

ECON 501b: Microeconomics. Spring 2013.

Lectures: 10:30-10:50 T Th
28 Hillhouse Ave, Rm. B8

Instructors: Eduardo Faingold
30 Hillhouse Ave., Rm. 27
Office hours: 4:30-5:30 T
eduardo.faingold@yale.edu
<http://www.econ.yale.edu/~ef253/>

Johannes Horner
30 Hillhouse Ave., Rm. 23A
johannes.horner@yale.edu
<https://sites.google.com/site/jo4horner/>

Teaching assistants: Ariel Tobias
ariel.tobias@yale.edu

Topic: This is the second part in the two-course sequence in Microeconomic Theory. The first course covered the basic tools of microeconomic analysis. The second course provides an introduction to game theory and information economics.

Game theory is the analysis of strategic interaction among individual agents. Game theory seeks to provide models of conflict and cooperation that are relevant in a large class of situations basic to almost all social sciences. It offers insight into economic, political or social situations in which individuals have different goals and preferences. The basic assumptions of game theory are that decision-makers pursue well-defined objectives (they are *rational*) and take into account their knowledge or expectations of other decision-makers' behavior (they are *strategic*).

The first half of this course will introduce basic notions such as action, strategy and equilibrium (and its various refinements). The second half extends the theory to cover situations where different agents have different information. This allows game theory to address situations in which agents have private information that is not readily accessible to all other agents. The resulting asymmetry in information is pervasive in economic relationships: Customers know more about their tastes than firms, firms know more about their own costs than their competitors. As private information changes the nature of the economic relationships, new tools are required to analyze exchange and contracting environments. The basic adverse selection model is introduced first as the relationship between an informed and an uninformed agent. The general theory of mechanism design analyzes the problem of how an uninformed player, (principal or designer) can induce privately informed agents to reveal their information. This will lead us, inter alia, to the theory of auctions and related optimal trading problems. In

contrast, in signaling models the informed agent attempts to credibly convey its information to the uninformed player or the market. Finally, optimal contracts are analyzed in environments where the private information only arises after contracting, which is referred to as the moral hazard problem.

Requirements: Grades will be based on:

25%: Mid-term exam: Thursday, February 28 (in class)

25%: Homework

50%: Final exam: TBA

Required texts

1. Andreu Mas-Collel, Michael D. Whinston and Jerry Green, *Microeconomic Theory* (Oxford University Press, 1995).
2. Drew Fudenberg and Jean Tirole, *Game Theory* (MIT Press, 1991)

Recommended texts

1. Patrick Bolton and Matthias Dewatripont, *Contract Theory* (MIT Press, 2005)
2. Robert Gibbons, *Game Theory for Applied Economists* (Princeton University Press, 1992)
3. Bernard Salanie, *The Economics of Contracts* (MIT Press, 2005).

Other useful sources:

Ken Binmore, *Essays on the Foundations of Game Theory* (Basil Blackwell, 1990)

Ken Binmore, *Playing for Real* (Oxford University Press, 2007)

David M. Kreps, *A Course in Microeconomic Theory* (Princeton University Press, 1990)

David M. Kreps, *Game Theory and Economic Modelling* (Oxford University Press, 1990)

Jean-Jacques Laffont and David Martimort, *The Theory of Incentives* (Princeton Univ. Press, 1990)

Jean-Jacques Laffont and Jean Tirole, *A Theory of Incentives in Procurement and Regulation* (MIT Press, 1993)

George J. Mailath and Larry Samuelson, *Repeated Games and Reputations* (Oxford University Press, 2006)

Roger G. Myerson, *Game Theory* (Harvard University Press, 1991)

Martin J. Osborne and Ariel Rubinstein, *Bargaining and Markets* (Academic Press, 1990)

Martin J. Osborne and Ariel Rubinstein, *A Course in Game Theory* (MIT Press, 1994)

Klaus Ritzberger, *Foundations of Non-Cooperative Game Theory* (Oxford University Press, 2002)

Jean Tirole, *The Theory of Industrial Organization* (MIT Press, 1988)

Tentative Outline (for the first 7 weeks)

Week 1: Strategic form games. Iterated dominance. Rationalizability.

Reading: FT Ch. 1.1 and 2.1. Notes on iterated dominance and rationalizability.

Week 2: Nash equilibrium and strategic form refinements.

Reading: FT Ch. 1.2, 1.3 and 8.4.

Week 3: Extensive form games. Kuhn's Theorem. Backward induction and subgame perfection. Multi-stage games with observable actions. The principle of one-shot optimality.

Reading: FT Ch. 3, 4.1 and 4.2

Week 4: Finitely repeated games. Rubinstein bargaining. Extensive form refinements.

Reading: FT Ch. 4.3, 4.4, 8.1, 8.2 and 8.3.

Week 5: Extensive form refinements (cont'd). Forward induction and strategic stability. Signaling games and the intuitive criterion.

Reading: FT Ch. 8.3, 11.2 and 11.3

Week 6: Infinitely repeated games with perfect monitoring. Recursive structure and self-generation. Perfect monitoring Folk Theorem.

Week 7: Imperfect monitoring. Midterm.