

POL730 FORMAL MODELING IN POLITICAL SCIENCE
Fall 2021, Tuesdays, 10:15am – 12:45pm

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Course Overview

This course is a follow-up to the introductory game theory course so I assume everyone in class knows the fundamentals of non-cooperative game theory. The introductory course was a “tools” course. This semester we will go beyond that and use the tools from POL631 and apply them to the study of specific questions in politics. In the meantime, we will continue to learn some more “tools.”

The formal models we will study this semester span all major sub-fields of political science. Even when you are not terribly excited by some of the models (especially because you are not interested in a particular sub-field), working on them will help improve your understanding of different applications in political science. Keep in mind that no particular model belongs to one sub-field, and you can always take a model from one sub-field and apply it to a research question in another.

Course Requirements

Presentations

This is NOT a lecture course, and so it requires significant advance preparation as well as active participation in class. The main goals are (i) mastering the course material and (ii) becoming fluent in discussing the material.

I will assign each week’s readings to individual students. Depending on the number of students in class, I expect each student to present 2 - 3 times. I encourage everyone to use Power Point presentations that we can post on Sakai after class.

I know that students usually prefer to present papers from their major sub-field. And while I am happy to accommodate everyone’s preferences, I’d still encourage students to choose one paper from their major field and one paper from a different sub-field.

Each presenter is responsible for presenting the main points of the readings: this includes

setting up the formal model, discussing the important assumptions, stating and proving the main results and discussing the intuition behind these results. Our main task in class will be to work through these main points together and think about possible extensions, open questions, and future research avenues. Presenters will essentially lead the class discussion, but all students are expected to actively participate with questions and comments. Presenters will be graded on quality of presentation as well as the mastery of the material.

Class Participation

Participation is *essential*. In class, not only the discussion leader(s) but all students are expected to have active, informed, and regular participation in which we do not only review readings analytically, but also consider relevant broader questions for discussion that arise from readings and are contributed by class participants. In short, you should demonstrate that you have read and thought about the readings.

This is primarily a *methods* class. However, I would also like everyone in class to think about the substantive question behind the formal model, and spend some time thinking about why the author(s) has decided to choose a particular game-theoretic tool to address a particular research question as well as if this choice makes sense --- meaning if you would think of choosing a different tool to apply to this particular research question, and why!

Assignments

Students will present on a non-assigned reading of their choice on a particular kind of game theory application. The presentation should focus on key elements of the formal model in the paper and it should be brief, preferably under 15 minutes so that everyone has a chance to present. The two assignment dates are marked on the syllabus.

Research Paper

Each student will also write an original research paper using tools from game theory. I know that time is short, and so I don't expect you to provide a publishable paper. However, you should be able to find an interesting research problem, place it in the literature, set up a formal model, solve it and substantively interpret the results. You should also be able to discuss the strengths and weaknesses of your paper along with possible extensions and how these extensions might add to the value of the existing model. Students will turn in two preliminary drafts and then the final paper.

The first preliminary draft is a project proposal explaining the main research question, along with a brief literature review. This may eventually become the introduction to the final paper. This will be due on **September 28**. The second preliminary draft is the set up of the formal model. This will include the players, description of the game tree or strategy space, utility functions for the players and information structure of the game. This will be due on **November 8**. The final paper will solve the model and discuss the results. The final paper should be submitted via e-mail to me no later than **December 1**.

Grades will be based on:

- Presentation(s): 30%
- Class Participation: 20%
- Assignments: 20%
- Research Paper: 30%

The course plan, below, is divided up by topics. Within each topic, I list readings that I intend to cover in class. Most of the readings are journal articles that are available online. Should you have any problems obtaining any of the reading materials listed in the schedule below, please let me know. The reading list is somewhat provisional and a bit ambitious! We will make some additions and certainly deletions along the way.

Tentative Class Schedule

August 24, 31: Signaling Games - Lecture

- Martin Osborne. 2004. *An Introduction to Game Theory*. New York: Oxford University Press. Chapter 10.

September 7: Class cancelled – Bahar is out of town (will reschedule!)

