

Game Theory	University of Houston
POLS 6389	Spring 2017
Mon and Wed	Francisco Cantú
5:30-7:00 p.m.	fcantu10@uh.edu
McElhinney Hall 108	Office Hours: Fri 3-5 p.m.

This is a graduate-level introduction to game theory. This course will provide a basic overview on the techniques to study the strategic interaction of rational agents as well as to discuss their application to different political settings. Covered topics will include (but not limited to) games of complete information, games of incomplete information, and repeated games. While there is no formal mathematical prerequisite, some basic knowledge on basic calculus and probability theory will come handy.

Requirements

Problem sets (55%): There will be several problem sets that will complement the lectures. Solutions to the problem sets will be provided after each assignment is due. You are required to type your individual solutions to the problem sets and show all your work to reach every answer. Working in groups is discouraged. Unless very pressing (and fully documented) situations, extensions are not allowed.

Final Exam (45%): There will be a comprehensive 24 hours take-home exam. This exam will be based on the reading material and the problem sets. You will be allowed to consult your notes.

Course Policies

Disabilities: If you have a disability that requires special testing accommodations or other classroom modifications, you need to notify both me and the Center for Students with DisAbilities (CSD).¹ You may be asked to provide documentation of your disability to determine the appropriate accommodations.

Academic Integrity: There is a zero tolerance policy for plagiarism in any of the required activities for this course, and any violation will be penalized in the terms cited by the UH's Academic Dishonesty Policy.²

Course Materials

Lectures will be organized around the following textbooks (available in the bookstore):

Williams, K. (2013). *Introduction to Game Theory: A Behavioral Approach*. Oxford University Press

Osborne, M. J. (2004). *An Introduction to Game Theory*. Oxford University Press

Additionally, we will review articles and selected parts of the following textbooks:

McCarty, N. and Meirowitz, A. (2007). *Political Game Theory: An Introduction*. Cambridge University Press

Gehlbach, S. (2013). *Formal Models of Domestic Politics*. Cambridge University Press

Gibbons, R. (1992). *Game Theory for Applied Economists*. Princeton University Press

Fudenberg, D. and Tirole, J. (1991). *Game Theory*. The M.I.T. Press

Myerson, R. B. (1991). *Game Theory: Analysis of Conflict*. Harvard University Press

Finally, we will use *Learning Catalytics*, a classroom response system that requires you to bring any device with wi-fi and web browser (e.g., laptop, smartphone, or tablet). You need to sign-up to the system following the instructions at https://learningcatalytics.com/users/sign_up. Except when using *Learning Catalytics*, laptops, tablets, or phones during class are discouraged.

¹<http://www.uh.edu/csd/>

²<http://www.uh.edu/academics/catalog/policies/academ-reg/academic-honesty/>

Tentative Course Outline

1. Decision Theory

- Preferences
- Lotteries
- The Expected Utility Theorem
- Risk Aversion

Readings:

McCarty and Meirowitz, chapters 2 and 3

Williams, chapters 3 and 4

2. Normal Form Games

- Elimination of Dominated Strategies
- Nash Equilibrium
- Pure Strategies

Readings:

Clark, W. R., Golder, M., and Golder, S. N. (2013). *Principles of Comparative Politics*. CQ Press, 2 edition, chapter 3

Osborne, chapters 2 and 3

Williams, chapters 5 and 6

Gehlbach, S. (2013). *Formal Models of Domestic Politics*. Cambridge University Press, chapter 1

- Mixed Strategies

Readings:

Williams, chapter 7

Osborne, chapter 4

Palacios-Huerta, I. (2014). *Beautiful Game Theory: How Soccer Can Help Economics*. Princeton University Press, chapters 1 and 2

3. Extensive Form Games

- Backward Induction
- Subgame-Perfect Equilibrium

Readings:

Williams, chapters 8 and 9

Osborne, chapters 5-7

Gehlbach, S. (2013). *Formal Models of Domestic Politics*. Cambridge University Press, chapter 4

4. Incomplete Information in Static and Dynamic Settings

- Bayesian Nash Equilibrium
- Dynamic Bayesian Games
- Perfect Bayesian Equilibrium

- Signaling Games

Readings:

Osborne, chapters 9 and 10

Williams, chapters 8 and 9

Chernykh, S. and Svoboda, M. W. (2015). Third-party actors and the success of democracy: How electoral commissions, courts, and observers shape incentives for electoral manipulation and post-election protests. *Journal of Politics*, 77(2):407–420

5. Repeated Games

- Finitely Repeated Games
- Infinitely Repeated Games
- The Folk Theorem

Readings:

Osborne, chapter 14

Milgrom, P., North, D., and Weingast, B. W. (1990). The role of institutions in the revival of trade: The medieval law merchant, private judges, and the champagne fairs. *Economics and Politics*, 2(1):1–23