

Econ 504: Game Theory and Estimation of Games

Syllabus

Instructors:

Prof. Fanny Camara

Email: fcamara@usc.edu

Textbook:

D. Fudenberg and J. Tirole, [Game Theory](#) (MIT Press) [FT] (Required)

R. Myerson [Game Theory Analysis of Conflict](#) (Harvard U. Press) [M]

M. Osborne and A. Rubinstein, [A Course in Game Theory](#) (MIT Press) [OR]

Course description and objectives:

This course will introduce game theory and estimation of games at the grad level.

The objectives are:

- (1) Understand most fundamental concepts in Game Theory
- (2) Know most recent literature on Estimation of Games
- (3) Improve presentation skills and critical reading of literature

Assignments and grading:

- **Research proposal:** You should think of the proposal as a “first draft” of your third year and so discuss and develop the topic with me during the term. The topic should be game theory or estimation of games. The paper should include: (i) a research question, (ii) a motivation and (iii) a concise review of existing literature that clarifies your contribution, the motivation and research question. The proposal should be 10 pages at most and will need to be turned in to me by email by the end of April. Students can collaborate on research proposals. I will review the proposals and then provide feedback that is intended to help you move forward with the project after the end of the course.
- **Presentations:** Students will be required to present two papers in class. Papers are chosen by the student and should be related to the following topics: game theory, industrial organization, estimation of games. Students will give a 1 hour and a half presentation on each paper. The presentations should discuss: (i) the research question, motivation, contribution and relationship to the background literature; (ii) the data; (iii) the empirical strategy; (iv) the main results; (v) conclusions and generalizability; (vi) strengths and weaknesses of the paper. The presentations will be followed by a 20 minute discussion involving the rest of the class.
- **Participation:** Students are expected to contribute to in-class discussion.

TOPICS:

1. Review. Nash equilibrium, common knowledge, iterated elimination of strictly and weakly dominated strategies.

FT, 1, 2.1, 2.2

M, 1,2,3.

OR, 3.1, 3.2, 3.3, 4

John Nash "[Non-Cooperative Games](#)," [The Annals of Mathematics](#) Second Series, Vol. 54, No. 2 (Sep., 1951), pp. 286-295

2. Extensive Games of Complete Information. Game trees, subgame perfection, paradoxes of rationality

FT 3

M 2.1

Selten R, A Reexamination of The Perfectness Concept for Equilibrium Points in Extensive Games, International Journal of Game Theory, 1975, 25-55.

Kreps D, and Wilson R, Sequential Equilibria, Econometrica, 1982, 863-894.

P. Reny (1992), "[Rationality in Extensive-Form Games](#)." Journal of Economic Perspectives 6, 103--18.

3. Applications of Extensive Form Games:

3.1 Bargaining with Complete Information. Contracts with complete information

Lecture Notes to be distributed

FT, 4.6.

M, 8.

Ariel Rubinstein "[Perfect Equilibrium in a Bargaining Model](#)," [Econometrica](#) Vol. 50, No. 1 (Jan., 1982), pp. 97-109

K. Chatterjee, B. Dutta, D. Ray and K. Sengupta (1993), "[A Noncooperative Theory of Coalitional Bargaining](#)," Review of Economic Studies 60, 463-477.

3.2. Repeated Games

D. Abreu (1988), "[On the Theory of Infinitely Repeated Games with Discounting](#)," Econometrica 56, 383-96.

Abreu, D., Pearce, D. and Stacchetti, E. (1990) "[Toward a theory of discounted repeated games with imperfect monitoring](#)," Econometrica, 58, 1041-1063.

ABREU, D., D. PEARCE, AND E. STACCHETTI (1986): "Optimal Cartel Equilibria with Imperfect Monitoring," *Journal of Economic Theory*, 39, 251-269.

D. Fudenberg and E. Maskin (1986), "[The Folk Theorem in Repeated Games with Discounting or with Incomplete Information](#)," *Econometrica* 54, 533-556.

Applications:

Andrew Atkeson "[International Lending with Moral Hazard and Risk of Repudiation](#)" *Econometrica* Vol. 59, No. 4 (Jul., 1991) pp. 1069-1089

Andrew Atkeson, Robert E. Lucas, Jr "[On Efficient Distribution with Private Information](#)" [The Review of Economic Studies](#) Vol. 59, No. 3 (Jul., 1992), pp. 427-453

4. Games with Incomplete Information. The Extensive Form with Incomplete Information. Refinements.

OR, 2.6., 11, 12

FT, 6, 8, 10, 11

I-K. Cho and D. Kreps (1987), "[Signalling Games and Stable Equilibria](#)," *Quarterly Journal of Economics* 102, 179-221.

5. Applications of Games with Incomplete Information

5.1 Disclosure Game

Milgrom, Paul R. "Good news and bad news: Representation theorems and applications." *The Bell Journal of Economics*(1981): 380-391.

Grossman, Sanford J. "The informational role of warranties and private disclosure about product quality." *The Journal of Law and Economics* 24.3 (1981): 461-483.

5.2. Signaling

J. Banks and J. Sobel (1987), "Equilibrium Selection in Signaling Games," *Econometrica* 55, 647–662.

D. Bernheim (1994), "A Theory of Conformity," *Journal of Political Economy* 102, 841-77

Spence, Michael. "Job market signaling." *Uncertainty in Economics*. 1978. 281-306.

5.3. Cheap Talk

V. Crawford and J. Sobel (1982), "[Strategic Information Transmission](#)," *Econometrica* 50, 1431-1451

M. Battaglini (2002), "Multiple Referrals and Multidimensional Cheap Talk," *Econometrica* 70, 1379-1401.

5.4 Auctions

M 3.11

FT 7.1

Roger B. Myerson "[Optimal Auction Design](#)" [Mathematics of Operations Research](#) Vol. 6, No. 1 (1981), pp. 58-73

Paul R. Milgrom, Robert J. Weber "[A Theory of Auctions and Competitive Bidding](#)" [Econometrica](#) Vol. 50, No. 5 (1982), pp. 1089-1122.

6. Miscellaneous Topics. To be covered if we have additional time.

6.1. Estimation of Static Games

Disability Services and Programs Statement

Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to the TA) as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. – 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.

Academic Integrity Standards

Students are required to review USC's academic integrity standards in the SCAMPUS (www.usc.edu/departments/publications/SCAMPUS/gov). Violations of any of the academic integrity standards set by the University can have serious consequences.