

University of Pennsylvania Department of Economics
Econ 13 / PPE 311: Strategic Reasoning
Fall 2017

Lectures	Tuesday & Thursday 10:30-11:50 (Stiteler B6).
Instructor	Deniz Selman (denizs@econ.upenn.edu) <i>Office Hours:</i> Monday 3:30-4:30 and by appointment (McNeil 560).
TA	Joonbae Lee (joonbae@sas.upenn.edu) <i>Office Hours:</i> Wednesday 4:00-6:00 (McNeil 351).
Grader	Nitin Krishnan (nitink@sas.upenn.edu)
Description	This course is about strategically interdependent decisions. In such situations, the outcome of your actions depends also on the actions of others. When making your choice, you have to consider the choices of others, who in turn are considering what you will be choosing. Game Theory offers several concepts and insights for understanding such situations, and for making better strategic choices. This course will introduce and develop some basic ideas from game theory, using illustrations, applications, and cases drawn from business, economics, politics, and sports. Some interactive games will be played in class.
Prerequisite	Econ 1. There will be little formal theory, so some high school algebra is the only math required. However, general numeracy (facility interpreting and doing numerical graphs, tables, and arithmetic calculations) is very important. NOTE: This course will be accepted by the Economics Department to be counted toward a Minor in Economics or as an Economics elective.
Textbook	Dixit, A., S. Skeath and D.H. Reiley, <i>Games of Strategy</i> , Norton, 4th edition, 2014. The textbook is available in the Penn bookstore. You may also purchase the ebook version (which works on all mobile devices including tablets and smart phones) for \$55 directly at https://digital.wwnorton.com/gamesofstrategy4 .
Lectures	I will primarily teach using lecture slides to which I will add figures and other material during lectures. I will also write on the blackboard at times. Students should attend and participate in class. In order to discourage classroom distractions, <i>the use of laptops and other electronic devices is not permitted during lectures apart from times that we are playing electronic games together as a class</i> . If you have a special condition which makes this a difficulty for you, please let me know.
Problem Sets	There will be six problem sets assigned and collected for grading during the semester. Problem sets will be posted on Canvas one week before the due date and due at the beginning of lecture (no later than 10:35 am) on the following due dates: (1) 14 Sep. (2) 28 Sep. (3) 19 Oct. (4) 2 Nov. (5) 21 Nov. (6) 7 Dec. <i>No late problem sets will be accepted.</i> Your lowest problem set grade will be dropped and the average of the others will constitute the problem set portion of your grade. NOTE: Working on problem sets diligently is the most effective way to prepare you for exams. I recommend you first work on your own and then meet to discuss the problems in groups. However, each student must turn in his or her own answers. Please write legibly and state which classmates you worked with on your submitted copy.
Exams	<i>First Midterm Exam: Tuesday 3 October (in class, beginning at 10:35 am sharp).</i> <i>Second Midterm Exam: Thursday 9 November (in class, beginning at 10:35 am sharp).</i> <i>Final Exam: Wednesday 20 December (9:00-11:00).</i> POLICY FOR MISSED EXAMS: There will be no make-up exams. Students who contact me <i>before</i> a Midterm Exam <i>and</i> provide a written valid excuse will have their grades calculated based on a reweighting of the other exams. Please see the departmental policies link below for a list of valid excuses. Students who miss an exam and do not satisfy the above conditions will receive a grade of zero on that exam. RE-GRADING POLICY: Students have one week from the day in which examinations and problem sets are returned to report errors in grading and/or to request that problems be re-graded. All such requests must be made in writing. If a student submits his/her exam for re-grading, then the student's entire exam will be re-graded with no guarantee of a higher total score. OTHER POLICIES & PROCEDURES: Apart from these stated specifics regarding the policy for missed exams and re-grading, this course complies with all departmental policies as posted on the departmental website at: http://economics.sas.upenn.edu/undergraduate-program/course-information/guidelines/policies .
Grading	Problem Sets (14%), Two Midterm Exams (24% each), Final Exam (38%)

Course Outline (*tentative and time permitting*)

DSR

1. INTRODUCTION AND MOTIVATION

Ch. 1-2

Decisions
Strategic games
Terminology and background assumptions of strategic games

2. GAMES WITH SEQUENTIAL MOVES

Ch. 3, Ch. 17 (Sec 3-6)

Game trees
Backward induction and rollback equilibrium
Bargaining

3. GAMES WITH SIMULTANEOUS MOVES

Ch. 4-6

Dominant and dominated strategies
Nash equilibrium

4. RANDOMIZATION

Ch. 7

Mixed strategies
The distinct roles of mixed strategies in zero-sum and non-zero sum games

5. THE PRISONERS' DILEMMA AND REPEATED GAMES

Ch. 10

Dominant strategy equilibrium in single play
Cooperation in repeated play
Tit-for-tat and other strategies
Examples from business competition, international negotiations

6. SOCIAL COORDINATION AND CONFLICT

Ch. 11

Multi-person dilemmas
Harmful external effects
Beneficial externalities, strategic complementarity: human capital and economic growth

7. UNCERTAINTY AND INFORMATION

Ch. 8, Ch. 13

Incentives to reveal and conceal private information
Signaling and screening
Design of contracts and incentives

8. VOTING IN ELECTIONS AND LEGISLATURES

Ch. 15

The median voter theorem and its limitations
Agenda manipulation
Strategic voting and the Gibbard-Satterthwaite Impossibility Theorem

9. AUCTIONS

Ch. 16

Different types of auctions
Strategies for bidders and sellers
Truthful revelation of preferences