# Political Science 796
# Formal Theories of Choice
# Fall 2013

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Office Hours: Tuesdays, 1-3:00

This course is an introduction to formal modeling, the basic concepts of game theory, and their use in political science research. Its purpose is to build general literacy in these methods, creating a foundation for both consumers and future practitioners. Following a review of rationality and utility theory, the course is divided into three main parts. In the first section, the focus is on noncooperative games with complete information. We will cover normal and extensive form games and their solution concepts, then turn to repeated games. The second section covers games in which actors have incomplete information. At the conclusions of each of these two units, we spend one class studying particular applications of game theory in the political science literature. The third section provides some grounding on other important parts of the literature: social choice theory, spatial voting, and bargaining. There is no prerequisite for this course. Mathematical concepts will be taught as needed.

## Textbooks

There are a number of textbooks that teach game theory at different levels of complexity and with application to different substantive fields. I encourage you to find a text that is suitable for your needs. It may be a good idea to use more than one book, since it can be helpful to have multiple explanations of difficult concepts. I have asked that the following three books be available for purchase at the Syracuse University Bookstore:

- James D. Morrow, *Game Theory for Political Scientists* (Princeton University Press: 1994).

- Nolan McCarty and Adam Meirowitz, *Political Game Theory: An Introduction* (Cambridge University Press: 2007).

- Martin J. Osborne, *An Introduction to Game Theory* (Oxford University Press: 2003).

- Kenneth C. Williams, *Introduction to Game Theory: A Behavioral Approach* (Oxford University Press: 2012).

Of these, the Morrow and Williams texts are less mathematically formal and thus is a good starting point. The presentation in McCarty and Meirowitz, on the other hand, is closer to what you will read in journal articles. Those with more extensive math backgrounds may prefer the latter. Osborne is somewhere between the two. The first two books apply the tools of game theory to political science problems, while Osborne and Williams are more general. Whenever possible, reading assignments indicate the appropriate pages from all three texts.

Another good introductory text, not geared specifically toward political science topics, is Joel Watson's *Strategy*, 2nd. edition, (W.W. Norton & Company, 2008).

Other reading selections will be made available on the the Blackboard site for the course.

## Assignments and Grading

The best way to learn the material is this course is by working through lots of problems. Problem sets will thus be assigned during most weeks, accounting for 40% of the course grade. Group work on problem sets is permitted, and I encourage you to help each other. The remaining 60% of the grade will come from three take-home "exams." These exams will be much like the problem sets except that they cover bigger chunks of the course and that you are expected to work alone, with the aid of your notes and texts. The two midterms will count 15% each, and the final will count 30%.

You have the option of writing a paper in place of the final exam, the details of which should be negotiated with me in advance. The purpose of the paper would be to apply a game theoretic approach to a research question that interests you, and I encourage this option for students who hope to use these methods in their own research.

## Academic Integrity

The Syracuse University Academic Integrity Policy holds students accountable for the integrity of the work they submit. Students should be familiar with the Policy and know that it is their responsibility to learn about instructor and general academic expectations with regard to proper citation of sources in written work. The policy also governs the integrity of work submitted in exams and assignments as well as the veracity of signatures on attendance sheets and other verifications of participation in class activities. Serious sanctions can result from academic dishonesty of any sort.

In particular, although I encourage you to work together on problem sets, the exams are a different story. I expect that you will not communicate with each other, or to any other individuals, about how to solve the problems on the exams.

## Students with special needs

If you believe that you need accommodations for a disability, please contact the Office of Disability Services (ODS), http://disabilityservices.syr.edu, located at 804 Uni-

versity Avenue, room 309, or call 315-443-4498 for an appointment to discuss your needs and the process for requesting accommodations. ODS is responsible for coordinating disability-related accommodations and will issue students with documented disabilities "Accommodation Authorization Letters," as appropriate. Since accommodations may require early planning and generally are not provided retroactively, please contact ODS as soon as possible. You are also welcome to contact me privately to discuss your academic needs, although I cannot arrange for disability-related accommodations.

## August 26: Introductory Meeting.

- Powell, Robert. 1999. *In the Shadow of Power: States and Strategies in International Politics.* Princeton University Press, pp. 23-39.

## August 28 & September 4: Rationality and Utility Theory

- Morrow, chapters 1-2.

- McCarty and Meirowitz, chapter 2.

- Osborne, chapter 1.

- Williams, chapters 3 and 4 (reading chapter 1 not a bad idea).

## Games with Complete Information

## September 9 & 11: Normal Form Games and their Solutions

- Morrow, pp. 51-104.

- McCarty and Meirowitz, chapter 5.

- Osborne, chapters 2, 4, and 12.

- Williams, chapters 5 and 7.

## September 16 & 18: Extensive Form Games and their Solutions

- Morrow, pp. 121-135, 156-60.

