chong, 2004, "A Cognitive Hierarchy Model of Games," *Quarterly Journal of Economics* 119:861-898 (Sections I-III, VI).

Kneeland, Terri, 2013, "Rationality and Consistent Beliefs: Theory and Experimental Evidence," Unpublished Manuscript, <http://terri.microeconomics.ca/research/jmp.pdf>

Daniel Fragiakidis, Daniel Knoepfle, and Muriel Niederle, 2013, "Identifying Predictable Players: Relating Behavioral Types and Subjects with Deterministic Rules," Unpublished Manuscript, <http://web.stanford.edu/~niederle/Fragiadakis.Knoepfle.Niederle.pdf>

### **Structural Estimation of Behavioral Models**

Camerer, Colin, Thomas R. Palfrey, and Salvatore Nunnari, 2014, "Quantal Response and Nonequilibrium Beliefs Explain Overbidding in Maximum-Value Auctions," Unpublished Manuscript, [http://www.columbia.edu/~sn2562/cnp\\_maxvaluegame.pdf](http://www.columbia.edu/~sn2562/cnp_maxvaluegame.pdf)

Nunnari, Salvatore, and Jan Zapal, 2014, "Gambler's Fallacy and Imperfect Best Response in Legislative Bargaining," Unpublished Manuscript, [http://www.columbia.edu/~sn2562/nunnarizapal\\_qregf.pdf](http://www.columbia.edu/~sn2562/nunnarizapal_qregf.pdf)