

University of Pennsylvania Department of Economics
Econ 13 / PPE 311: Strategic Reasoning
Spring 2021

Lectures	Monday & Wednesday 3:30pm - 4:50pm. Please use the Zoom links on your Canvas calendar (or the Zoom tab on Canvas) to join synchronous lectures.
Instructor	Deniz Selman (denizs@econ.upenn.edu) <i>Office Hours:</i> Thursday 4:20pm-5:20pm and by appointment (https://upenn.zoom.us/my/deniz).
TA	Isaac Rabbani (irabbani@sas.upenn.edu) <i>Office Hours:</i> Tuesday 8:00pm-9:00pm & Friday 10:00am-11:00am (https://upenn.zoom.us/my/isaacrabbani).
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	Lectures will be held <i>synchronously</i> via Zoom. It is important that you come to class prepared to participate. Looking over the slides and watching class recordings is not a substitute for attending and participating in class.
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 <i>beginning of lecture</i> on these dates: (1) Mon 8 Feb. (2) Mon 22 Feb. (3) Wed 17 Mar. (4) Wed 31 Mar. (5) Mon 19 Apr. (6) Wed 28 Apr. <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.
Quizzes	There will be three in-class quizzes held on these dates: (1) Wed 10 Feb. (2) Mon 22 Mar. (3) Wed 21 Apr. NO MAKE-UP QUIZZES: You will receive a zero for any quiz that you miss for any reason. To accommodate students who must miss a quiz, your lowest quiz grade will be dropped and the average of the other two quizzes will constitute the quiz portion of your grade.
Exams	First Midterm Exam: Monday 1 March (during regular class time via Canvas). Second Midterm Exam: Monday 5 April (during regular class time via Canvas). Final Exam: Date TBA (via Canvas). 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 exams, quizzes 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	Best Five Problem Sets (15%), Best Two Quizzes (12%), Two Midterm Exams (21% each), Final Exam (31%).

Course Outline *(subject to minor changes)*

DSR

INTRODUCTION AND MOTIVATION

Ch. 1-2

Decisions
Strategic games
Terminology and background assumptions of strategic games

SEQUENTIAL GAMES WITH COMPLETE INFORMATION

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

Game trees
Backward induction
Rollback Equilibrium
Bargaining

SIMULTANEOUS GAMES WITH COMPLETE INFORMATION

Ch. 4-6

Dominant and dominated strategies
Iterated deletion of strictly dominated strategies
Nash Equilibrium

RANDOMIZATION

Ch. 7

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

REPEATED GAMES

Ch. 10

Finitely repeated games
Subgame Perfect Equilibrium
Infinitely repeated games: grim trigger, tit-for-tat

SIMULTANEOUS GAMES WITH INCOMPLETE INFORMATION

Ch. 8

Players with uncertain preferences
“Nature” and its role
Bayesian Nash Equilibrium
Application: The Market for Lemons (Akerlof)

SEQUENTIAL GAMES WITH INCOMPLETE INFORMATION

Ch. 13

Pooling and separating strategies
Beliefs and signaling
Perfect Bayesian Equilibrium
Application: Job Market Signaling (Spence)