Game Theory with Applications to Finance and Marketing, I

The Course Syllabus, Fall 2014

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This course introduces the modern non-cooperative game theory to senior undergraduate students and graduate students. A game may or may not involve asymmetric information, and may be static or dynamic in nature. Thus we can classify games into four categories, and define four associated equilibrium concepts, which are Nash equilibrium (NE), subgame perfect Nash equilibrium (SPNE), Bayesian equilibrium (BE), perfect Bayesian equilibrium (PBE), and other refined equilibrium concepts. We shall first talk about these equilibrium concepts, and in particular the Cho-Kreps refinement on PBE's, and then give applications regarding auctions, asset trading, bilateral monopoly, bargaining, and strategic firms' imperfect competition in price, quantity, and location. The emphases will be on signalling, screening, and reputation games that are particularly useful in modelling securities trading and corporate agency problems.

Then the course considers many applications in respectively finance and marketing. These applications will be useful for students who are interested in writing master theses using a game-theoretic approach. The applications in finance may include financial signaling, financial contract design, stock trading with information asymmetry, the strategic roles of forward and option contracts. The applications in marketing may include optimal product line design and product line extension, the theory of distribution channel, optimal promotion mix design (coupon versus rebate, and trade dealing), exclusive dealing and exclusive territory, optimal pricing strategy (best price in town policy) and collusion, and consumer search. We shall link these topics to e-commerce.

Students will be responsible for solving problem sets and presenting an assigned paper. This together with an in-class midterm examination determines a student's grade. A tentative schedule now follows.

Week No.	Contents
1	Static Games with Complete Information, I
2	Static Games with Complete Information, II
3	Multistage Games and Repeated Games
4	Static Games with Incomplete Information
5	Screening Games, Part I
6	Screening Games, Part II
7	Signaling Games
8	Perfect Bayesian Equilibrium and Refinements
9	Midterm Exam
10	(Presentation starts.) Financial Signaling Models, I
11	Financial Signaling Models, II
12	Asset Trading Models, I
13	Asset Trading Models, II
14	Interactions between Financial and Product Markets
15	Product Line Design, Branding and Return Policy, I
16	Product Line Design, Branding and Return Policy, II
17	Distribution Channels and E-commerce
18	Promotion and Advertising