14.126 Game Theory
Fall 2002

Textbooks

1. Fudenberg, and Tirole. *Game Theory*. The MIT Press, 1991. [Primary]

2. Osborne, and Rubinstein. *A Course in Game Theory*. The MIT Press, 1994. [Primary]

3. Weibull. *Evolutionary Game Theory*. The MIT Press, 1995. [Supplementary]

4. Fudenberg, and Levine. *The Theory of Learning in Games*. The MIT Press, 1998. [Supplementary]

5. Krishna. *Auction Theory*. Academic Press, 2002. [Supplementary]

Games and Economic Behavior articles (1993-, vol. 5-) in the list are downloadable from the journal website: http://www.apnet.com/www/journal/ga.htm

Journal of Economic Theory articles (1993-, vol. 59-) in the list are downloadable from the journal website: http://www.academicpress.com/jet

Articles before 1997 in *Econometrica*, *Review of Economic Studies* or *Quarterly Journal of Economics* are downloadable from JSTOR: http://www.jstor.org/

Grading

There will be approximately five problem sets (40%) and a take-home final exam (60%).

<u>Tentative Outline</u>

Class # 1 Choice Theory (Savage, 1954; Kreps, 1988)

  *Yildiz, M (2001), Lecture notes

  Savage, L. (1954), *The Foundations of Statistics*.

  Kreps, D. (1988), *Notes on the Theory of Choice*.

Class # 2, #3 Introduction. Definitions (Nash, Perfect, Sequential Equilibrium, Rationalizability, Correlated Equilibrium, Backward Induction, Forward Induction, Sequential Rationality, Self confirming equilibria)

  *Fudenberg and Tirole, Chaps. 1,2,3.

  Osborne and Rubinstein Chaps. 2,3,4,6.

  Aumann, R. (1995) "Backward Induction and Common Knowledge of Rationality," *Games and Economic Behavio*r, 8, 6-19

  Ben-Porath, E. (1997) "Rationality, Nash Equilibrium and Backward Induction in Perfect Information Games," *Review of Economic Studie*s, 64, 23-46.

  Brandenburger, A. (2001): "The Power of Paradox".

  Aumann, R. and A. Brandenburger (1995) "Epistemic Conditions for Nash Equilibrium," *Econometric*a, 63, 1161-1180.

  Bernheim, D. (1984) "Rationalizable Strategic Behavior," *Econometric*a, 52, 1007-1028.

  Pearce, D. (1984) "Rationalizable Strategic Behavior and the Problem of Perfection," *Econometric*a, 52, 1029-1050.

  Aumann, R. (1987) "Correlated Equilibrium as an Expresssion of Bayesian Rationality," *Econometric*a, 55, 1-18.

  Kreps and Wilson (1982) "Sequential Equilibria," *Econometric*a, 50, 863-894.

  Dekel, E., D. Fudenberg and D. Levine (1999), "Payoff Information and Self-Confirming Equilibrium," working paper.
http://levine.sscnet.ucla.edu/papers/ack32rc.pdf

  Fudenberg, D. and D. Kreps (1995), "Learning in Extensive Games, I: Self-Confirming Equilibrium," *Games and Economic Behavior*, 8, 20-55.

Class # 4, #5 Repeated Games

*Fudenberg and Tirole, Chap. 5.

Osborne and Rubinstein Chap. 8.

Abreu, D., P. K. Dutta, and L. Smith (1994), "Folk Theorems for Repeated Games: A NEU Condition," *Econometrica* 62, 939-948.

Fudenberg, D. and E. Maskin (1986), "The Folk Theorem for Repeated Games with Discounting and Incomplete Information," *Econometrica* 54, 533-54.

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

Fudenberg, D., D. M. Kreps, and E. Maskin (1990), "Repeated Games with Long-run and Short-run Players," *Review of Economic Studies* 57, 555-573.

