ECON4010 Advanced Topics in Microeconomics

Fall 2023

Department of Economics
Chinese University of Hong Kong

Professor LI Duozhe
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Lectures: Thu 2:30 to 5:15pm
Classroom: Lee Shau Kee Archi Bldg 211
Office Hour: Thu 10:30 to 11:30am

TA: Miss GUO Keyi
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Tutorial: TBA
Classroom: TBA
TA Office Hour: TBA

Course Description

This course covers several advanced topics in microeconomic theory. The main focus is the economics of uncertainty and information. We begin with the theory of choice under uncertainty, where the main goal is to gain a good understanding of the expected utility theory and the concept of risk aversion. Then, we review the most commonly used solution concepts in noncooperative game theory, which serve as the analytical tools for the rest of the course. The most important part of the course is the study of various models with asymmetric information, including adverse selection, signaling, screening, and the principal-agent problem. Finally, we give an elementary introduction to the theory of stable matching and market design. In order to do well in this course, the students should be familiar with calculus, elementary optimization techniques and basic probability theory.

Learning Outcomes

After completing this course, the students are expected to:

1. Acquire advanced knowledge in various topics in microeconomics;
2. Develop skills in theoretical modeling and analysis;
3. Obtain preparations for conducting independent research in microeconomics.

Recommended Textbooks

There is no required textbook for this course. My lecture is mainly based on the following books and related journal articles.

1. A. Mas-Colell, M. Whinston and J. Green, *Microeconomic theory*, Oxford University Press, 1995.
2. G. Jehle and P. Reny, *Advanced microeconomic theory*, 3rd edition, Prentice Hall, 2011
3. M. Osborne and A. Rubinstein, *A course in game theory*, MIT, 1994.
4. A. Roth and M. Sotomayor, *Two-sided matching*, Cambridge, 1990.

Problem Sets

The problem sets are essential adjunct to the lecture material. Students are expected to work on them independently and to attend the tutorial session, during which the TA will go over all the questions and review related class materials.

Assessment Scheme

The grade will be determined by the assignments (10%), a midterm exam (40%) and a comprehensive final exam (50%). The assignment of grades will follow the following descriptors.

Grade	Descriptor
A	Truly outstanding performance, able to apply knowledge to novel situations/problems
A-	Thorough understanding of taught concepts, steady accumulation of knowledge and skills throughout the course
B+/B/B-	Satisfactory grasp of key concepts, consistent involvement in learning activities
C+/C/C-	Fair understanding of key concepts
D+/D	Some misunderstanding of key concepts, inconsistent efforts observed
F	Unsatisfactory performance, poor understanding of subject matter, poor efforts

Grading is done on an absolute basis in accordance with the above reference criteria, not on the basis of the distribution of marks (which is sometimes known as grading on a curve)

Exam Schedule

The midterm exam will be held in class on **Oct. 26, 2023**. There is **NO** make-up exam. For those who miss the midterm exam due to medical reasons, they need to present a Doctor's note, upon which the weight of midterm exam will be transferred to the final exam. The final exam is centrally scheduled, and specific date and time will be announced in November. Please note that we cannot arrange a make-up final exam to accommodate your travel plans.

Academic Honesty

Please pay attention 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 can be found at http://www.cuhk.edu.hk/policy/academichonesty/.

Course Outline

1. Choice under Uncertainty

Expected Utility Theory, Risk Aversion, First-Order and Second-Order Stochastic Dominance

2. Game Theory

Strategic Games: Dominance, Nash Equilibrium, Bayesian Nash Equilibrium;
Extensive Games: Backward Induction, Subgame Perfect Equilibrium, Sequential Equilibrium

3. Markets with Asymmetric Information

Information Asymmetry and Adverse Selection, Signaling Model and Screening Model, Principal-Agent Problem

4. Matching and Market Design

Two-Sided Matching: Marriage Market, Pairwise Stability, Deferred Acceptance Algorithm;
One-Sided Matching: House Allocation, Serial Dictatorship, Housing Market, Top Trading Cycle