Syllabus EC812B Microeconomics II
Last Updated on January 2, 2019

This is the second and final part of the first-year graduate course in Microeconomics. Similar to the first part of this sequence that you had in the fall (EC812A), the goal of this course is to offer you a rigorous introduction to the key ideas in microeconomics and provide you the mathematical and modeling tools that are essential to pursue independent research in economics.

However, there is one key contrast between this course and its prequel. EC812A concludes by discussing that, under certain conditions, perfectly competitive market is the most efficient social institution for allocation of resources. In this course, we complement this finding by asking what happens if these conditions are relaxed. That is, how well would a market perform if there is market power, information asymmetries between buyers and sellers, or externalities? Furthermore, how would we improve the allocation of resources when the market does not perform well?

But in order to study these issues, first we need to develop a new tool: game theory. We will spend at least a third of the course in developing the key ideas of game theory and then apply them to explore several issues of market imperfections.

Instructor. My name is Hanzhe Zhang. My office hour is Tuesday 3-4pm in 206 Old Botany, or by appointment. For any questions, email me: hanzhe@msu.edu, or simply stop by my office. Lectures are Tuesdays and Thursdays 1-2:20pm in 049 Agriculture Hall.

Teaching Assistants. The teaching assistants are Jaemin Ryu (email: ryujaem1@msu.edu, office hour: Thursday 11-12pm), who is primarily in charge of the TA sessions, and Su Hwan Chung (email: chungsu@msu.edu, office hour: Wednesday 5-6pm), who is primarily in charge of grading. You can also email your TAs for an appointment if you cannot meet them during their office hours. The TAs will also hold recitations on Fridays 10:20-12:20pm in 12C Berkey Hall. You are strongly encouraged to attend these sessions regularly. The purpose of these sessions is to present you the opportunity to ask questions on the homework solutions that you may have trouble following or past prelim questions. If needed, the TAs may also cover supplemental course materials in these sessions.

Textbooks. The primary textbook for this course is:

- Mas-Colell, Andreu, Michael D. Whinston, and Jerry R. Green, Microeconomic Theory, Oxford University Press, New York, 1995. (MWG)

For the game theory section, you may also consider buying:

- Gibbons, Robert, Game Theory for Applied Economists, Princeton University Press, New York, 1992. (G)

This is a classic text in game theory and offers a less technical and more applied discussion. If you find the game theory part in MWG too terse to follow, you can use this book as a primer. Another reference worth checking out is:

- Jehle, Geoffrey A., and Philip J. Reny, Advanced Microeconomic Theory, Pearson, 2011. (JR)

Chapter 7 covers game theory. Chapter 8 covers information economics. Chapter 9 covers mechanism design.

Grading. Grading will be based on problem sets and exams. The problem sets count for 20% of the grade. Each of the four exams counts for 20% of the grade.

Problem Sets. The problem sets are turned in individually. You may consult any material and any classmate. I strongly encourage you to work in groups since the exchange of ideas between group members offers invaluable learning experience. It will also help you better cope with the workload.

Exams. All exams will be closed book. They are intended to mimic the actual prelim setting and contents. All exams are mandatory and may only be missed because of an acceptable documented reason. If you foresee such a difficulty, please make every attempt to discuss with me prior to the exam. Unexcused exams receive a zero.

Remarks. As you could see below, we will be covering a considerable amount of material – most of which are conceptually deep and analytically challenging. The key to master this material is to make sure that you consistently work hard and stay up-to-speed with the class lectures. Doing the problem sets will help you a lot in this regard. Do not let backlog pile up. There is very little slack time built into this syllabus. If you allow a backlog to build up, you may find it difficult to catch up!

Also, we will heavily emphasize on the rigor of our analysis. So, I expect you to be very comfortable with the mathematical toolkit developed in EC811A. MWG's mathematical appendix is also a very useful resource if you are stuck with math issues.

Course Outline

Class	Date	Content	Source
1	Tuesday, 1/08	Normal and Extensive Form Games	MWG 7, G 1
2	Thursday, 1/10	Pure and Mixed Strategies	MWG 7, G 1
3	Tuesday, 1/15	Dominance Solvability and Pure Strategy Nash Equilibrium	MWG 8, G 1
4	Thursday, 1/17	Mixed Strategy Nash Equilibrium	MWG 8, G 1
5	Tuesday, 1/22	Games of Incomplete Information: Bayesian Nash Equilibrium	MWG 8, G 3
6	Thursday, 1/24	Dynamic Games: Subgame Perfect Nash Equilibrium	MWG 9, G 2
7	Tuesday, 1/29	Dynamic Games: Perfect Bayesian Nash Equilibrium	MWG 9, G 4
8	Thursday, 1/31	Exam 1: Game Theory	
9	Tuesday, 2/05	Monopoly	MWG 12B
10	Thursday, 2/07	Oligopoly: Bertrand and Cournot Models	MWG 12C, G 2
11	Tuesday, 2/12	Oligopoly: Stackelberg Model	MWG 12D, G 2
12	Thursday, 2/14	Oligopoly: Exclusive Contracts and Entry Deterrence	MWG 12D, G 2
13	Tuesday, 2/19	Oligopoly: Finitely Repeated Games	MWG 12D, G 2
14	Thursday, 2/21	Oligopoly: Infinitely Repeated Games and Collusion	MWG 12D, G 2
15	Tuesday, 2/26	Review Session	
16	Thursday, 2/28	Exam 2: Market Power	
17	Tuesday, 3/12	Adverse Selection	MWG 13B
18	Thursday, 3/14	Signaling	MWG 13B, G 4
19	Tuesday, 3/19	Signaling and Belief Refinement	MWG 13B, G 4
20	Thursday, 3/21	Monopolistic Screening	MWG 14C
21	Tuesday, 3/26	Moral Hazard	MWG 14B
22	Thursday, 3/28	Exam 3: Information Economics	
23	Tuesday, 4/02	Mechanism Design: Dominant Strategy Implementation	MWG 23B
24	Thursday, 4/04	Mechanism Design: Bayesian Implementation	MWG 23C
25	Tuesday, 4/09	Mechanism Design: Quasilinear Bayesian Implementation	MWG 23D
26	Thursday, 4/11	Externalities: Pigouvian Tax and Property Rights	MWG 11B
27	Tuesday, 4/16	Public Goods	MWG 11C
28	Thursday, 4/18	Public Goods and VCG Mechanism	MWG 23C
29	Tuesday, 4/23	Review Session	
30	Thursday, 4/25	Exam 4: Mechanism Design and Externalities	