

ECON 4010
ADVANCED TOPICS IN MICROECONOMICS
Department of Economics
Chinese University of Hong Kong
FALL 2017

Instructor

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Time and Location

Fridays 8:30AM - 11:15AM, YIA 402.

Course Webpage/Materials: Blackboard.

TA

Mr. Jiong Wu <j.wu@link.cuhk.edu.hk>
Tutorial and Office Hours: TBA

Office Hours

Thursday: 4:00pm-5:00pm, or by appointment.

Course Overview

This course covers several advanced topics in microeconomic theory, with a main focus on the economics of uncertainty and information. We will begin with the theory of choice under uncertainty, so as to obtain a solid understanding of the vNM expected utility theory and the concept of risk aversion. We will then give a quick review of noncooperative game theory, in particular, representations of games and various solution concepts, which will serve as the analytical tools for the rest of the course. The most important part of the course is the study of various economics models with asymmetric information, including adverse selection, signaling, screening, and principal-agent problems. Finally, time permitting, we will give a quick introduction to the theory of stable matching and market design. To do well in this course, students should be familiar with calculus, elementary optimization techniques, and basic probability theory.

Learning Outcomes

After completing the course, students are expected to

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

Recommended Textbooks

There is no required textbook for this course. I will write my own lecture notes and my lectures will mainly draw materials from related journal articles and the following books:

- R. Gibbons, *Game Theory for Applied Economists*, Princeton University Press 1992.
- M. Osborne, *An Introduction to Game Theory*, Oxford 2004.
- M. Osborne and A. Rubinstein, *A Course in Game Theory*, The MIT Press, 1994.
- R. Myerson, *Game Theory: Analysis of Conflict*, Harvard, 1991.
- D. Kreps, *A Course in Microeconomics*, Princeton University Press, 1990.

- A. Roth and M. Sotomayor, *Two-Sided Matching*, Cambridge, 1990.

The first two are excellent advanced undergraduate-level game theory books, with a lot of examples and exercises and very intuitive exposition. Osborne and Rubinstein (1994) is an encyclopedic textbook on game theory; Myerson (1991) is a nice textbook for those who would like to get a deeper understanding of the materials. Kreps (1990), proceeding in a somewhat informal way, provides intuitive explanations, as well as nice insights on many issues. Roth and Sotomayor (1990) is so far the best book on two-sided matching problems.

Grading (Assessment Scheme)

Your course grade will be determined jointly by problem sets, an in-class midterm, and an in-class final (both exams are closed-book). They will count toward the grade as follows.

Assignments	20%
Midterm	35%
Final	45%

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

- **Problem Sets:**

There will be (around) 7 problem sets. These are essential adjunct to the course material. The problem sets will be graded on the basis of whether you made an effort to do the problems and not whether or not you had the right answers. Students are expected to work on the problem sets independently and to attend tutorial sessions, in which answers to difficult problems in the problem sets will be discussed. Each student should hand in an independent solution to each problem set. As an upper-year student, you would play a very risky strategy if you free ride on others' solutions without making a serious effort on the problem sets. Finally, I will **NOT** accept any late assignments.

- **Exams:**

There will be two (**in-class**) written exams, one midterm exam and one (comprehensive) final exam. The exams will only include materials that have been covered in class. The midterm exam will be held in class on **Friday, October 20th, 8:30AM – 11:15AM**. There will be **NO** make-up exams. For those who miss the midterm exam due to circumstances that are truly exceptional and can be substantiated (for example, a note signed by a medical doctor indicating that the student is truly medically incapable to take the exam at the exam time), the weight of the midterm exam of such students will be transferred to the final exam. The **final exam** will be centrally scheduled and the time and venue of the final will not be announced until November. Please note that we **cannot** arrange a make-up exam for the final to accommodate your travel plans.

- **Lecture Notes**

I will prepare a set of lecture notes, which will be posted in a timely manner on Blackboard.

Academic Honesty

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/>.

List of Topics:

The following is a tentative list of the topics that will/might be covered in the course.

1. Choice under Uncertainty

Preferences over Lotteries, Expected Utility Theory, Risk Aversion

2. Game Theory

Extensive and Normal form representations; Strategies; Mixed Strategies; Dominant and Dominated strategies; Nash Equilibrium; Incomplete Information Games: Bayesian-Nash Equilibrium; Dynamic Games: Sequential Rationality, Backward Induction and Subgame Perfection; Beliefs and Sequential Rationality: Perfect Bayesian Equilibrium; Sequential Equilibrium; Finitely/Infinitely Repeated Games and Folk Theorem (time permitting)

3. Information Economics

Information Asymmetry, Adverse Selection in Markets for Lemmons, Signaling, Screening

4. The Principal-Agent Problem

Moral Hazard and Risk Sharing, Hidden Information and Screening; Revelation Principle

5. 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

Important Dates

- September 04, Monday: First Day of Classes.
- **Midterm Exam: Friday, October 20th, 8:30AM - 11:15AM (in class).**
- October 21, Saturday: Orientation Day for Undergraduate Admissions.
- November 16, Thursday: 83rd Congregation for the Conferment of Bachelor's Degrees and Master's Degrees.
- **Final Exam: To Be Announced.**