DR. HSUEH-LING HUYNH	TEL: 1-617-353-6823	EMAIL: hlhuynh@bu.edu
OFFICE HOURS:	W6-7:30PM & R 2-3:30PM	RM.309, 270 BAY STATE RD.
LECTURES:	M 6:30 -9:15PM	CAS B36

TEXT:

Martin J. Osborne, *An Introduction to Game Theory*, Oxford University Press 2004

REFERENCES:

1. Martin J. Osborne & Ariel Rubinstein, *A Course in Game Theory*, MIT Press 1994
(The full text of this book can also be accessed for free at http://theory.economics.utoronto.ca/books/. You must register and observe the authors' terms of usage.)

2. Robert Gibbons, *Game Theory for Applied Economists*, Princeton University Press 1992

GRADE   Exam1 [40%] + Exam2 [60%]
                      *** No make-up tests or exams will be given. ***

COURSE DESCRIPTION

        The origins of modern game theory and its application to economics can be traced back to the 1830's, when the mathematician Antoine Augustin Cournot wrote his now famous model of duopoly, but for a century its development was fitful and slow. After the appearance of John von Neumann and Oskar Morgenstern's 'Theory of Games and Economic Behavior' in 1944, interest and research in the subject underwent a phase of rapid and extensive growth. It is now regarded by economists and social scientists as a central theory of human strategic interaction, and in recent years it has even entered the conversations of an educated public.

        In this master's level course, we will study the logical and analytic underpinnings of game theory, as well as its economic applications. From the rigorous formulation of models of interaction and the concept of strategies, we will move on to the positive and normative assertions of game theory – Nash Equilibrium, Iterated Deletion of Dominated Strategies, Rationalizability, Sub-game Perfection, Evolutionary Stability etc., and examine assumptions about human decision and social institutions that may support these assertions. Many of these ideas have been motivated by economic phenomena, which still provide the best illustrations of game theory as well as inspirations for game theorists.

        It is also well known that game theory frequently makes predictions which appear to be at odds with observed human behavior, whether seen in natural settings or deliberate experiments. We will discuss some of these findings, and may occasionally engage in experimentation ourselves. However, even when we feel that game theory fails to deliver empirically sound predictions or prescriptions, a useful way to understand why it may be so is to scrutinize its assumptions and logic as closely and deeply as we can.

        The student is assumed to come equipped with basic knowledge of economic theory and mathematics (including some calculus and probability theory), but most important of all is his/her ability and willingness to think clearly and logically.

COURSE SCHEDULE   See attached.

Registered students should check the course website at https://learn.bu.edu/ frequently for course material, announcements, updates on the schedule, and grades.

ACADEMIC CONDUCT

It is the student's responsibility to read, understand and observe the University's *Academic Conduct Code*. (For graduate students: https://www.bu.edu/cas/files/2017/02/GRS-Academic-Conduct-Code-Final.pdf; for undergraduates including BA/MAs: https://www.bu.edu/academics/resources/academic-conduct-code/). Cases of suspected misconduct will be referred to the appropriate University authorities. Furthermore, acts of plagiarism or cheating will be penalized with failing grades.

COURSE SCHEDULE Details of this schedule are subject to change. Registered students can log into the course website at <u>https://learn.bu.edu/</u>. You should visit this website frequently to get the latest course schedule, check announcements, obtain class material and verify your personal grading record.

♦ LECTURE and READING are complements rather than substitutes. To do well in this course, you must understand both thoroughly. Readings from the TEXT are given in this schedule. Additional reading will be assigned or suggested from time to time.

♦ HOMEWORK problems will be assigned from time to time in relation to the progress of the course. Although they will not be collected and graded, working through practice problems is essential for mastering the course material and preparing for the exams. SOLUTIONS to the exams and some homework problems will be posted on the course website, and we may devote some time in class to solving problems. But you will not benefit from the solutions until you have worked seriously on the problems.

♦ EXAM dates are given below. The two exams will test your comprehensive understanding of the course material up to the time of the exam.

DATE	LECTURE	READING
M1/28	**Modeling Strategic Interactions**	Chapter 1
	Extensive Form Games with Complete and Perfect Information	Chapters 5, 6, 7
	Backward Induction and the problems it raises	
M2/04	Zermelo's Theorem and the Game of Chess	
	Centipede Game & Chain Store Paradox	
	Rubinstein Bargaining Model and Subgame Perfect Equilibrium	Chapter 16 Section 16.1 (Sec.16.2-4 are of related interest but not part of the course)
M2/11	**Strategic (Normal) Form Games with Complete Information**	Chapters 2, 3, 4
	Nash Equilibrium and the problems it raises	
	Cournot & Bertrand Models of Oligopoly	
M2/18	*<Holiday; Substitute Monday Schedule on Tuesday 2/19>*	
T2/19	Strategic Substitutes vs. Strategic Complements	
	Iterated Deletion of Dominated Strategies	Chapters 11, 12
	Maximin and Rationalizable Strategies	
M2/25	Mixed Strategy and Nash Equilibrium in Mixed Strategies	
	Existence of Nash Equilibrium	
M3/04	**Strategic (Normal) Form Games with Incomplete Information**	Chapter 9
	Decision under Uncertainty and Statistical Inference	
M3/11	*<No Class Meeting: Spring Recess>*	
M3/18	Bayesian Nash Equilibrium	
	Correlated Equilibrium	
M3/25	EXAM 1: covers course material through 3/18	

DATE	LECTURE	READING
M4/01	**Repeated Games** Inter-temporal Preference and Decision Reward, Punishment and Cooperation Subgame Perfect Equilibrium Payoffs and Strategies	Chapters 14, 15
M4/08	**Social Norms** Third-Party Sanction Subgame Perfect Equilibrium and Recursive Strategies	
M4/15	*<Holiday; Substitute Monday Schedule on Wednesday 4/17>*	
W4/17	**Evolution of Behavior and Belief** Population Dynamics and Evolutionary Stability	Chapter 13
M4/22	**Extensive Form Games with Imperfect or Incomplete Information** Sequential Rationality and Inference about the Past Imperfect Recall	Chapter 10
M4/29	Perfect Bayesian Equilibrium Signaling and Screening in Labor Markets Reputation in Repeated Interactions & Monetary Policy Cheap Talk, Persuasion & Debate	

M 5/6<6-8pm>   EXAM 2: covers material from the whole course
Final exam schedule is subject to confirmation or change by the University Registrar's official announcement later in the semester.