EC 741: Graduate Microeconomic Theory II
Game Theory and Information Economics Module

Spring 2009

Instructor: Prof. M. Utku Ünver

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Teaching Assistant: Details to follow.

Class Room and Time: Room: 429 Bldg: 21 Campanella Way, Tue-Thu 1:00-2:45 pm

Course Objectives: This is an introductory game theory module in the Graduate Microeconomic Theory sequence. The aim of the course is to build a solid background for economics PhD students in game theory and information economics. It is equally targeted to students who would like to do applied or theoretical work in the future.

Teaching Method: Lectures and Recitations. The lectures will cover primarily the theoretical material, supplemented with examples. Participation is very much encouraged. Problem solving is essential for improving one's understanding of game theory. Regular homework exercises will be assigned. Moreover your TA will hold weekly recitation hours in which he will solve more examples.

Course Materials:

[1] *A Course in Game Theory*, Martin Osborne and Ariel Rubinstein (for game theory)

[2] *Microeconomic Theory*, Andreu Mas-Colell, Michael Winston, and Jerry Green (for mechanism design and information economics)

[3] Lecture notes distributed and taken during the class.

Other Recommended Textbooks:

[4] *Game Theory for Applied Economists*, Robert Gibbons (highly recommended as a secondary reading, master's level basic game theory and information economics)

[5] *Game Theory*, Drew Fudenberg and Jean Tirole (advanced game theory)

Non-fiction Bedtime/Summer Reading after the Comps

[6] *Thinking Strategically*, Avinash Dixit and Barry Nalebuff (especially for first time economics students)

[7] *The Evolution of Co-operation*, Robert Axelrod (very nice book on repeated games, and tit-for-tat strategies)

Grades and Requirements: Students are expected to come to each class, read the assigned material and solve the homework questions as scheduled. Class participation through questions to the instructor and answers to the questions of the instructor are expected.

Homework assignments: There will be graded homework assignment sets and also you will take a final at the end of the semester on this module.

Tentative Course Outline:

- Introduction ([1] Chapter 1) and Knowledge in Games (Advanced Read. [1] Chapter 5)
- Strategic Games *3 Classes*
  - Normal Form Games ([1] Chapter 2.1)
  - Pure Nash Equilibrium ([1] Chapter 2.2, 2.3, 2.4)
  - Bayesian Games ([1] Chapter 2.6)
  - Existence of Nash Equilibrium in Mixed Strategies ([1] Chapter 3.1 and 3.2, Handouts)
  - Rationalizability and Iterated Dominance ([1] Chapter 4)
- Extensive Games with Perfect Information *3 Classes*
  - Extensive Form Games, Subgames, Information Sets, Perfect vs Imperfect Information ([1] Chapter 6)
  - Backward Induction and Subgame Prefect Equilibrium ([1] Chapter 6)
  - Finitely and Infinitely Repeated Games, Folk theorem (Rubinstein's bargaining game) ([1] Chapter 7)
- Extensive Games with Imperfect Information ([1] Chapter 11) *2 Classes*
  - Sequential Equilibrium, Perfect Bayesian Equilibrium ([1] Chapter 12)
- Incentives and Mechanism Design ([2] Chapter 23) *3 Classes*
  - Revelation Principle and Mechanism Design Problem
  - Optimal Dominant Strategy Mechanisms - VCG, House Allocation
  - Optimal Bayesian Mechanisms - Auction Design
- Information Economics and Principal-Agent Models *4 Classes*
  - Adverse Selection,Signalling, Screening ([2] Chapter 13)
  - The Principal-Agent Problem: Hidden actions and hidden information ([2] Chapter 14)
    - Moral Hazard
    - Monopolistic Screening
    - Cheap Talk