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## **PSC/ECO 288: GAME THEORY**

SPRING 2013

**M/W 15:25-16:40pm**  
MELIORA ROOM 203

### **Instructor**

Visiting Assistant Prof. Kostas Matakos  
Office: Harkness 109D  
E-mail: [kmatakos@z.rochester.edu](mailto:kmatakos@z.rochester.edu)  
Office Hours: **W 9:00 - 11:00am**

### **Teaching Assistants**

- Jonathan Klingler (E-mail: [jonathan.klingler@rochester.edu](mailto:jonathan.klingler@rochester.edu). Office hours: **Thu** *TBA*, Harkness 333).
- Battal Doğan (E-mail: [bdogan@mail.rochester.edu](mailto:bdogan@mail.rochester.edu). Office hours: **Tue** 16:00-17.00pm, Room *TBA*).
- Miguel Rueda (E-mail: [mrueda@z.rochester.edu](mailto:mrueda@z.rochester.edu). Office hours: **M** 11:00am-12:00, Harkness 334).

### **Course Outline:**

In social interaction (political, economic, or other) individual welfare depends on the choices of multiple actors. Thus, individuals must anticipate other people's behavior in order to reach optimal decisions. Game theory is a systematic framework for understanding and analyzing such strategic interaction.

The goal of this course is to introduce the theory of games in a systematic way. We will cover basic solution concepts for simultaneous and sequential move games, with and without perfect information. Applications will be drawn from models of conflict and war, electoral competition, voting and agenda manipulation, legislative bargaining, campaigning etc.

**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,
- Games, Strategies, and Decision Making, by Joseph Harrington, and
- Strategies and Games, by Prajit Dutta.

Finally,

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

is informal yet informative. Also,

- Political Economics, by T. Persson and G. Tabellini

contains slightly more advanced material but, it is a good source of game theoretic applications to political science.

**Homework Assignments:** Working through homework assignments is essential for an understanding of course material. Working in groups is fine but each student must write up her/his own answers and clearly indicate the other members of the study-group. Over the course of the semester, there will be approximately nine problem sets that will be due in class. Assignments will be due on *Mondays* at the beginning of class. *No late homework will be accepted.* Instead, you can drop one assignment in calculating the homework component of your final grade.

**Recitation:** The TA's will offer a recitation sessions on Fridays/Mondays prior to each assignment (assignments will be due on Mondays). Time and Room of Recitations *TBA*.

**Evaluation:** Your grade will be based on homework assignments (15%), two midterms (25% each), and a non-cumulative final (35%). *There will be no provisions for extra credit.* Both midterms will take place in class, the first on Monday, February 25, and the second on Wednesday, April 03. The final exam is scheduled for Monday, May 6, at 8:30am (*TBC*).

**Schedule:** Below is a tentative outline of the main topics of the course.

TOPIC 1 INTRODUCTION

**Week 1** (01/16). Overview and logistics.

TOPIC 2 STRATEGIC FORM GAMES

**Weeks 2-6** (01/21 - 02/24). Dominated strategies. Iterated Elimination. Nash equilibrium in pure and mixed strategies.

**Note:** There will be no classes on **M** 01/21 and **W** 01/23 (Week 2). Class on **W** 02/13 (Week 5) will be rescheduled.

MIDTERM I (02/25)

TOPIC 3 EXTENSIVE FORM GAMES

**Weeks 7-9** (02/27 - 03/24). Strategies. Subgame perfect Nash equilibrium.

TOPIC 4 GAMES OF IMPERFECT INFORMATION

**Week 10** (03/25 - 04/01). Information sets. Equivalence between extensive and strategic forms.

MIDTERM II (04/03)

TOPIC 5 REPEATED GAMES

**Weeks 11-12** (04/08 - 04/15). Repeated games. Folk Theorems.

TOPIC 6 GAMES OF INCOMPLETE INFORMATION I

**Week 13** (04/17 - 04/22). Bayesian games.

TOPIC 7 GAMES OF INCOMPLETE INFORMATION II

**Weeks 14-15** (04/24 - 05/01). Dynamic games of incomplete information. Weakly sequential equilibrium. Signaling games.