

C007007 Game Theory(2022/2023)

September 15, 2022

Course Information.

- Instructor: Haihan Yu
 - Email: haihanyu@proton.me, Academic Website: haihan-yu.github.io
- Classroom: 6104
- Time: Week 1-16(Friday 9:55-11:30)
- Office hour: by appointment via email

Course Description.

This is a graduate course on the mathematical models of decision making under strategic situations. We will cover the classical topics in graduate game theory, including static games, dynamic games and games of incomplete information.

Prerequisite

1. Calculus, probability, and intermediate microeconomics If you do not have any exposure to game theory, I suggest you watch the Yale game theory open course([link](#)).

Course Materials.

This course will be entirely based on my lecture notes which will be delivered weekly. The lecture notes are self-contained. The following books are not required, but are recommended as supplementary text.

1. Andreu Mas-Colell, , Michael D. Whinston, and Jerry R. Green. Microeconomic theory. New York: Oxford university press, 1995(We will cover more or less chapter 7,8,9 of this book).
2. Osborne, Martin J., and Ariel Rubinstein. A course in game theory. MIT press, 1994.

Grade policy.

- Final Exam: 50%
- Weekly assignments and attendance: 50%
 - The weekly assignment will start from the third week.
 - Every week, when I send you the homework by email, I will also send you a link to submit the homework.
 - All homework should be submitted *electronically*. Please scan your homework and put it in *a single pdf file*.
 - The weekly assignment should be submitted before next Friday 9:55.
- Bonus points: If you find any mistakes in the lecture note, or you provide some insightful examples for the models we discuss in the class, one point will be added to your score of weekly assignment each time.

Tentative Outline.

1. Introduction
2. Static games with complete information
3. Dynamic games with complete information
4. Static Games with incomplete information
5. Dynamic games with incomplete information

Course requirement.

1. This course is relatively demanding, but the reward is significant. If you decide to take this course, put effort on it throughout the whole semester, including
 - (a) Reading the lecture notes before each class. Take notes in class. If you have any questions, don't be shy, just raise up your hand and ask the question. Keep in mind that asking questions during the lectures has a positive externality because other people may have the same questions.
 - (b) Review the lecture notes after classes and finish the weekly assignments.
2. Discussion for assignment between classmates is strongly encouraged, but you have to write up your answers **independently**. Any detected cheating in the assignments (which is much easier to find than you believe) means **the end of all deals**.

3. The course is geared towards research. You are encouraged to talk with me about your research. If your research is related to this course, we can spend a few lectures talking about stuff about your research.
4. Follow the rules and enjoy the classes, we will achieve the Pareto outcomes .