

Economics 209A
Game Theory

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593 Evans Hall
Office Hours: Tue 1:30-3:00

Requirements:
6 problem sets: 50%
Final exam: 50%

Textbooks, which are useful references, but not required:

Osborne and Rubenstein: *Game Theory*

Mas-Colell, A., M. Whinston, and J. Green, *Microeconomic Theory*, Oxford University Press, 1995

Kreps, D., *A Course in Microeconomic Theory*, Princeton University Press, 1990

This is a second-year course in game theory, which has a number of objectives:

- Give an overview of important standard topics, without necessarily memorizing every detail.
- Develop techniques to solve problems and build models.
- You will be expected to understand the model and key results of each paper, and be able to do problems connected with the papers. I will try to make problems as self-contained as possible, but reading papers will be definitely helpful for the problems.
- Develop a sense of what problems are interesting, by learning from a representative sample of important papers.
- Gain a better understanding of how to write theory papers: How to formulate the model, how to build a sequence of propositions and lemmas supporting the main result, how to add discussion that makes the paper flow and rings the bell with what the readers already know. For this purpose, learning fundamental material from the papers may be more useful than learning it from a textbook.
- While an in-class presentation is not required, there will be a few opportunities for student presentations.

Content

0. Normal Form Games Dominance Solvability, Nash Equilibrium, Bayesian Nash Equilibrium, Correlated Equilibrium.

1. Extensive Form Games

Game Tree, Backward Induction, Subgame Perfection, Information sets, Perfect Bayesian Equilibrium, Sequential Equilibrium

Kreps, D. and Wilson R. “Sequential Equilibria,” *Econometrica*, 1982

2. Signaling and Screening, Mechanism Design, Revelation Principle

Signaling, Competitive Screening, Monopolistic Screening

Mailath, George J., 1987. “Incentive Compatibility in Signaling Games with a Continuum of Types,” *Econometrica*, vol. 55(6), pages 1349-65

Myerson, R. (1981) “Optimal Auction Design.” *Mathematics of Operations Research*.

3. Bargaining.

Nash, John "The Bargaining Problem" *Econometrica*, 1950, 155-162

Ariel Rubinstein, "Perfect Equilibrium in a Bargaining Model," *Econometrica*, Vol. 50, No. 1. (Jan., 1982), pp. 97-110.

4. Contracts (Examples)

Diamond, Douglas W, 1984. "Financial Intermediation and Delegated Monitoring," *Review of Economic Studies*, vol. 51(3), pages 393-414.

Scharfstein, D. and Bolton, P. "A Theory of Predation Based on Agency Problems in Financial Contracting," *American Economic Review*, March 1990, pp. 93-106.

5. Higher Order Beliefs

Morris, Stephen, and Hyun Song Shin (1998), "Unique Equilibrium in a Model of Self-Fulfilling Currency Attacks", *American Economic Review*, 88, 3, 587-597.

Yossi Feinberg & Andrzej Skrzypacz, (2005). "Uncertainty about Uncertainty and Delay in Bargaining," *Econometrica*.

6. Repeated Games

Abreu, D., Pearce, D., and Stacchetti, E. (1986) "Optimal Cartel Equilibria with Imperfect Monitoring." *Journal of Economic Theory* Vol. 39, pp. 251-269

Abreu, D., Pearce, D., and Stacchetti, E. (1990) "Toward a Theory of Discounted Repeated Games with Imperfect Monitoring." *Econometrica* Vol. 58, pp. 1041-1063

Fudenberg, D., Levine, D., and Maskin, E. (1994) "The Folk Theorem with Imperfect Public Information." *Econometrica* Vol. 62, pp. 997-1039

Sannikov, Y. (2005) "Games with Imperfectly Observable Actions in Continuous Time.," working paper, UC Berkeley

7. Reputation

Kreps, D. and Wilson, R. "Reputation with Imperfect Information." *Journal of Economic Theory*, 1982

Milgrom, P. and Roberts, J. "Predation, Reputation and Entry Deterrence." *Journal of Economic Theory*, 1982.