

ADVANCED GAME THEORY

David A. Siegel

Course information:

Course Number: POS5698
Time: T 1:15 - 2:30 pm,
W 9:30-10:45 am
Place: 532 Bellamy Building
Course website: Blackboard

Contact Information:

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OH: T 9:30-11:30

Course Description

This is the (optional) second semester in the game theory sequence. The prerequisites are Game Theory I and the department's Mathematics class, or the equivalent of both. However, there will be a review of the material from the first semester of game theory, so don't worry if your game theory is rusty. The first few weeks also review/introduce many mathematical tools. And, of course, I will be happy to answer questions in class or help on an individual basis.

The course has two primary aims. The first is a better understanding of the technical modeling literature. By the end of the course you should not only be able to read and understand most of it, but also have a good idea as to why authors made the choices they did, and what they gained or lost by making them. The second is an enhanced ability to write models of your own. Throughout the course you will be exposed to an array of different theoretical modeling choices, from signaling and bargaining games to agency problems to (if time permits) behavioral models and computational methods, both to familiarize you with them and to indicate which may be of best use in a given context. Along the way we will also discuss how to present formal models, which can be as important as the modeling decisions themselves.

Course Format

I believe the best way to learn modeling is by doing, and the class structure reflects this. I have partitioned the course into eight sections, some of which have subtopics. After each of the first six sections there will be a problem set, which will be due two weeks after we complete the section. We will work through the problems together in the class in which they are due, so all problem sets should be turned in by the beginning of class. The rest of the time we will discuss new material. While the only required reading is from the notes that I will hand out, I strongly suggest that you at least read through model set-ups and justifications in the recommended readings. While I do not expect you to understand everything upon first (or second) reading, I do expect you to have done all readings before class, and to come to class with questions. I encourage frequent interruptions in this regard. It is easy to fall behind, and no question which helps prevent this is a bad one. At the conclusion of the class you will turn in a research paper on any topic you choose; the only requirement is that it contain a model using techniques studied in class.

Readings

There is no required textbook for the course. I will post to Blackboard notes providing the formal presentation of all topics prior to each class, usually several weeks beforehand. You are responsible for reading these carefully and coming to class with questions. I will provide additional notes detailing the examples we will go over in class after we go over them. You may also find the

following textbook useful: McCarty, Nolan and Adam Meirowitz. 2007. *Political Game Theory: An Introduction*. New York: Cambridge University Press (MM). I will note relevant chapters in this book in each section. Recommended papers are mostly available in the usual places.

Course Requirements

- Participation (10%): There are two components to participation: questions during classes, and active participation while working through the problems. I expect both.
- Problem Sets (60%): This is by far the most important part of the course. You are welcome to work together on these, but each person must write up the solutions on his or her own, either by hand (assuming your handwriting is legible) or by computer (preferably in L^AT_EX). You are strongly encouraged to make sure that you understand each thing you write down, and I encourage you to come talk to me if this is proving difficult. This is for your benefit, not mine; you will get much more out of the class this way. I will try to return graded problem sets a week after being turned in, and will pass out a solution key as well. I will give generous credit for making the attempt at a difficult problem even if the solution is not found, so don't worry if your answers are not flawless. I will also drop the lowest problem set grade.
- Paper (30%): You have two options for writing the paper, which is due at the beginning of finals week. You may write a short modeling paper, which ideally would serve as either the theory section of a longer paper or, more fleshed out, as the theory chapter of your dissertation. Or, if you are in the process of taking other courses and want to conserve effort, you may turn in a longer paper that contains a sizable theoretical component, with prior permission from both me and the other instructor. In either case, this paper may be on any substantive topic, must use methods discussed in the class, and must be typewritten (again, preferably in L^AT_EX). It also must include all proofs or other supporting information, either in the text or in an appendix. Length may be variable, but, particularly if you choose to turn in a paper for multiple classes, the theoretical contribution must be significant. Prior discussion with me about both the substance of and the methods employed in the paper is strongly encouraged. As with the problem sets, I will be generous in giving credit for attempting something difficult, so please feel free to stretch yourselves.

Tentative Schedule:

Section 1: Review of Game Theory I

RECOMMENDED READING: None, but it might be helpful to read over your notes from Game Theory I prior to class.

Section 2: Individual and Group Choice

Topic: Choice, Uncertainty, and Mathematical Underpinnings.

RECOMMENDED READINGS:

MM Ch 2,3.

