

POLS 308: Game Theoretic Methods in Political Science

Spring 2017 Section 501, MonWedFri, 10:55–11:45 a.m., Allen 1015

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Fri 10:00-10:45 a.m. & 2:15-3:15 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 enhance our understanding of 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 should:

- 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 <http://disability.tamu.edu>.

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.

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:

- 15 percent – participation
- 20 percent – homework assignments
- 25 percent – first midterm exam
- 25 percent – second 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.

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 (Monday/Wednesday) and section (Friday) are mandatory. Attendance will be recorded in class.

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>.

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

Homework Assignments

Written homework assignments will be distributed in class and on e-campus. These will often be distributed on Monday and be due during the Friday section. Partial credit will be awarded.

Exams

The first and second 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 on May 8 during the final exam period, 8:00–10:00 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 will include 3 to 4 students. 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).

Grading Policy

Late assignments will lose one letter grade (i.e., 10 percent, which would change the grade from A to B) for each day they are late. The only exceptions will be for an excused absence, in which case students must make personal arrangements with us.

If a student feels as though a grade should be changed, after discussing the grade with Ms. Haglin, 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/>.

Course Outline

Jan 18 – Introduction

- Skim DSR Chapter 1, both editions

Jan 20 – Game Theory Overview

- Skim DSR Chapter 2, both editions

Jan 23 – Expected Utility Theory and Decision Theory

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

Jan 25 – Sequential Moves

- Read DSR Chapter 3, both editions

Jan 27 – Section

Jan 30 – Application – Brinkmanship

- Read DSR Chapter 14 in Edition 4 or Chapter 15 in Edition 3
- *Distribute first homework assignment*

Feb 1 – 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.

Feb 3 – Section

- *First homework assignment due*

Feb 6 and 8 – 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*

Feb 10 – Section

- *Second homework assignment due*

Feb 13 and 15 – 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 17 – Section

- *Third homework assignment due*

Feb 20 – Continuous Strategies

- Read DSR Chapter 5, both editions
- *Distribute fourth homework assignment*

February 22 – Application – War

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

Feb 24 – Section

- *Fourth homework assignment due*

February 27 – Application – Median Voter Theorem

- Read DSR pages 613–619 in Edition 4 or pages 639–645 in Edition 3

March 1 – Midterm Review

March 3 – Midterm I

March 6 – Combining Sequential and Simultaneous Moves

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

March 8 – 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 10 – Section

- *Fifth homework assignment due*

March 13–17 – Spring Break

March 20 – Application – Strategic Moves

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

March 22 – 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 24 – Section

– *Sixth homework assignment due*

March 27 – 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*

March 29 – 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 31 – Section

– *Seventh homework assignment due*

April 3 – Collective Action

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

April 5 – Uncertainty and Information

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

April 7 – Section

– *Sign up for paper writing groups*

April 10 – Application – Education

– Read Spence, Michael. (1973) “Job Market Signaling.” *The Quarterly Journal of Economics* 87(3): 355-374.

April 12 – Application – Resolve

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

April 14 – Reading Day/No Class

April 17 – Voting Paradoxes (Social Choice Theory)

– Read DSR Chapter 15 in Edition 4 and Chapter 16 in Edition 3

April 19

- Midterm Review

April 21 – Midterm II

April 24

- Meet with paper-writing group

April 26, 28 and May 1

- Group Paper Presentations

May 8 – 8:00–10:00 a.m. Group Paper Due During Final Exam Period

- Submit printed copy to me
- Submit electronic copy on e-campus, Turnitin