

ECON 4124: Game Theory

Department of Economics, HKUST

Instructor

Qinggong Wu
wqg@ust.hk
LSK 6081
Office hour: 3:00 - 4:30, Wed.

Teaching Assistant

Yi Zhang
yzhangil@connect.ust.hk
LSK 5067
Office hour at 3:00 - 4:30, Fri.

Course Overview

This course is about *games* — a very useful model of social and economic interactions. We will learn the fundamental concepts of games, in particular the *equilibrium*, and the techniques of analyzing games. Then we will apply game theory to examine a number of important real-life economic problems.

Prerequisites

There will be math — make sure you are comfortable with that. The math will not be too advanced, though. In particular, calculus will not appear much, if ever. On the other hand, basic understanding of probability (i.e. random variables, expected values, the Bayes' rule) is required.

Knowledge of economic principles (ECON 2103/2113) is required. Intermediate microeconomics (ECON 3113/3133) is not a must, but would be helpful.

Textbook

Martin J. Osborne: *An Introduction to Game Theory* (Oxford).

Additional material of the textbook, including solution to some exercises, can be found at its official website:

<http://www.economics.utoronto.ca/osborne/igt/>.

Grading

Homework assignments (20%), a midterm exam (35%), and a final exam (45%).

Homework

Homework assignments are problem sets. Feel free to discuss the problems with anyone, but: Write the homework by yourself! Flagrantly copying other people's work violates the honor code.

Exams

Midterm: In class, Oct 18 (Friday)

Final: In exam period, to be determined

Exams are closed-book.

Tutorials

There will be tutorials, though not in every week. Your TA will use tutorials to discuss homework and other problems.

Course Objectives

After taking the course, you are expected to have a good understanding of the main ideas of game theory, and know how to analyze social and economic phenomena from a game-theoretic perspective.

Honor Code

There will be no tolerance for plagiarism and cheating. Any related offense will lead to disciplinary action including termination of studies at the University. Attention is drawn to University policy and regulations on honesty in academic work, and to the disciplinary guidelines and procedures applicable to breaches of such policy and regulations.

Course Plan

We will cover the following topics in the textbook.

- Introduction (Ch.1)
- Nash Equilibrium (Chs.2 and 3)
- Mixed Strategy Equilibrium (Ch.4)
- Extensive Games (Chs.5 and 6)
- Repeated Games (Ch. 14)
- Imperfect Information I (Ch.9)
- Imperfect Information II (Ch.10)

Then we will discuss some additional topics. The following list is tentative.

- Communication
- Voting
- Auctions
- Information aggregation and mechanism design