CAS EC403(A1)   **Boston University**
Game Theory   **Fall 2012**

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OFFICE HOURS: M 12-1:30PM & W 3-4:30PM   RM.309, 270 BAY STATE ROAD
LECTURES: MWF 2-3PM   GCB 209

TEXT	Avinash Dixit, Susan Skeath & David H. Reiley Jr., ***Games of Strategy (3rd ed.)***, W.W. Norton 2009
GRADE	Tests 30% (Test1 [15%] + Test2 [15%])
	Exams 70% (Exam1 [30%] + Exam2 [40%])
	*** 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 introductory course, we will study the logical and analytic underpinnings of game theory. 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.

Being an advanced undergraduate course intended for economists, 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 http://blackboard.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 *Academic Conduct Code* (http://www.bu.edu/academics/resources/academic-conduct-code/, also available from CAS Advising and Student Academic Life). Cases of suspected misconduct will be referred to the Dean's Office. Furthermore, acts of plagiarism or cheating will be penalized with failing grades.

EC403(A1)   **FALL 2012**

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

♦ LECTURE complements READING and self-study. They are not substitutes. To do well in this course, you must understand both thoroughly.
♦ HOMEWORK problems are specified as follows: "S2.3" refers to Solved Exercise S3 at the end of Chapter 2 of Dixit-Skeath-Reiley, while U2.3 refers to the Unsolved Exercise U3 in the same chapter. "S2.1- 2.4" means "S2.1, S2.2, S2.3 and S2.4". Additional problems may be given out in class from time to time.
♦ SOLUTION to the homework problems, tests and exams will be posted on the course website. But you will not benefit from the solutions unless you have worked seriously on the problems.
♦ A TEST will focus on homework problems assigned since the last test or exam.
♦ An EXAM will test your comprehensive understanding of the course material up to the time of the exam.

DATE	LECTURE	READING	HOMEWORK
	Game Theory and Strategic Interactions		
W9/05	Model of Strategic Interactions:	Ch. 1, 2	S2.1-2.2, U2.3-2.4
F9/07	(1) Game-Form and Payoffs		
M9/10	(2) Predicting Play and Giving Strategic Advice		
	Extensive Form/ Sequential-move Games & Backward Induction		
W9/12	Backward Induction and the problems it raises	Ch. 3	S3.1-3.4
F9/14	Model of the Decision Maker:		
	(1) Individual preference and optimizing behavior		U3.5-3.9
M9/17	(2) Knowing the preferences and rationality of others		
	Strategic (Normal) Form/Simultaneous-move Games & Nash Equilibrium		
W9/19	What is a strategy? Action by self and belief about others	Ch. 3, 4, 5	S4.1-4.6, U4.1-4.6
F9/21	Normal-form Games with Complete Information		S4.7-4.11
M9/24	Nash Equilibrium and the problems it raises		U4.7-4.11
W9/26	Dominant and Dominated Strategies		S5.6-5.7
F9/28	Iterated Deletion of Dominated Strategies		U5.6-5.7
M10/01 Test1	*Test covers homework problems from 9/07 through 9/30*		
W10/03	Maximin and Rationalizable Strategies		S5.8-5.9, U5.8-5.9
	Game Theory and Economic Behavior		
F10/05	Continuous strategies and best-response functions	Ch. 5, 12	S5.1-5.5, U5.8-5.10
M10/08	*<Holiday>*		
W10/10	Cournot's Model of Oligopoly	Review relevant parts of your	
F10/12	Bertrand's Model of Oligopoly	Intermediate Microeconomics textbook	S12.1, S12.4, U12.3, U12.5
M10/15	Public Decisions and Voting	Ch. 16	S16.1-S16.2, U16.3, U16.5
	Auctions	Ch. 17	S17.2-17.4, U17.2-17.4
W10/17	Rubinstein's Bargaining Model	Ch. 18	S18.2, U18.1-18.2
F10/19	*Review, Discussion and/or Experiment*		
M10/22 Exam1	*Exam covers course material through 10/19*		

DATE	LECTURE	READING	HOMEWORK
	Games with Imperfect Information		
W10/24	Multi-stage Games, Inferences about the Past	Ch. 6	S6.1-6.5, U6.1-6.5
F10/26	Subgame Perfect Equilibrium		S6.6-6.10, U6.6-6.10, U6.11-6.12
	Mixed Strategy		
M10/29	Mixed Strategies: Tax Evasion and Random Audits	Ch. 7, 8	S7.1-7.8, U7.9-7.10
W10/31	Interpretations of Mixed Strategies		S8.1-8.3, S8.5-8.9, U8.10-8.11
F11/02	Mixed strategy equilibrium for zero-sum games		
M11/05	Correlated Equilibrium		
	Games with Incomplete Information		
W11/07	Decision under Uncertainty:	Ch. 9, 10	S9.4-9.8, U9.9-9.10
	(1) Expected Payoffs		
F11/09	(2) Prior Beliefs and Factual Information		
M11/12	Promise and Threats: Are they Credible?		
W11/14	Signaling and Screening		U9.11
F11/16	Brinkmanship and Commitment	Ch. 15	S15.1, S15.4, U15.1
M11/19 Test2	*Test covers homework problems from 10/24 through 11/16*		
	<Thanksgiving Recess>		
	Repeated Interaction and Social Interaction		
M11/26	Reward and Punishment	Ch. 11	S11.1-11.2, S11.4, S11.6
W11/28	Repeated Games & Mutual Sanction		U11.1, U11.3, U11.4
F11/30	Social Norms & Third-party Sanction		
	Evolution of Behavior and Belief		
M12/03	Population Dynamics:	Ch. 13	S13.2-13.3, S13.7-13.8
	(1) Replication & Statistical Equilibrium		
W12/05	(2) Random Perturbation & Selection		S13.9-13.10
F12/07	Maynard-Smith's notion of Evolutionary Stability		U13.1, U13.6, U13.8
M12/10	Evolution and Stability of Social Norms		
W12/12	*Review, Discussion and/or Experiment*		

W12/19 Exam2 <3-5pm> *Exam covers material from the whole course*