Economics 2020b / HBS 4011 / HKS API-112
Microeconomic Theory II
Spring 2024

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Meetings: Mon. and Wed. from 9:00 to 10:15 am, Kennedy School L-130
Sections: Friday, 9 to 10:15 am, Kennedy School L-130 and other time(s) to be scheduled based on class polling during the first week of class.

Course Objectives: This is the second semester in a year-long course in microeconomic theory that serves as an applied alternative to the more theoretical microeconomics sequence of Economics 2010a and 2010b. Intended primarily for students who anticipate doing original research employing the tools of microeconomic theory, this doctoral-level course is designed for the dual purposes of giving students a systematic grounding in microeconomics and preparing them to use economic models in their own research. This second semester course addresses the broad methodological topics of game theory, information economics, and social choice.

Audience: This year-long sequence is suitable for doctoral students in any field and for advanced Public Policy (MPP or MPA) students in the Kennedy School. However, it is primarily intended for students who will be reading or producing research with microeconomic content. While the topics in this course are mathematical, the emphasis is on economic content and research methodology rather than proofs and technical details. Nevertheless, mathematical arguments are employed to help explain the intuition of the theories studied. Students without strong background in the areas mentioned below (see prerequisites) will likely be better served by delaying the sequence until they develop the proper background.

Prerequisites:: The formal prerequisite for the course is Multivariate Calculus (typically two years of college calculus). It is also helpful to have background in calculus-based probability theory (e.g. HKS API-201Z or Statistics 110) and intermediate microeconomics (e.g. HKS API-101Z or Economics 1011). It is possible, though rare, for students to enroll in the second semester of the sequence without taking the first semester course.

Students who do not have all of these prerequisites may still be able to enroll in the course but should consult with Professor Avery before doing so.

Readings: The main text for the course is Andreu Mas-Colell, Michael D. Whinston and Jerry R. Green, Microeconomic Theory (Oxford University Press, 1995), also known as MWG. Other alternative texts include David Kreps, A Course in Microeconomic Theory (Princeton University Press, 1990), and Robert Gibbons, Game Theory for Applied Economics (Princeton University Press, 1992). Copies of all texts as well as additional materials will be made available through the HKS and Baker Business libraries.

Group Activities: We will divide the class into two subgroups for small group exploration of applied topics for 4 of the 24 scheduled meetings of the course.

Review Sessions: The Teaching Fellows will be conducting weekly review sessions, which will go over difficult material from the lectures and readings. Identical review sessions will be held on Thursday and Friday to guarantee that almost everyone will be able to regularly attend one.

Requirements and Evaluation: Evaluation will be based on, problem sets (40%), a midterm exam, (20%) and a final exam (40%). We will also keep track of class attendance and participation in the small group sessions, which we will use as a tiebreaker in cases where students are on the borderline between two letter grades.

We will also provide additional practice problems and solutions will be provided on the course website. These problems are designed to highlight the key technical skills and concepts associated with each lecture. It is strongly recommended that students devote time to working through these problems and solutions rather than trying to build a comprehensive understanding of the material in the textbook.

Web site: Relevant course materials will be posted on the course Canvas web site.

Schedule of Lectures and Readings

UNIT 1: GAME THEORY

Lecture 1 (January 22): Introduction to Game Theory and Iterated Dominance

Readings: MWG 7A-7D, 8A-8C, Avery Notes chapter 1.

Lecture 2 (January 24): Pure Strategy Nash Equilibrium
Lecture 3 (January 29): Mixed Strategy Equilibrium and Existence of Nash Equilibrium

Readings: MWG 7E, 8D, Avery Notes chapters 2 and 3.

Lecture 4 (January 31): GROUP ACTIVITY - Auctions and Split-Award Bidding

Readings: TBA

Lecture 5 (February 5): Bayes-Nash Equilibrium

Readings: *Avery Notes chapters 5 and 6.*

Lecture 6 (February 7): Subgame Perfect Equilibrium
Lecture 7: (February 12): Dynamic Games and Recursion

Readings: MWG 9A - 9B, Avery Notes chapters 7 and 8.

Lecture 8 (February 14): GROUP ACTIVITY - The Median Voter Theorem

Readings: TBA

FEBRUARY 19: NO CLASS – PRESIDENT'S DAY

Lecture 9 (February 21): Perfect Bayesian Equilibrium
Lecture 10 (February 26): **Refinements of Perfect Bayesian Equilibrium**

Readings: MWG 9C-9D, Avery Notes, chapter 9.

Lecture 11 (February 28): Repeated Games

Readings: MWG 12D, Avery Notes, chapter 10.

Lecture 12 (March 4): The Hotelling Model of Competition

Readings: TBA

MIDTERM EXAMINATION – Wednesday March 6 (covers Lectures 1 to 10).

SPRING BREAK: NO CLASS ON MONDAY MARCH 11, WEDNESDAY MARCH 13.

UNIT 2: INFORMATION ECONOMICS

Lecture 13 (March 18): Adverse Selection: The Lemons Model

Readings: Avery Notes, chapter 12.

Lecture 14 (March 20): The Spence Signaling Model
Lecture 15 (March 25): Applications of Signaling

Readings: MWG 13.A – 13.B, Avery Notes, chapters 13 and 14.

Lecture 16 (March 27): GROUP ACTIVITY - Signaling and the Academic Job Market

Readings: TBA

Lecture 17: (April 1) Screening and Health Insurance
Lecture 18 (April 3): Applications of the Screening Model

Readings: MWG 13.D, Avery Notes, chapter 15.

Lecture 19 (April 8) Introduction to Moral Hazard
Lecture 20 (April 10): The Principal-Agent Model

Readings: MWG 14.A – 14B, Avery, chapter 16

Lecture 21 (April 15): Career Concerns

Readings: TBA

Lecture 22 (April 17): Social Choice: May's Theorem

Readings: MWG 21.A – 21.B, Avery Notes, chapter 17.

Lecture 23 (April 22): Arrow's Impossibility Theorem

Readings: MWG 21.C, Avery Notes, chapter 18.

Lecture 24 (April 24): **GROUP ACTIVITY** - Ranked Choice Voting