

# Microeconomics II: Game Theory

Spring 2014

T, Th 10:10 am -12pm; Room 310 Main Instruction Building

## **Instructor Contact Information:**

Fanzheng Yang

Office: 609 Academic Building

Email: fanzhengy@gmail.com (best way to contact me)

Office Hours: W 8:30-10:00 am & Th 3:30-5:00 pm, or by appointment.

## **Textbook:**

Osborne, *An Introduction to Game Theory*, Oxford University Press.

## **Additional Game Theory References:**

Mas-Colell, Whinston and Green, *Microeconomic Theory*, Oxford University Press, 1995.

Fudenberg and Tirole, *Game Theory*, MIT Press, 1991.

Myerson, *Game Theory: Analysis of Conflict*, Harvard University Press, 1997.

Gibbons, *Game Theory for Applied Economists*, Princeton University Press, 1992.

Camerer, *Behavioral Game Theory: Experiments in Strategic Interaction*, Princeton University Press, 2003.

## **Course Overview:**

This course offers an introduction to *game theory* for graduate students in Economics. Game theory explores the multi-person decision-making situations when players' payoffs depend on other players' choices. It analyzes games with *strategic* interactions and tells us how *rational* players should play such games. During the last 40 years game theory has been successfully applied to many fields of economics, and is being more and more heavily used in political science and sociology.

This course is intended to give you a thorough introduction to game theory which originally emerged as a field of mathematics. You don't have to know a lot of

mathematics to enroll in the course because we will prove most of the results from first principles. However, being at ease with basic probability theory and some calculus is a definite plus. At the end of the course you should be able to analyze and solve fairly sophisticated games.

Sometimes, the standard game theoretical assumptions turn out to be too demanding for many real-world players and actual strategies can look quite different from the predicted ones. We will conduct a large number of in-class experiments in order to identify the systematic deviations. If time permits, we will also discuss recent advances in game theory which allow us to model boundedly rational behavior.

All in all, this is a quantitative course which tries to present the basic concepts as intuitively as possible. The course is designed to be accessible to graduate students who enjoy combining conceptual thinking and practical understanding. The course combines analytical (lectures), experiential (game playing), interactive (in-class discussion), peer (group study) and individual (reading and homework after class) learning.

### **Grades:**

- 1. Participation (5%):** You are required to attend all classes, participate in in-class games and open discussions, and also complete short quizzes. If you cannot attend a lecture, please notify me by email in advance.
- 2. Homework (10%):** In order to learn the material it is absolutely essential to do the problem sets. You are encouraged to work in groups (of up to 4 people); each person should submit their own work but list the names of group members if the assignment was completed in a group.
- 3. Midterms (45%):** You will have two midterm exams. The first midterm is tentatively scheduled on **March 25**, and the second midterm is tentatively scheduled on **April 29**. There will be no make-up exams to replace the missed midterms. If you miss a midterm, then you will receive a grade of zero for the exam.
- 4. Final exam (40%):** Date, time and venue will be announced later in the semester.