September 14: Extensive Games with Imperfect Information - Presentations

- (Andrew) Kenneth A. Schultz. 1998. “Domestic Opposition and Signaling in International Crises.” *American Political Science Review*. 92(4): 829-844.

September 21: September 14: Extensive Games with Imperfect Information – Presentations

- (Tucker) Georg Vanberg. 2001. “Legislative-Judicial Relations: A Game Theoretic Approach to Constitutional Review.” *American Journal of Political Science*. 45(2): 346-361.

September 28: Signaling Games – Assignment

October 5: Fall Break

October 12: Cheap Talk - Presentations

- Thomas W. Gilligan and Keith Krehbiel. 1987. “Collective Decision-making and Standing Committees: An Information Role for Restrictive Amendment Procedures.” *Journal of Law, Economics and Organization* 3: 145-193.
- Thomas W. Gilligan and Keith Krehbiel. 1989. “Asymmetric Information and Legislative Rules with a Heterogeneous Committee.” *American Journal of*

- Political Science* 33(2): 459-490.
- Thomas W. Gilligan and Keith Krehbiel. 1990. "Organization of Informative Committees by a Rational Legislature." *American Journal of Political Science* 34(2): 531-564.
 - Andrew Kydd. 2003. "Which Side Are You On: Bias, Credibility and Mediation." *American Political Science Review* 47(4): 597-611.

October 19: Bayesian Games - Presentations

- Timothy J. Feddersen and Wolfgang Pesendorfer. 1996. "Swing Voter's Curse." *American Economic Review*. 86(3): 408-424.
- Timothy J. Feddersen and Wolfgang Pesendorfer. 1998. "Convicting the Innocent: The Inferiority of Unanimous Jury Verdicts and Strategic Voting." *American Political Science Review*. 92(1): 23-35.

October 26: Repeated Games - Lecture

- Martin Osborne. 2004. *An Introduction to Game Theory*. New York: Oxford University Press. Chapters 14-15.

November 2: Repeated Games - Presentations

- Paul Milgrom, Douglas North and Barry Weingast. 1990. "The Revival of Trade: The Law Merchant, Private Judges, and the Champagne Fairs." *Economics and Politics*. 2(1): 1-20.
- James Fearon and David Laitin. 1996. "Interethnic Cooperation." *American Political Science Review*. 90(4): 715-735.
- Barry R. Weingast. 1997. "The Political Foundations of Democracy and The Rule of Law." *American Political Science Review*. 91(2): 245 – 263.

November 9: Repeated Games - Assignment

November 16: Repeated Games – Presentations

- Torsten Perrson, Gerard Roland and Guido Tabellini. 1997. "Separation of Powers and Accountability: Toward a Formal Approach to Comparative Politics." *Quarterly Journal of Economics* 112 (November): 1163-1202.
- Daron Acemoğlu and James Robinson. 2001. "A Political Theory of Transitions." *American Economic Review* 91: 938-963.

November 23: Bargaining Games - Lecture

- Martin Osborne. 2004. *An Introduction to Game Theory*. New York: Oxford University Press. Chapter 16.
- Ariel Rubinstein. 1982. "Perfect Equilibrium in a Bargaining Model."

Econometrica. 50(1): 97-110.

November 30: Bargaining Games – Presentations

- David P. Baron and John A. Ferejohn. 1989. “Bargaining in Legislatures.” *American Political Science Review*. 83(4): 1181-1206.
- Bahar Leventoğlu and Ahmer Tarar. 2005. “Pre-negotiation Public Commitment in Domestic and International Bargaining.” *American Political Science Review*. 2005. 99(3): 419-433.
- James Fearon. 1995. “Rationalist Explanations for War.” *International Organization*. 49(3): 379-414.
- Robert Powell. 1996. “Bargaining in the Shadow of Power.” *Games and Economic Behavior*. 15(2): 255-289.

OR

- Robert Powell. 1999. *In the Shadow of Power: States and Strategies in International Politics*. Princeton: Princeton University Press. Chapter 3.
- Bahar Leventoglu and Ahmer Tarar. 2008. “Does Private Information Lead to Delay or War in Crisis Bargaining?” *International Studies Quarterly*. 52(3): 533-553.