

Economics 2052: Game Theory Spring 2010

Monday 4-7 pm Robinson Hall 107 www.courses.fas.harvard.edu/3690

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This class covers topics in game theory, including common knowledge, equilibrium refinements, repeated games, reputation effects, and evolution and learning. The amount of time devoted to each topic is flexible and may be adjusted in response to student interests.

Prerequisites: Game Theory: Economics 1052 or 2010a or equivalent- e.g. Ch 1, 3, 4, 5, 6, and 8 of FT. Math: some familiarity with real analysis, point-set topology, ODEs, an ability to write simple proofs, and a willingness to look things up.

Supplementary Texts: [neither is required] D. Fudenberg and J. Tirole [FT], *Game Theory* D. Fudenberg and D. Levine [FL], *The Theory of Learning in Games*

Other references: V. Krishna [K], *Auction Theory* G. Mailath and L. Samuelson [MS], *Repeated Games and Reputations* W. Sandholm [S], *Population Games and Evolutionary Dynamics*

<http://www.ssc.wisc.edu/~whs/book/index.html> **Grading:** This class does not have a final exam; instead the course grade will be based on four assigned problem sets. You may work together on the problems in groups no larger than 3; each problem's solution should be accompanied with the names of the people you worked with. However, you should not discuss the problems with anyone outside of your group, except for me and Yuichiro, and you should not use any past solution sets. You are free to look at books, journal articles and working papers for help and hints. **Schedule:** The class will not meet on President's Day, Feb. 15 (a Harvard holiday); the class will probably meet on Monday May 3, which is during reading period. The last problem set will be due on Wed May 5, near the end of reading period.

References

- There is enough material here for at least 2 semester courses; we will skip some sections entirely and only cover some of the papers of the sections we do cover. **1. Knowledge, common knowledge, global games, hierarchies of beliefs** *FT Chapter 14. *Aumann, R. J. [1976] "Agreeing to Disagree," *The Annals of Statistics* 4, 1236-1239. *Brandenburger, A. and E. Dekel [1993] "Hierarchies of Beliefs and Common Knowledge," *Journal of Economic Theory* 59, 189-198. Brandenburger, A. and E. Dekel [1987] "Common Knowledge with Probability 1," *Journal of Mathematical Economics* 16, 237-245. Brandenburger, A. and E. Dekel [1987]. "Rationalizability and Correlated Equilibria," *Econometrica* 55, 1391-1402. Carlsson, H. and E. van Damme [1993] "Global Games and Equilibrium Selection" *Econometrica* 61, 989-1018. Dekel, E., D. Fudenberg and S. Morris [2006] "Topologies on Types," *Theoretical Economics* 1, 275-309.. *Dekel, E., D. Fudenberg and S. Morris [2007] "Interim Correlated Rationalizability," *Theoretical Economics* 2, 15-40. Dekel, E. and F. Gul [1997] "Rationality and Knowledge in Game Theory," in *Advances in Economics and Econometrics: Seventh World Congress of the Econometric Society*, ed. D. Kreps and K Wallis, pp 87-172..
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Journal of Game Theory* 7, 73-80. **3. Repeated Games** Background
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4. Reputation Effects and Repeated Signaling

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