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**PSC/ECO 288**

Fall 2007

M, W 14:00-15:15

**GAME THEORY**

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Gavett 312

Prof. Tasos Kalandrakis

**Office:** 109C Harkness Hall

**Office Hours:** W 10:00-12:00

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In social interaction (political, economic, or other) outcomes are determined as a result of choices from all actors involved. Hence, to arrive at optimal decisions, individuals have to anticipate other people's behavior. Game theory is a systematic framework for understanding and analysis of such strategic interaction.

In this course we shall introduce the theory of games in a systematic way. We shall cover basic solution concepts for simultaneous and sequential move games. We will then move to games of incomplete information and study modifications of the basic solution concepts. The course concludes with a study of repeated games. We may run a few in-class experiments. We may occasionally use elementary calculus, which will be reviewed in class.

### **EVALUATION**

Your grade will be based on class participation (10%), homework assignments (20%), a midterm (30%), and a cumulative final (40%). The midterm will take place in class on Monday, October 22.

### **READING**

The main textbook for the course is

- *An Introduction to Game Theory*, by Martin Osborne (Oxford).

Lectures will be based on -- but not limited to -- the material in this book. Other optional textbooks you may wish to consult for a different perspective, additional examples, and generally to deepen your understanding of the material are,

- *Strategy*, by Joel Watson, and
- *Strategies and Games*, by Prajit Dutta.

Finally,

- *Thinking Strategically*, by A. Dixit and B. Nalebuff,

is informal yet informative.

### **HOMEWORK**

Working through homework assignments is essential for an understanding of course material. Over the course of the semester, there will be approximately bi-weekly problem sets that will be due in class. **No late homework will be accepted.** You can drop one assignment in calculating the homework component of your final grade.

## **RECITATION**

The TA will offer a weekly recitation. Time and location will be announced in due course.

## **TENTATIVE OUTLINE OF THE COURSE**

### **WEEK 1** (September 5)

Introduction. Historical Overview. Preliminaries.

### **WEEK 2, 3, & 4** (September 10, 12, 17, 19, 24, 26)

Games in normal form. Dominance concepts. Nash equilibrium in pure and mixed strategies.

### **WEEK 5, 6, & 7** (October 1, 3, 10, 15, 17)

Games in the extensive form. Subgame Perfect Nash Equilibrium.

**MIDTERM: October 22.**

### **WEEK 8, 9, 10, 11, & 12** (October 24, 29, 31, November 5, 7, 12, 14, 19)

Bayesian Games. Extensive Form Games of Imperfect Information.

### **WEEK 13 & 14** (November 26, 28, December 3, 5)

Repeated Games

### **WEEK 15** (December 10, 12)

Cooperative Games and the Core