

**Econ 3160 Game Theory**  
The Chinese University of Hong Kong  
Department of Economics  
Fall 2018

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| Instructor: Bingyong Zheng                | TA: Yu Ching Lam           |
| Office: ELB 1015                          | Office: ELB 1017           |
| Phone: 3943-9278                          | Phone: 63591977            |
| Email: bingyongzheng@gmail.com            | Email: yclam1248@gmail.com |
| Office hour: Tuesday 2:00-3:15            | Office hour: TBA           |
| Lectures: T 8:30-10:15 am, H 12:30-1:15pm | Tutorial: TBA              |

Recommended Textbook: *Game theory for applied economists* by Robert Gibbons, Princeton University Press

Course website: <https://sites.google.com/site/bingyongzheng/teaching/game-theory>

Assessment: The course grade will be determined by: (1) the problem sets, 20%; (2) midterm exam, 40%; (4) final exam, 40%.

The midterm exam will be held in week 7 of the term. The final exam date is set by the University, and students should check the university website for information of the final exam.

Assignments: There will be 5 problem sets. The problem sets are essential for understanding the course materials and also help you to prepare for the exams. Students are expected to complete the problem sets independently and turn it in on time. TA will go over the solutions on tutorials.

#### Description of the course

Game theory is the branch of microeconomics concerned with the analysis of optimal decision making in competitive situations in which the actions of each decision maker have significant impact on the fortune of the others. In this course, we will cover strategic form games (also called normal form games), extensive form games with perfect information, extensive form game with imperfect information, static games with incomplete information, signaling games and repeated games. At the end of the course, students are expected to be familiar with solution concepts as Nash equilibrium, subgame perfect Nash equilibrium, Perfect Bayesian

game, and Bayesian Nash equilibrium. If time allowed, we may briefly talk about some other solution concepts.

Students are expected to be familiar with microeconomics at the intermediate level and multivariate calculus.

## **Course Outline**

### **Part 1: Strategic form Games and Applications**

1. Introduction
2. Strategy and Nash equilibrium
3. Mixed strategies
4. Games with continuous strategies
5. Rationalizability

### **Part 2: Extensive form games**

6. Extensive form game with perfect information
7. Backward induction and Subgame perfect equilibrium
8. Extensive form game with imperfect information and Perfect Bayesian equilibrium

### **Part 3: Static games with incomplete information**

9. Static Games with Incomplete Information and Bayesian Nash equilibrium
10. Application: auction

### **Part 4: Signaling game**

11. Signaling game
12. Job-market signaling

## **Part 5: Repeated game and application**

13. Finitely repeated game
14. Infinitely repeated game

# Academic honesty and plagiarism

The Chinese University of Hong Kong places very high importance on honesty in academic work submitted by students, and adopts a policy of zero tolerance on academic dishonesty. While “academic dishonesty” is the overall name, there are several sub-categories as follows:

- (i) Plagiarism
- (ii) Undeclared multiple submissions
- (iii) Buying or selling, possibly through third parties, papers/essays/dissertations
- (iv) Violating rules 15 or 16 of the Universitys Rules to be Observed by Candidates at Examination Centre (Examination Rules) (Annex)
- (v) Cheating in tests and examinations (including violation of rules 17 or 18 of the Universitys Examination Rules)
- (vi) Impersonation fraud in tests and examinations (including violation of rule 19 of the Universitys Examination Rules)
- (vii) All other acts of academic dishonesty

Any related offence will lead to disciplinary action including termination of studies at the University.

Everyone should make himself/herself familiar with the content of this website and thereby help avoid any practice that would not be acceptable.