

PSC/ECO 288: GAME THEORY

SPRING 2019
MW 15:25-16:40pm
MELIORA 203

Prof. Tasos Kalandrakis
Office: Harkness 109C
Email: kalandrakis@rochester.edu
Office Hours: T 1:00-2:30pm

Teaching Assistants

- Alessio Albarello (Email: aalbare1@ur.rochester.edu. Office hours: M 1:45-3:15pm, T 2:30-3:30pm, Harkness 109A).
- Jihwan Do (Email: econ.jihwando@gmail.com. Office hours: W 10:00-11:30am, Harkness 220).

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.

This course follows the College credit hour policy for four-credit courses. This course meets twice weekly for three academic hours per week. The course also includes recitation for one academic hour per week.

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 and will be due *in class* right before lecture. Assignments will be posted on blackboard roughly a week before the due date, as detailed in the following schedule:

- Assignment 1 – post January 28; due February 6.
- Assignment 2 – post February 6; due February 13.
- Assignment 3 – post February 13; due February 20.
- Assignment 4 – post February 20; due February 27.
- Assignment 5 – post February 27; due March 6.
- Assignment 6 – post March 6; due March 20.
- Assignment 7 – post April 1; due April 10.
- Assignment 8 – post April 10; due April 17.
- Assignment 9 – post April 17; due April 24.
- Assignment 10 – post April 24; due May 1.

Please check blackboard course pages regularly for up to date information on assignment due dates, etc. *No late homework will be accepted.* Instead, you can drop two assignments in calculating the homework component of your final grade.

Academic honesty: General University policies and guidelines regarding academic honesty apply with the following added clarifications. First, with regard to homework assignments, we expect and even encourage students discussing and jointly working on assignment problems, *yet* you are individually responsible and must prepare and write up submitted answers on your own. Second, course materials including lecture notes, assignments, assignment answer keys, and exams are proprietary and are not intended for sharing outside the classroom, certainly not for dissemination in the public domain through electronic media. *You may not make such materials available to any third person or entity within or outside the University.*

Recitation: TAs will offer a recitation session on Mondays prior to each assignment (all assignment due dates are Wednesdays at the beginning of class) and/or prior to each midterm exam. Recitations will take place in Morey 321 from 4:50pm to 6:05pm. There will be no recitation on the following dates:

- January 28.
- April 1.

Evaluation: Your grade will be based on homework assignments (10%), the first midterm (27.5%), the second midterm (22.5%), 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 Monday, February 25, and the second on Wednesday, March 27. The final exam is scheduled for Monday, May 6, at 8:30am.

Course conduct & Electronics policy: The use of computers, laptops, i-pads, cell-phones or similar devices during lectures is prohibited, unless note-taking software accommodation is arranged ahead of time and a formal notification is received from the accommodation office. Copies of lecture slides will be posted online ahead of time for anyone who wishes to print a hard copy on which to take side notes during lecture. Common courtesy is expected which includes, for instance, refraining from entering or exiting

the classroom in the middle of lecture. If you do not plan on attending the full lecture please give prior notice of your early departure or skip class altogether.

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

TOPIC 1 STRATEGIC FORM GAMES

Weeks 1-5. Overview. Dominated strategies. Iterated Elimination. Nash equilibrium in pure and mixed strategies.

TOPIC 2 EXTENSIVE FORM GAMES

Weeks 5-9. Strategies. Subgame perfect Nash equilibrium. Backwards Induction. Bargaining.

TOPIC 3 GAMES OF IMPERFECT INFORMATION

Weeks 9-10. Information sets. Extensive and strategic form.

TOPIC 4 REPEATED GAMES

Week 11. Repeated games. Folk Theorems.

TOPIC 5 STATIC GAMES OF INCOMPLETE INFORMATION

Week 12. Bayesian games.

TOPIC 6 DYNAMIC GAMES OF INCOMPLETE INFORMATION

Weeks 13-15. Dynamic games of incomplete information. Sequential equilibrium. Signaling games.