

Syllabus of the Game theory Course

(Tentative and subject to changes)

1. What do Game Theorists do ? An example:
 - Two sided Matching (Gale and Shapley).
2. Describing non-cooperative games:
 - Games in extensive form.
 - Games in Strategic form.
3. Solution concepts:
 - Domination; Repeated elimination of dominated strategies.
 - Stability; Nash Equilibrium.
 - Security; Maxmin.
4. Two-person zero-Sum games; Value and Equilibrium.
5. Randomized strategies:
 - Mixed strategies: Nash Theorem.
 - Behavioral strategies; Perfect recall.
6. Refinement of the Nash Equilibrium.
 - Sub-game perfectness; Backward induction (looking forward).
 - Forward induction (looking backward).
7. Correlated equilibrium.
8. Repeated games and the *Folk Theorem*.
9. Modelling incomplete information in games.
 - Some expository examples: The value of information.
 - Hierarchies of beliefs.
 - The model of Harsanyi and Bayesian equilibrium.
 - The Mertens-Zamir Universal Belief Space.
 - The Bayesian equilibrium revisited.
10. Cooperative Games
 - The Nash Bargaining problem.
 - Games in coalition function form. The Core. The Shapley value

General textbooks

1. M. J. Osborne and A. Rubinstein, **A course in Game Theory**, *MIT Press*, 1994.
2. Roger Myerson, **Game Theory**, *Harvard University Press*, 1991.
3. D. Fudenberg and J. Tirole, *Game Theory*, *MIT Press*, 1991.

Old Classics:

1. J. von Neumann and O. Morgenstern, **Theory of Games and Economic Behavior**, New York: *John Wiley and Sons.*, 1944.
2. R.D. Luce and H. Raiffa, **Games and Decisions**, New York: *John Wiley and Sons.*, 1957.
3. G. Owen, **Game Theory**, (Second Edition), New York: *Academic Press*, 1982.

Remark I will be generally following few chapters from the newly published Hebrew textbook “*Game Theory*” By S. Zamir, M. Maschler and E. Solan (*MAGNES, Hebrew University Press*, 2008). In the process of translation.