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University of Pennsylvania Department of Economics
Econ 13 / PPE 311: Strategic Reasoning
Spring 2020

Lectures
Monday & Wednesday 3:30-4:50 (MCNB 286-287).

Instructor
Deniz Selman (deniz@econ.upenn.edu)
Office Hours: Tuesday 10:45-11:45 and by appointment (PCPE 541).

Instructor
Isaac Rabbani (irabbani@sas.upenn.edu)
Office Hours: Monday 10:30-11:30 & Friday 10:30-11:30 (PCPE 500).

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
The textbook is available in the Penn bookstore. You may also purchase the ebook version (which works on all mobile devices including

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, 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. 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 on these dates:
No late problem sets will be accepted. 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) Mon 10 Feb. (2) Wed 25 Mar. (3) Wed 22 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: Wednesday 26 February (in class, beginning at 3:35 pm sharp).
Second Midterm Exam: Wednesday 8 April (in class, beginning at 3:35 pm sharp).
Final Exam: Tuesday 5 May (9:00 am - 11:00 am).

Exams
NO MAKE-UP EXAMS: Students who contact me before a Midterm Exam and 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%).

http://economics.sas.upenn.edu/undergraduate-program/course-information/guidelines/policies.
Course Outline *(subject to minor changes)*

INTRODUCTION AND MOTIVATION  
Decisions  
Strategic games  
Terminology and background assumptions of strategic games  

SEQUENTIAL GAMES WITH COMPLETE INFORMATION  
Game trees  
Backward induction  
*Rollback Equilibrium*  
Bargaining  

SIMULTANEOUS GAMES WITH COMPLETE INFORMATION  
Dominant and dominated strategies  
Iterated deletion of strictly dominated strategies  
*Nash Equilibrium*  

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

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

SIMULTANEOUS GAMES WITH INCOMPLETE INFORMATION  
Players with uncertain preferences  
“Nature” and its role  
*Bayesian Nash Equilibrium*  
Application: The Market for Lemons (Akerlof)  

SEQUENTIAL GAMES WITH INCOMPLETE INFORMATION  
Pooling and separating strategies  
Beliefs and signaling  
*Perfect Bayesian Equilibrium*  
Application: Job Market Signaling (Spence)