University of Pennsylvania
Fall Term 2018

ECON 13/PPE 311 - Strategic Reasoning

Lectures: Tuesday and Thursday 10.30-12.00, in Stiteler Hall B6.

Professor: David Dillenberger, 619 PCPSE, 898-1503, ddill@sas.upenn.edu
        Office hours: Monday, 4.30-5.30pm or (by appointment only) before class.

TA: Coby Wittman, ywittman@sas.upenn.edu
        Office hours: Tuesday, 2-3pm and Wednesday, 10-11am at 141 PCPSE

Grader: Nitin Krishnan, nitink@sas.upenn.edu

Course home page: usual Canvas: https://canvas.upenn.edu/

PLEASE READ CAREFULLY the Departmental Policies at both
https://economics.sas.upenn.edu/undergraduate/course-information/course-policies
and
https://ppe.sas.upenn.edu/study/curriculum/ppe-policies

COURSE 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 think what the others will choose, who in turn are thinking what you will be choosing, and so on. 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. There will be little formal theory, and the only pre-requisite is some high-school algebra and having taken Econ 1. However, general numeracy (facility interpreting and doing numerical graphs, tables, and arithmetic calculations) is very important. This course will also be accepted by the Economics department as an Econ course, to be counted toward the Minor in Economics (or as an Econ elective).

TEXTBOOK

Avinash Dixit, Susan Skeath and David H. Reiley, Jr. (henceforth DSR), *Games of Strategy*, 4th
        edition, 2014

GRADING

Problem sets: n=5 or 6 homework assignments during the term, due about once every two weeks, depending on our progress. **The best (n-1)** will comprise **10%** of the course grade. Problems should be solved primarily on your own. Some "reasonable" collaboration is permitted, but you shouldn't just obtain the solution from another source.

Exams: There will be two (non-cumulative) in class midterm examinations. **Each midterm exam counts for 25% of the course grade.** There will be a (comprehensive) final examination. **The final exam counts for 40% of the course grade.** If you are unable to take one of the midterm exams for **an excused reason** (illness or other emergency but ***not***, for example, early flight arrangements), the final exam will count for 60% of your course grade and the other midterm for 30%. There will be no make-up exams or other accommodations, with the exception of **(*)** below. All exams are closed book, notes, calculators, and mobile phones.

Exam dates: October 2 (Tuesday)*, November 8 (Thursday), and December 17 (Monday), 9am-11am

(*) October 2nd is Simchat Torah. Students who wish to observe this holiday must inform me **within the first two weeks** of the semester of their intent in order to discuss alternative options.

There will be no class on Tuesday, November 20. Make up class TBA.

THE FINE PRINT

(1) 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. 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).

(2) Students should attend and participate in class; ***their mobile phones and other devices should not***. The professor will employ the necessary means to discourage classroom distractions.

COURSE OUTLINE (ORDER OF TOPICS MIGHT CHANGE)

1. INTRODUCTION AND MOTIVATION

Topics: Decisions (impersonal environment) and games (environment has other strategic actors whose choices interact with ours). Some dimensions of classification of strategic interaction

Required reading: DSR, Chapters 1 and 2

2. GAMES WITH SEQUENTIAL MOVES

Topics: Game trees, Rollback equilibrium, Bargaining

Required reading: DSR, Chapter 3. DSR, Chapter 17 (sections 3-6)

3. SIMULTANEOUS-MOVE GAMES

Topics: Dominant strategies, Dominated strategies, Nash equilibrium.

Required reading: DSR, Chapters 4-6

4. RANDOMIZATION

Topics: Mixed strategies. Their distinct roles in zero-sum and non-zero sum games.

Required reading: DSR, Chapter 7

5. SOCIAL COORDINATION AND CONFLICT

Topics: Multi-person dilemmas. Harmful external effects: congestion and pollution. Beneficial externalities, strategic complementarity: human capital and economic growth. Role of policy, social conventions etc.

Required reading: DSR, Chapter 11

6. THE PRISONERS' DILEMMA AND REPEATED GAMES

Topics: Dominant strategy equilibrium in single play. Tacit cooperation in repeated play. Tit-for-tat and other strategies. Examples from business competition, international negotiations.

Required reading: DSR, Chapter 10

7. UNCERTAINTY AND INFORMATION

Topics: Incentives to reveal and conceal private information, and strategies for doing so: signaling and screening. Design of contracts and incentives.

Required reading: DSR, Chapters 8 and 13

8. VOTING IN ELECTIONS AND LEGISLATURES

Topics: The median voter theorem and its limitations. Agenda manipulation. Other topics as time permits.

Required reading: DSR, Chapter 15

9. AUCTIONS

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

Required reading: DSR, Chapter 16

10. CONTRACTS, LAW, AND ENFORCEMENT IN STATIC SETTINGS

Topics: Complete contracting in discretionary environments. Contracting with court-imposed breach remedies. Expectation damages, Reliance damages.

Required reading: Lecture notes