PSC/ECO 288: GAME THEORY

Spring 2011
MW 15:25-16:40pm
Meliora 203

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Office Hours: W 9:00-11:00am

Teaching Assistants

- Jeff Arnold (Email: jeffrey.arnold@gmail.com. Office hours: T 11:00-12:00am, Harkness 338).
- Jonathan Olmsted (Email: j.p.olmsted@rochester.edu. Office hours: M 13:00-15:00pm, Harkness 304).
- Miguel Rueda (Email: ruedamiguel@gmail.com. Office hours: M 9:30-10:30am, Harkness 315a).

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, 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.

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

Recitation: The TAs will offer a recitation session on Mondays prior to each assignment (assignments will be due on Wednesdays). Recitations will take place in B&L 109 from 4:50pm to 6:05pm.

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 Wednesday, February 23, and the second on Wednesday March 30. The final exam is scheduled for Monday, May 2, at 8:30am.

Schedule: Below is an outline of the main topics of the course.

Topic 1 Introduction

Week 1. Overview and logistics.

Topic 2 Strategic form games

Weeks 2-6. Dominated strategies. Iterated Elimination. Nash equilibrium in pure and mixed strategies.

Topic 3 Extensive form games

Weeks 7-9. Strategies. Subgame perfect Nash equilibrium.

Topic 4 Games of Imperfect Information

Week 10. Information sets. Equivalence between extensive and strategic forms.

Topic 5 Repeated Games

Weeks 11-12. Repeated games. Folk Theorems.

Topic 6 Games of incomplete information I

Week 13. Bayesian games.

Topic 7 Games of incomplete information II

Weeks 14-15. Dynamic games of incomplete information. Weakly sequential equilibrium. Signaling games.