

POLS 308: Game Theoretic Methods in Political Science Spring 2018

Section 500, Mon/Wed/Fri, 9:45–10:35 a.m., Allen 1016

Section 501, Mon/Wed/Fri, 10:55–11:45 a.m., Allen 1016

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Mon/Tues 11:45-12:45 p.m. or
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Office Hours:

Wed 12:00-1:00 p.m. and
Thurs 11:40-12:40 p.m.

Course Description

The course will present the core concepts of game theory. Game theory is used to study strategic interaction in politics. Game theory uses mathematical models to describe and understand political and social phenomena. The emphasis will be on the basics of modeling, model building skills, and problem solving.

Much of what happens in the world of politics involves decisions by individuals, such as politicians, leaders, voters, etc. Many of these decisions are strategic, meaning they depend on decisions made by others. In this course, students will learn to use analytical tools – such as decision theory, expected utility theory, and game theory – and to apply these tools to settings of interest. Students will also read contemporary political science research to see how these tools have been used to understand politics.

Prerequisites

There are no prerequisites for this course. However, game theory relies heavily on the use of math. The only math that students need to know in order to be successful in this course is high-school level algebra (manipulating and solving equations and inequalities, for example). There will be a lot of algebra and logical reasoning. To do well in the course, it is very important that students come to class and to office hours and that they ask questions (this material is difficult to learn by just reading the textbook).

Learning Outcomes

By the end of the course, students will:

- be able to construct and solve game-theoretic models;
- use game theory to develop logical arguments to understand and explain decision-making in a variety of settings;
- understand fundamental strategic dilemmas that individuals face in making political decisions and optimal solutions to those dilemmas; and
- have an enhanced analytical ability to make sense of strategic interactions.

Learning Environment

It is of utmost importance that every student feels comfortable speaking in class and that we are always respectful of one another. Students with concerns, challenges or special circumstances of any sort should let me know as soon as possible.

Americans with Disabilities Act Policy Statement

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information visit .

Course Materials

There is one required textbook for the course: Avinash Dixit, Susan Skeath, and David Reiley. *Games of Strategy*, 3rd or 4th Edition (2015), Norton – called “DSR” hereafter. It is available at area bookstores. Edition 3 or 4 is acceptable for use in the course, and the syllabus lists the assigned reading in both editions.

Two other textbooks may be of use for additional examples; they are not required. They are: Martin J. Osborne, *An Introduction to Game Theory* and Robert Gibbons, *Game Theory for Applied Economists*.

A number of additional readings are also required; students can access them on the library e-reserves: <https://library-reserves.library.tamu.edu/areslocal/index.htm>. Students may need to download a .pdf viewer before viewing them. If, for some reason, the articles are not available on the course site, it is incumbent on the student to download them from the internet. The University Library and Google Scholar are good resources for this. Students are expected to have completed the reading by the day for which it has been assigned. All the readings are equally vital, and the exams and assignments will evaluate knowledge of the textbook, articles, and any material covered in lecture.

Assignments and Grading

Grades in the course will be based on the following assignments:

- 10 percent – participation
- 15 percent – homework assignments
- 20 percent – first midterm exam
- 20 percent – second midterm exam
- 20 percent – third midterm exam
- 15 percent – group modeling paper

Grades will be awarded based on the following grading scale: A=90-100, B=80-89, C=70-79, D=60-69, F=59 and below.

Late assignments will not be accepted. The only exception will be for excused absences, in which case students must make personal arrangements with us. A student whose absence is excused will not be penalized for that absence and shall be allowed to take an examination or complete a missed assignment within 14 calendar days from the last day of the initial absence. Students should inform us in a timely manner of excused absences, as they must complete any missed work. If students need to miss class for a religious holiday, due to a medical or personal emergency, or in order to attend an activity, these absences are excused. Accommodations for absences can be sought either prior or after the absence, but not later than two working days after the absence. For activities and medical or personal absences, the student is responsible for providing satisfactory documentation to substantiate the reason for the absence. Failure to notify or document properly may result in an unexcused absence. Falsification of documentation is a violation of the Honor Code. View the university's full attendance policy, Rule 7, here: <http://student-rules.tamu.edu/rule07>.

