# PSC/ECO 288: GAME THEORY

Spring 2015
MW 15:25-16:40pm
Meliora 203

Prof. Tasos Kalandrakis
Office: Harkness 109C
Email: kalandrakis@rochester.edu
Office Hours: MW 14:00-15:00pm

## Teaching Assistants

- Sergio Ascencio Bonfil (Email: sascenci@z.rochester.edu. Office hours: T 13:30-15:00pm, Harkness 109A).
- Peter Bils (Email: pbils@z.rochester.edu. Office hours: T 10:00-11:30am, Harkness 315A).
- Gleason Judd (Email: gleason.judd@rochester.edu. Office hours: W 10:00-11:30am, Harkness 109A).

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 best 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 complete information. Applications will be drawn from models of conflict and war, electoral competition, voting and agenda manipulation, market competition, 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 – materials from this book. Other optional textbooks you may wish to consult for a different perspective, additional examples, and generally to deepen your understanding 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:** Game theory cannot be mastered without working through homework assignments. Problem sets will be assigned on a weekly or bi-weekly basis (roughly nine assignments total), and will be due *in class*. A detailed schedule of assignment due dates is maintained and regularly updated on blackboard. *No late homework will be accepted.* Instead, you can drop one assignment in calculating the homework component of your final grade.

**Recitation:** TAs will offer a recitation session on Mondays prior to each assignment (assignments will be due on Wednesdays) and prior to each midterm exam. Recitations will take place in Lattimore 201 from 4:50pm to 6:05pm.

**Evaluation:** Your grade will be based on homework assignments (10%), class participation (5%), the first midterm (25%), the second midterm (20%), and a non-cumulative final (40%). *There will be no provisions for extra credit.*

**Exam Dates:** Both midterms will take place in class, the first on Wednesday, February 25, and the second on Wednesday, March 25. The final exam is scheduled for Monday, May 4, at 8:30am.

**Course conduct:** Common courtesy is expected during lectures which includes, for instance, refraining from cell phone use of any type, refraining from computer use for purposes other than access of class notes, and staying in the classroom until the end of lecture. More generally, you are expected to adhere to all University rules regarding proper student conduct including but not limited to matters of academic honesty.

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

Topic 0 Introduction

Week 1. Overview and logistics.

### Topic 1 Strategic form games

Weeks 2-5. Dominated strategies. Iterated Elimination. Nash equilibrium in pure and mixed strategies.

### Topic 2 Extensive form games

Weeks 6-9. Strategies. Subgame perfect Nash equilibrium. Information sets and imperfect information.

### Topic 3 Repeated Games

Weeks 10-11. Repeated games. Folk Theorems.

### Topic 4 Static games of incomplete information

Weeks 12-13. Bayesian games.

### Topic 5 Dynamic games of incomplete information

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