Syllabus: Initial Draft
Econ 4101: Game Theory Honors
University of Pennsylvania
Professor: Steven Matthews
This Version: January 21, 2024

Description. The object of game theory is to understand situations in which a person's behavior affects the optimal behavior of others. In this course we study the theory and some of its applications to economics, political science, and law. The goal is to give you a solid grasp of both the methods and the basic models used in game theory.

Prerequisites. Econ 2100 and Math 1080 or 1410, with a grade of B or better.

Teaching Methodology. Lecture slides and notes will be posted on Canvas. Almost weekly problem sets, which will be presented/discussed in class on the day they are due (all Mondays).

Class Time and Room. MW 1:45 - 3:14 pm, PCPE 225.

Office Hours. Fridays, 11-12 in PCPE 618.
And by appointment <stevenma@econ.upenn.edu>.

Required Textbook: *Strategy: An Introduction to Game Theory,* 3$^{\text{rd}}$ edition, by Joel Watson.

Optional Supplementary Text: *Game Theory: An Introduction,* by Steven Tadelis.

Assessment. 50% for the nine problem sets,[1] and 25% for each of two in-class midterms. If you are unable to take a midterm for an excused reason,[2] the homework will count for $66.\bar{6}\%$ and the remaining exam for $33.\bar{3}\%$. Each exam is closed book, notes, and electronics. The problem set due dates and exam dates are listed below.

Attendence. Because this is a small class, good attendance and participation will be used to raise marginal course grades.

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[1]One of your problem sets that has your worst score will be dropped.

[2]The definition of an excused absence, departmental regrade policies, and so on can be found at https://economics.sas.upenn.edu/undergraduate/course-information/course-policies.

Important Dates

First Class	Monday 1/22
PS 1 due	2/5
PS 2 due	2/12
PS 3 due	2/19
PS 4 due	2/26
Spring Break	March 2-10
PS 5 due	3/18
Midterm 1	3/20
PS 6 due	4/1
PS 7 due	4/8
PS 8 due	4/15
PS 9 due	4/22
Midterm 2	5/1

Tentative Course Outline

Topic	Watson Chapter
Representing Games	
Extensive form, strategies	$1-3$
Normal form, beliefs/mixed strategies	$4,5$
Static Games	
Best response, rationalizability, applications	$6-8$
Equilibrium, applications	$9,10$
Mixed strategy equilibrium	11
Strictly competitive games	12
Contract and law	13
Dynamic Games	
Extensive forms and subgame perfection	$14,15$
Applications: IO and parlor games	$16,17$
Bargaining games	19
Repeated games and applications	$22,23$
Incomplete Information Games	
Random events and incomplete information	24, App A
Bayesian-Nash equilibrium, applications	$26,27$
PBE, signaling, reputation	$28,29$
Risk and Incentives (Moral Hazard)	25