Austen-Smith, David and Jeffrey S. Banks. 2000. *Positive Political Theory I: Collective Preference*. Ann Arbor: University of Michigan Press, Ch 1.

Bazerman, Max H. 2008. *Judgment in Managerial Decision Making*. New York: John Wiley and Sons, Ch 3.

Topic: Social Choice Theory and Methods of Proof

RECOMMENDED READINGS:

MM Ch 4.

Austen-Smith, David and Jeffrey S. Banks. 2000. *Positive Political Theory I: Collective Preference*. Ann Arbor: University of Michigan Press, Ch 2.

Sen, Amartya. 1970. "The Impossibility of a Paretian Liberal," *Journal of Political Economy* 78: 152–157.

McKelvey, Richard D. 1976. "Intransitives in Multidimensional Voting Models and Some Implications for Agenda Control." *Journal of Economic Theory* 12: 472–482.

Section 3: Normal and Extensive Form Games

Topic: Normal Form Games and Comparative Statics

RECOMMENDED READINGS:

MM Ch 5.

Ashworth, Scott and Ethan Bueno de Mesquita. 2006. "Monotone Comparative Statics in Models of Politics." *American Journal of Political Science* 50(1): 214–231.

Calvert, Randall L. 1985. "Robustness of the Multidimensional Voting Model: Candidate Motivations, Uncertainty, and Convergence." *American Journal of Political Science* 29:69–95.

Osborne, Martin. 1995. "Spatial Models of Political Competition Under Plurality Rule: A survey of Some Explanations of the Number of Candidates and the Positions They Take." *Canadian Journal of Economics* 27: 261–301.

Topic: Bayesian Games

RECOMMENDED READING:

MM Ch 6.

Austen-Smith, David and Jeffrey S. Banks. 1996. "Information Aggregation, Rationality, and the Condorcet Jury Theorems." *American Political Science Review* 90: 34–45.

Topic: Extensive Form Games

RECOMMENDED READINGS:

MM Ch 7.

Palfrey, Thomas R. 1984. "Spatial Equilibrium with Entry." *Review of Economic Studies* 51: 139–156.

Romer, Thomas and Howard Rosenthal. 1978. "Political Resource Allocation, Controlled Agenda, and the Status Quo." *Public Choice* 33(1): 27–44.

Section 4: Dynamic Games of Incomplete Information

RECOMMENDED READING:

MM Ch 8 (Through section 5).

Austen-Smith, David, and John R. Wright. 1992. "Competitive Lobbying for a Legislator's Vote." *Social Choice and Welfare* 9: 229–257.

Epstein, David, and Peter Zemsky. 1995. "Money Talks: Detering Quality Challengers in Congressional Elections." *American Political Science Review* 89(2): 295–308.

Farrell, Joseph. 1987. "Cheap Talk, Coordination, and Entry". *Rand Journal of Economics* 18: 34–39.

Gilligan, Thomas and Keith Krehbiel. 1987. "Collective Decision-Making and Standing Committees: an Informational Rationale for Restrictive Amendment Procedures." *Journal of Law, Economics, and Organization* 3(2): 287–335.

Spence, Michael. 1973. "Job Market Signaling." *The Quarterly Journal of Economics* 87(3): 355–374.

Section 5: Refinements and Repeated Games

Topic: Equilibrium Refinements and Herding Models

RECOMMENDED READING:

MM Ch 8 (Through end).

Jeffrey S. Banks and Joel Sobel. 1987. "Equilibrium Selection in Signaling Games." *Econometrica* 55(3): 647–661.

Feddersen, Timothy J. and Wolfgang Pesendorfer. 1996. "The Swing Voter's Curse." *The American Economic Review* 86(3): 408–424.

David M. Kreps and Robert Wilson. 1982. "Sequential Equilibria." *Econometrica* 50(4): 863–894.

Lohmann, Susanne. 1993. "A Signaling Model of Informative and Manipulative Political Action." *American Political Science Review* 87(2): 319–333.

Topic: Repeated Games

RECOMMENDED READING:

MM Ch 9.

Axelrod, Robert. 1981. "The Emergence of Cooperation among Egoists." *American Political Science Review* 75(2): 306–318.

Bendor, Jonathan and Piotr Swistak. 1997. "The Evolutionary Stability of Cooperation." *American Political Science Review* 91: 290–307.

Fearon, James D. and David D. Laitin. 1996. "Explaining Interethnic Cooperation." *American Political Science Review* 90(4): 715–735.