Kandori, M. (1992), "Social Norms and Community Enforcement," *Review of Economic Studies* 59, 63-80

Class # 6   Review

Class #7   Cheap Talk

*Crawford, V and J. Sobel (1982) "Strategic Information Transmission," *Econometrica,* 50, 1431_1451.

*Myerson, R. (1986) "Multi-Stage Games with Communication," *Econometrica*, 54, 323-358.

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

Class #8, #9 Bargaining Theory

*Osborne and Rubinstein, Chaps 7, 15.

*Yildiz, M. (2001): "Bargaining without a common prior – An immediate agreement theorem"

Fudenberg and Tirole, Chap. 10

Rubinstein, A. (1982) "Perfect Equilibrium in a Bargaining Model," *Econometrica*, 50, 97-109.

Nash, J. (1950), "The bargaining problem," *Econometrica*, 18.

Class #10 Signaling, reputation

Fudenberg and Tirole, Chaps 9.

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

*Kreps, D. and R. Wilson (1982) "Reputation and Imperfect Information," *Journal of Economic Theor*y, 27, 253-279.

*Milgrom and Roberts (1982), "Predation, reputation and entry deterrence," *Journal of Economic Theor*y, 27, 280-312.

*Kreps, D., P. Milgrom, J. Roberts, and R. Wilson (1982) "Rational Cooperation in the Finitely Repeated Prisoners' Dilemma," *Journal of Economic Theor*y, 27, 245-52.

Class #11, #12 Epistemic Foundations

Fudenberg and Tirole Chaps 2-14.

*Yildiz, *Lecture Notes*

*Aumann (1995), *Interactive Epistemology*.

*Dekel, E. and F. Gul (1997) "Rationality and Knowledge in Game Theory," in *Advances in Economics and Econometrics: Theory and Application*s, D. M. Kreps and K. F. Wallis eds., Cambridge University Press, 1997.

Milgrom, P. and N. Stokey (1982) "Information, Trade and Common Knowledge," *Journal of Economic Theor*y, 26, 177-227.

Class #13 Review

Class #14, #15, #16, #17 Learning and Evolution

*Weibull, chapters 2-3.

*Fudenberg and Levine, chapters ??

Erev, I. and A. Roth (1995) "On the Need for Low-Rationality Game Theory," http://www.economics.harvard.edu/~aroth/

*Noldeke, G. and L. Samuelson (1993) "An Evolutionary Analysis of Forward and Backward Induction," *Games and Economic Behavior*, 5, 425-454.

Kandori, M., G. Mailath, and R. Rob (1993) "Learning, Mutation, and Long-run Equilibria in Games," *Econometrica*, 61, 29-56.

Young, P. (1993) "The Evolution of Conventions," *Econometrica*, 61, 57-84.

Ellison, G. (1993) "Learning, Local Interaction and Coordination," *Econometrica*, 61, 1047-1071.

Fudenberg, D. and D. Kreps (1995) "Learning in Extensive Games, I: Self-Confirming Equilibria," *Games and Economic Behavior*, 8, 20-55.

Class #18   Review

Class # 19 Supermodular Games

*Milgrom, P. and J. Roberts (1990) "Rationalizability and Learning in Games with Strategic Complementarities," *Econometrica*, 58, 1255-1277.

*Milgrom, P. and J. Roberts (1996), "The LeChatelier Principle", *The American Economic Review*, Vol. 86, No. 1. (Mar., 1996), pp. 173-179.

Vives, X. (1990) "Nash Equilibrium with Strategic Complementarities," *Journal of Mathematical Economics*, 19, 305-321

Topkis, D. M. (1998) *Supermodularity and Complementarity*, Princeton.

Class # 20, #21, #22 Auctions

*Krishna, Chaps. 2,3,5-7,10,17.

*Myerson, R. (1981), "*Optimal Auction Design*," *Mathematics of Operations Research* 6, pp. 58-73.

*Milgrom, P. and R. Weber (1982), "A Theory of Auctions and Competitive Bidding," *Econometrica* 50, 1089-1122.

Class # 23   Review