- McCarty and Meirowitz, chapter 7.

- Osborne, chapter 5.

- Williams, chapters 8 and 9.

- Clinton, Robert Lowry. 1994. "Game Theory, Legal History, and the Origins of Judicial Review." *American Journal of Political Science* 38(2): 285-302. (Blackboard)

## September 23 & 25: Repeated Games

- Morrow, chapter 9. Can skip pp. 284-291 on chain store paradox with uncertainty.

- McCarty and Meirowitz, chapter 9.

- Osborne, chapters 11 and 14. See also chapter 15, pp. 451-461.

- Bianco, William T., Peter C. Ordeshook and George Tsebelis. 1990. "Crime and Punishment: Are One-Shot, Two-Person Games Enough?" *The American Political Science Review*, 84(2): 569-586. (Blackboard)

## September 30 & October 2: Applications of Complete-Information Games

- Geddes, Barbara. 1991. "A Game Theoretic Model of Reform in Latin American Democracies." *The American Political Science Review*, 85(2): 371-92. (Blackboard)

- Powell, Robert. 1991. "Absolute and Relative Gains in International Relations Theory." *American Political Science Review* 85(4): 1303-1320. (Blackboard)

- Vanberg, Georg. 1998. "Abstract Judicial Review, Legislative Bargaining, and Policy Compromise." *Journal of Theoretical Politics* 10: 299-326. (Blackboard)

## Games with Incomplete Information

## October 7 & 9: Bayesian Games

- Take-home midterm #1 due in class.

- Morrow, chapter 6.

- McCarty and Meirowitz, chapter 6.

- Osborne, chapter 9.

- Williams, chapter 10, sections A to C. Chapter 11.

## October 14 & 16: Perfect and Sequential Equilibria

- Morrow, chapter 7.

- McCarty and Meirowitz, chapter 8.

- Osborne, chapter 10, pp. 313-331.

- Williams, chapter 10, sections D to H.

## October 21 & 23: Signaling Games and Cheap Talk

- Morrow, chapter 8.

- McCarty and Meirowtiz, review section on signaling from Chapter 8.

- Osborne, chapter 10, pp. 331-358.

- Williams, review chapter 10, section E.

- Sartori, Anne E. 2002. "The Might of the Pen: A Reputational Theory of Communication in International Disputes." *International Organization*, 56(1): 121-149. (Blackboard)

## October 28 & 30: Applications of Incomplete-Information Games

- Fearon, James D. 2004. "Why Do Some Civil Wars Last so Much Longer than Others?" *Journal of Peace Research*, 41(3): 275-301. (Blackboard)

- Clark, Tom S. 2009. "The Separation of Powers, Court Curbing, and Judicial Legitimacy." *American Journal of Political Science*, 53(4): 971-989. (Blackboard)

## Social Choice Theory, Spatial Voting, and Bargaining

## November 4 & 6: Social Choice and Arrow's Impossibility Theorem

- Take-home midterm #2 due in class.

- Riker, William H. 1982. *Liberalism Against Populism*, pp. 1-19. (Blackboard)

- Shepsle, Kenneth A. 2010. *Analyzing Politics: Rationality Behavior and Institutions*, pp. 41–89. (Blackboard)

- Morrow, pp. 133-138.

- McCarthy and Meirowitz, chapter 4.

## November 11 & 13: Spatial Models of Voting and Legislating

- Morrow, pp. 104-111, 135-145.

- Osborne, chapter 3, pp. 70-76.

- Williams, Appendix 3.

- Strom, Gerald S. 1990. *The Logic of Lawmaking*, pp. 14-20, 50-75. (Blackboard)

- Cox, Gary C. 1990. "Centripetal and Centrifugal Incentives in Electoral Systems." *American Journal of Political Science*, 34(4): 903-935. (Blackboard)

## November 18: Models of Electoral Competition

- Downs, Anthony. 1957. *An Economic Theory of Democracy*, pp. 114-141. (Blackboard)

- Gehlbach, Scott. 2013. *Formal Models of Domestic Politics*, pp. 1–26. (Blackboard)

## November 20: No class on this day

## December 2 & 4: Bargaining

- Morrow, pp. 111-119, 145-156, 237-241.

- McCarty and Meirowitz, chapter 10.

- Osborne, chapter 16.

- Baron, David P. and John A. Ferejohn. 1989. "Bargaining in Legislatures." *The American Political Science Review* 83(4): 1181-1206. (Blackboard)

## Some Food for Thought

- Varian, Hal. "How to Build an Economic Model in Your Spare Time." Available at http://people.ischool.berkeley.edu/~hal/Papers/how.pdf.

- Boix, Carles. 2003. *Democracy and Redistribution*, pp. 19-62. (Blackboard) Given what we have studied, you should now be able to read this chapter and follow the workings of the model.

## Take-home final exam or paper due on December 12