SCHEDULE AND MATERIAL

(Synchronized) Lectures: Tuesday and Thursday 10.30am-11.50am, EST.
Zoom link: https://upenn.zoom.us/j/95901643923?pwd=aGd5YVIROTVLbGR1WjFaOHlvVTBXdz09
All lectures will be recorded and posted on Canvas
- Live sessions can be disrupted for a variety of reasons. In the event of a disruption, I will try to get the session back on line within 15 minutes. If not, I will record the relevant material to viewed later. In the event of a disruption, I will communicate via the Announcements feature on Canvas.

Q&A sessions: Friday, 9-10am and 5-6pm, EST. Zoom link: https://upenn.zoom.us/j/9665206847
All Q&A sessions will be recorded and posted on Canvas.
- During Q&A sessions we will solve problems and do other interactive activities such as play games. We will focus on material related to that week's lectures. Office hours will be mostly devoted to answer individual questions and to help with the problem sets.

Piazza: We will use piazza to facilitate discussions with your classmates. Post any questions about course content and problem sets or thoughts on the material here: https://piazza.com/class/kehtbt9ci334hx
We will also hold discussions here related to lecture material.

INSTRUCTORS

Professor: David Dillenberger, ddill@sas.upenn.edu
Virtual office hours: Monday, 4.00pm -5.30pm or (by appointment) before class.
(Zoom link: https://upenn.zoom.us/j/9927242650?pwd=ZEQyc1BWUE81NkhHYmdTbEtCK3Y5dz09 . Passcode: 646481)

TA: Marcus Tomaino, tomaino@sas.upenn.edu
Virtual office hours: Monday 9:00am - 10:30am and Wednesday 2.30pm - 4pm.
(Zoom link: https://upenn.zoom.us/j/92517890855 )

TA: Sherwin Lott, lotts@sas.upenn.edu
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 McAdams (henceforth DSM), *Games of Strategy*, 5th edition, 2020

- In terms of material covered, Dixit, Skeath, and Riley (4th edition, 2014) will also be accepted. However, the schedule below and all announcements and problem sets will refer to the 5th edition; if you use the older edition, it will be your responsibility to make the relevant adjustment.

GRADING

Problem sets: 5 homework assignments during the term, due about once every two weeks, depending on our progress. The best 4 will comprise 15% of the course grade.

Midterm exams: There will be two (non-cumulative) midterm examinations. Each midterm exam counts for 25% of the course grade. These exams will be given during the time of class and you will have 24 hours to return them.

Midterm exams schedule: October 6 (Tuesday), November 10 (Tuesday).

1 See instructions for problem sets and examinations for all details and the “fine print”.
**Final exam:** There will be a (comprehensive) final examination. **The final exam** counts for **35%** of the course grade. This exam will be given during the final exam scheduled time and you will have 24 hours to return it.

**Final exam schedule:** TBD

- If you are unable to take one of the midterm exams for an **excused reason**, as specified in the departmental policies, the final exam will count for 50% of your course grade and the other midterm for 35%. There will be no make-up exams or other accommodations. All exams are under the university’s code of academic integrity.

**Pass/Fail Option.** You can switch to taking the course for Pass/Fail. You have until **October 30** to make this change.

Please read carefully the Departmental Policies at both [https://economics.sas.upenn.edu/undergraduate/course-information/course-policies](https://economics.sas.upenn.edu/undergraduate/course-information/course-policies) and [https://ppe.sas.upenn.edu/study/curriculum/ppe-policies](https://ppe.sas.upenn.edu/study/curriculum/ppe-policies)

Also, make sure to read carefully the INSTRUCTIONS FOR PROBLEM SETS AND EXAMINATIONS file.

**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: DSM, Chapters 1 and 2

2. **GAMES WITH SEQUENTIAL MOVES**

   Topics: Game trees, Rollback equilibrium, Bargaining

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

3. **SIMULTANEOUS-MOVE GAMES**

   Topics: Dominant strategies, Dominated strategies, Nash equilibrium.

   Required reading: DSM, Chapters 4-5
4. COMBINING SEQUENTIAL AND SIMULTANEOUS MOVES

Topics: Moving advantage, Subgame perfect equilibrium.

Required reading: DSM, Chapters 6

5. RANDOMIZATION

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

Required reading: DSM, Chapter 7

6. SOCIAL COORDINATION AND CONFLICT

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

Required reading: DSM, Chapter 11

7. 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: DSM, Chapter 10

8. 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: DSM, Chapters 9 and 14
9. VOTING IN ELECTIONS AND LEGISLATURES

Topics: The median voter theorem and its limitations. Agenda manipulation.

Required reading: DSM, Chapter 16

10. CONTRACTS, LAW, AND ENFORCEMENT IN STATIC SETTINGS


Required reading: Lecture notes

11. (if time permits) AUCTIONS

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

Required reading: DSM, Chapter 15