Milgrom, Paul, Douglass North, and Barry Weingast. 1990. "The Role of Institutions in the Revival of Trade: The Medieval Law Merchant, Private Judges, and the Champagne Fairs." *Economics and Politics* 2:1–23.

Section 6: Bargaining

RECOMMENDED READING:

MM Ch 10.

Banks, Jeffrey S. 1990. "Equilibrium Behavior in Bargaining Games." *American Journal of Political Science* 34(3): 599–614.

Baron, David P. and John A. Ferejohn. 1989. "Bargaining in Legislatures." *American Political Science Review* 89: 1181–1206.

Diermeier, Daniel and Timothy J. Feddersen. 1998. "Cohesion in Legislatures and the Vote of Confidence Procedure." *American Political Science Review* 92(3): 611–621.

Fearon, James D. 1994. "Domestic Political Audiences and the Escalation of International Disputes." *American Political Science Review* 88(3): 577–592.

Fearon, James D. 1995. "Rationalist Explanations for War." *International Organization* 49(3): 379–414.

Nash, John F. Jr., 1950. "The Bargaining Problem." *Econometrica* 18: 155–162.

Rubinstein, Ariel. 1982. "Perfect Equilibrium in a Bargaining Model." *Econometrica* 50: 97–109.

Section 7: Mechanism Design and Agency Theory

RECOMMENDED READING:

MM Ch 11.

Bendor, Jonathan and Adam Meirowitz. 2004. "Spatial Models of Delegation." *American Political Science Review* 98(2): 293–310.

Epstein, David and Sharyn O'Halloran. 1994. "Administrative Procedures, Information, and Agency Discretion." *American Journal of Political Science* 38(3): 697–722.

Ferejohn, John. 1986. "Incumbent performance and electoral control." *Public Choice* 50: 5–25.

Shapiro, Jacob N. and David A. Siegel. 2007. "Underfunding in Terrorist Organizations." *International Studies Quarterly* 51: 405–429.

Section 8: Modeling Grab Bag: Behavioral Models, Computational Methods, Quantal Response Equilibrium, and Global Games

REQUIRED READING:

Bendor, Jonathan, Daniel Diermeier, and Michael Ting. 2003. "A Behavioral Model of Turnout." *American Political Science Review* 97(2): 261–280.

McKelvey, Richard D. and Thomas R. Palfrey. 1995. "Quantal Response Equilibria in Normal Form Games." *Games and Economic Behavior* 10: 6–38.

McKelvey, Richard D. and Thomas R. Palfrey. 1998. "Quantal Response Equilibria in Extensive Form Games." *Experimental Economics* 1: 9–41.

Morris, Stephen and Hyun Song Shin. 2001. "Global Games: Theory and Applications." Cowles Foundation Discussion Paper No. 1275R.

Siegel, David A. 2009. "Social Networks and Collective Action." *American Journal of Political Science* 53(1): 122–138.

Additional Information

University Attendance Policy: Excused absences include documented illness, deaths in the family and other documented crises, call to active military duty or jury duty, religious holy days, and official University activities. These absences will be accommodated in a way that does not arbitrarily penalize students who have a valid excuse. Consideration will also be given to students whose dependent children experience serious illness.

Academic Honor Policy: The Florida State University Academic Honor Policy outlines the University's expectations for the integrity of students' academic work, the procedures for resolving alleged violations of those expectations, and the rights and responsibilities of students and faculty members throughout the process. Students are responsible for reading the Academic Honor Policy and for living up to their pledge to "...be honest and truthful and... [to] strive for personal and institutional integrity at Florida State University." (Florida State University Academic Honor Policy, found at <http://dof.fsu.edu/honorpolicy.htm>.)

Americans With Disabilities Act: Students with disabilities needing academic accommodation should: (1) register with and provide documentation to the Student Disability Resource Center; and (2) bring a letter to the instructor indicating the need for accommodation and what type. This should be done during the first week of class.

This syllabus and other class materials are available in alternative format upon request.

For more information about services available to FSU students with disabilities, contact the: Student Disability Resource Center
874 Traditions Way
108 Student Services Building
Florida State University
Tallahassee, FL 32306-4167
(850) 644-9566 (voice)
(850) 644-8504 (TDD)
sdrc@admin.fsu.edu
<http://www.disabilitycenter.fsu.edu/>

Syllabus Change Policy: Except for changes that substantially affect implementation of the evaluation (grading) statement, this syllabus is a guide for the course and is subject to change with advance notice.