

ECON5030: MICROECONOMIC THEORY II

Spring 2024

Department of Economics
The Chinese University of Hong Kong

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Course Description: The course covers applied game theory and its applications: principal-agent problems, economics of information, auctions, bargaining, public goods provision, mechanism design, and market design. This module aims to provide students rigorous and accessible explanations. The objective is to focus on classic results. If time permits, we will also take the students in selected areas to the frontiers of research.

Learning Outcomes: After completing this course, the students are expected to:

1. Acquire basic knowledge in applied game theory;
2. Obtain preparations for conducting independent research.

Textbook There is no required textbook for this course. The lecture is mainly based on lecture notes.

Grading:

- 20% Four assignments
- 40% Midterm Examination
- 40% Final Examination

Grade Descriptor:

- A Outstanding/Generally outstanding performance on all learning outcomes.
- A- Generally outstanding performance on all learning outcomes.

- B+ Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- B Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- B- Substantial performance on all learning outcomes, OR high performance on some learning outcomes which compensates for less satisfactory performance on others, resulting in overall substantial performance.
- C+ Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- C Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- C- Satisfactory performance on the majority of learning outcomes, possibly with a few weaknesses.
- D+ Barely satisfactory performance on a number of learning outcomes.
- D Barely satisfactory performance on a number of learning outcomes.
- F Unsatisfactory performance on a number of learning outcomes, OR failure to meet specified assessment requirements.

Course Outline:

1. Introduction
2. Static games
 - Normal form games, Nash equilibrium
 - Bayesian games, Bayesian equilibrium
3. Dynamic games
 - Dynamic games with complete information, Subgame-perfect equilibrium
 - Dynamic games with incomplete information, Perfect Bayesian equilibrium
4. Information economics
 - Market for Lemons
 - Communication
 - Bayesian persuasion
 - Principal-agent problem
5. Allocation mechanisms: bargaining and auction
 - Nash, Rubinstein bargaining
 - First price auction, Second price auction, Revenue equivalence theorem
6. Mechanism design
 - Screening
 - Single unit auction, Public goods/Bilateral trade
7. Market design
 - Two-sided matching, School choice, Deferred acceptance algorithm
 - One-sided matching, Housing market, Top trading cycles

Academic Honesty and Related Procedures:

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. Details may be found at <http://www.cuhk.edu.hk/policy/academichonesty/>.

With each assignment, students will be required to submit a signed declaration that they are aware of these policies, regulations, guidelines and procedures.

- In the case of group projects, all students of the same group should be asked to sign the declaration, each of whom is responsible and liable to disciplinary actions should there be any plagiarized contents in the group project, irrespective of whether he/she has signed the declaration and whether he/she has contributed directly or indirectly to the plagiarized contents.
- For assignments in the form of a computer-generated document that is principally text-based and submitted via VeriGuide, the statement, in the form of a receipt, will be issued by the system upon students' uploading of the soft copy of the assignment.

Assignments without the properly signed declaration will not be graded by teachers.

Only the final version of the assignment should be submitted via VeriGuide.

The submission of a piece of work, or a part of a piece of work, for more than one purpose (e.g. to satisfy the requirements in two different courses) without declaration to this effect, shall be regarded as having committed undeclared multiple submission. It is common and acceptable to reuse a turn of phrase or a sentence or two from one's own work; but wholesale reuse is problematic. In any case, agreement from the course teacher(s) concerned should be obtained prior to the submission of the piece of work.