If a student feels as though a grade should be changed, after discussing the grade with the teaching assistant, he or she should initiate a grade appeal. The appeal must be initiated within one week after receiving the graded assignment. The appeal must include the original assignment and a brief explanation detailing why the assignment deserves a higher grade (attention to the content of the assignment and the assignment prompt will be useful here). I will re-evaluate the grade.

Aggie Honor Code

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit: <http://www.tamu.edu/aggiehonor/>.

Participation

Students earn participation grades through attendance, asking questions, providing insight into the reading and lectures, and actively listening to their classmates' comments. Any quizzes and other in-class assignments will also be included as part of the participation grade. Students must come to class having read the assigned material, and they should be prepared to ask questions. Attendance of lecture (often Monday/Wednesday) and section (often Friday) are mandatory. Attendance will be recorded in class. Each student may miss one class day without penalty.

Cell phones are not permitted in class. Computers are permitted for word processing, but, if they become too distracting, students will be asked to put them away.

Homework Assignments

Written homework assignments will be distributed in class and on e-campus. Partial credit will be awarded. Final answers must be highlighted in the submitted homework. There will be nine homework assignments; grades will be calculated using the highest eight scores. This means that

each student may miss one homework assignment without penalty (or opt to complete all the homework assignments).

Exams

The midterm exams will be in-class, closed book exams. The content of the exams will be similar to the content of the homework assignments.

Group Modeling Paper

Students will write one group modeling paper, which is due by May 8th at 10:00 a.m. Students will have the opportunity to select their own groups; any student without a group will be assigned to an existing group. Each group should include 4 students (groups with 5 students will be permissible if necessary/desired). The paper should present a political question of interest to the students and develop a game theoretic model that explores and helps answer the question. The paper should be about 5 pages long, double-spaced (7 pages maximum, excluding figures and bibliography).

Course Outline

Reading should be completed before class on the day it is listed.

WEEK 1

Jan 17 – Introduction & Game Theory Overview

- Class Assessment
- Skim DSR Chapter 1 and 2, both editions

Jan 19 – Expected Utility Theory and Decision Theory

- Read DSR pages 263–266 in Edition 4 or pages 251–257 in Edition 3

WEEK 2

Jan 22 – Sequential Moves

- Read DSR Chapter 3, both editions
- *Distribute first homework assignment*

Jan 24 – Application – Initiatives

- Read Gerber, Elisabeth R; Lupia, Arthur and McCubbins, Mathew D. 2004 “When Does Government Limit the Impact of Voter Initiatives? The Politics of Implementation and Enforcement.” *The Journal of Politics*, 66(1), pp. 43-68. (Focus on the two-actor model.)
- RECOMMENDED Persson, Torsten; Roland, Gerard and Tabellini, Guido. 2000. “Comparative Politics and Public Finance.” *Journal of Political Economy*, 108(6), pp. 1121–61.
- RECOMMENDED Morrison, Kevin. 2007. “Natural Resources, Aid, and Democratization: A Best-Case Scenario.” *Public Choice*, 131(3/4), pp. 365-386.

Jan 26 – Section

- *First homework assignment due*

WEEK 3

Jan 29 – Simultaneous Moves – Discrete Strategies

– Read DSR Chapter 4, both editions

(in Edition 3, you may ignore the section “The Minimax Method for Zero-Sum Games”)

– *Distribute second homework assignment*

Jan 31 – Application – Median Voter Theorem

– Read DSR pages 613–617 in Edition 4 or pages 639–643 in Edition 3

– RECOMMENDED Guriev, Sergei and Sonin, Konstantin. 2009. “Dictators and oligarchs: A dynamic theory of contested property rights.” *Journal of Public Economics* 93:1-13.

Feb 2 – Section

– *Second homework assignment due*

WEEK 4

Feb 5 – 7 – Simultaneous Moves – Mixed Strategies

– Read DSR Chapter 7 in Edition 4 or Chapters 7 & 8 in Edition 3

(in Edition 3, you may ignore the sections “The Minimax Method” in Chapter 7 and “Mixing Among Any Number of Strategies: General Theory” in Chapter 8)

– *Distribute third homework assignment*

Feb 9 – Section

– *Third homework assignment due*

WEEK 5

Feb 12 – Recap Application – Brinkmanship

– Read DSR Chapter 14 in Edition 4 or Chapter 15 in Edition 3

Feb 14 – Review for Midterm I

Feb 16 – MIDTERM I

WEEK 6

Feb 19 – Simultaneous Moves – Continuous Strategies

– Read DSR Chapter 5, both editions

– *Distribute Fourth homework assignment*

Feb 21 – Application – War

– Read Fearon, James D. 1995. “Rationalist Explanations for War.” *International Organization* 49(3):379-414.

Feb 23 – Section

– *Fourth homework assignment due*

WEEK 7

February 26 – Combining Sequential and Simultaneous Moves

- Read DSR Chapter 6, both editions
- *Distribute Fifth homework assignment*

February 28 – Application – International Cooperation

- Read Morrow, James D. (1994) Modeling the Forms of International Cooperation: Distribution Versus Information” *International Organization*, 48(3), pp. 387-423.

March 2 – Section

- *Fifth homework assignment due*

WEEK 8

March 5 – Application – Strategic Moves

- Read DSR Chapter 9 in Edition 4 and Chapter 10 in Edition 3
- *Distribute Sixth homework assignment*

March 7 – Application – Democracy

- Read Weingast, Barry R. 1997. “The Political Foundations of Democracy and the Rule of Law.” *American Political Science Review* 91(2):245-63.

March 9 – Section

- *Sixth homework assignment due*

March 12–16 – Spring Break

WEEK 9

March 19 – Midterm II Review

March 21 – MIDTERM II

March 23 – Prisoners’ Dilemma and Repeated Games

- Read DSR Chapter 10 in Edition 4 and Chapter 11 in Edition 3
(in Edition 3, you may ignore the section “Solutions IV: Asymmetric Information”)
- *Distribute seventh homework assignment*

WEEK 10

March 26 – Application – Interethnic Cooperation

- Read Fearon, James D. and Laitin, David A. (1996) “Explaining Interethnic Cooperation.” *American Political Science Review* 90(4): 715-735.
- RECOMMENDED Axelrod, Robert. (1980) “More Effective Choice in the Prisoner’s Dilemma.” *Journal of Conflict Resolution* 24(3): 379-403.

March 28 – Section

- *Seventh homework assignment due*

March 30 – No Class

WEEK 11

April 2 – Collective Action

- Read DSR Chapter 11 in Edition 4 and Chapter 12 in Edition 3
- *Distribute eighth homework assignment*

April 4 – Application – Collective Action

- Read Urpelainen, Johannes. (2011) “Can Unilateral Leadership Promote International Environmental Cooperation?” *International Interactions*, 37(3): 320-339

April 6 – Section

- *Eighth homework assignment due*

WEEK 12

April 9 – 11 – Uncertainty and Information

- Read DSR Chapter 8 in Edition 4 and Chapter 9 in Edition 3

April 13 – Section

- Get into paper-writing groups

WEEK 13

April 16 – Application – War Chest

- Read Epstein, David and Zemsky, Peter. (1995) “Money Talks: Deterring Quality Challengers in Congressional Elections.” *The American Political Science Review* 89(2): 295-308.
- RECOMMENDED Spence, Michael. (1973) “Job Market Signaling.” *The Quarterly Journal of Economics* 87(3): 355-374.
- *Distribute ninth homework assignment*

April 18 – Application – Deterrence

- Pond, Amy and Carroll, Robert. (2016) “Costly Signaling in Autocracy.” *Working Paper*: 1-14.

April 20 – Section

- *Ninth homework assignment due*

WEEK 14

April 23 – Midterm III Review

April 25 – MIDTERM III

April 27

- Class Assessment
- Group Paper Presentations

WEEK 15

April 30 and May 1 (redefined day)
– Group Paper Presentations

FINALS WEEK

May 8 by 10:00 a.m. Group Paper Due
– Submit electronic copy on e-campus, Turnitin