

POLS 4070
MWF: 12:40-1:30 p.m.
Baldwin 102
Spring 2023

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Game Theory

Game Theory is the study of strategy. Our emphasis will be on how models of strategy apply to common problems in politics. This will help students think about politics analytically, objectively, and deeply. No prior knowledge of the subject is needed, but I will assume that students have sufficient aptitude for high school algebra and abstract reasoning to move at a fairly quick pace.

The course begins with a brief introduction to discrete games (a theory of strategic choice applied to games with discrete choices). We illustrate the theory using several examples, then apply it to problems in international diplomacy and voter turnout. We will then examine repeated games and their effects on cooperation. The next section of the course introduces students to spatial voting models and how they help us understand things like behavior of the Supreme Court and passage of the Powell amendment. We will further study the anomalies of multiple dimensional spatial voting models, such as McKelvey's Chaos Theorem (a wild but fascinating discovery) and apply these models to the Russian Duma, stopping rules in committees, and the alleged vote trade in the election of 1824. In the end, students will understand some of the most advance theories of strategy as it is applied to political science. They will also gain the tools needed to approach problems objectively and "scientifically."

Polling

As a bit of an experiment, I will try to use Google Forms for in-class polling. That means you will login to a form to pick an answer. I will not know who answered the question nor get a record of individual responses. However, Google Forms will show us how the group responded in real time. The Google Form login is <https://forms.gle/M2sePUH1oecuCyTR7>. Please keep it in a handy location.

Mental Health and Wellness Resources

If you or someone you know needs assistance, you are encouraged to contact Student Care and Outreach in the Division of Student Affairs at 706-542-7774 or visit <https://sco.uga.edu>. They will help you navigate any difficult circumstances you may be facing by connecting you with the appropriate resources or services.

UGA has several resources for a student seeking [mental health services](#) or [crisis support](#). If you need help managing stress anxiety, relationships, etc., please visit [BeWellUGA](#) for a list of FREE workshops, classes, mentoring, and health coaching led by licensed clinicians and health educators in the University Health Center. Additional resources can be accessed through the UGA App.

Grading

Your grade will consist of your perusall grade, four homework assignments, a mid-term exam, and a final exam. I expect students to attend all classes and assume that you are mature enough to understand what happens when you miss a class. Ask another student for notes if you miss a class. I will not give out notes nor put them on the webinator. However, all assignments will be on ELC.

Although I generally think of 90-100 as an A, 80-90 as a B, etc., but since the university uses a plus minus system I use the following scale for overall grades:

	A	92 or above	A-	90-91.99	
B+	88-89.99	B	82-87.99	B-	80-81.99
C+	78-79.99	C	72-77.99	C-	70-71.99
D+	68-69.99	D	62-67.99	D-	60-61.99
F	59.99 or below				

Perusall and Readings

All required reading assignments are posted on [Perusall](#) – a social e-reader which encourages you to discuss the readings with other students. Perusall can be free, but we will be including the Dixit, Skeath, and McAdams, *Games of Strategy* textbook, which is not free. **Perusall will charge you \$95 for perpetual online access to the book or \$75.33 for 180 day online access.** The paperback version is \$132 so think of this as a savings. Each reading in Perusall is considered an assignment that you read, question, and comment on. 10% of your grade will be based on your Perusall discussions. Students often ask, “how does Perusall grade me?” The answer is it grades reading and discussion. Focus on “discussion,” not posting. Pay attention to its nudges to get full points. Note, each assignment (a.k.a., each reading) should be completed before the relevant class. See the course overview in ELC for details on how to sign up for Perusall.

Home Work Assignments

Each home work assignment is worth 10% of your grade. These assignment will help you practice the analytic skills taught in the course and help you prepare for the exams. Assignments will be posted on ELC roughly one week before they are due.

Exams

The preponderance of your grade comes from a mid-term exam and a final exam. Both may contain multiple choice, fill in the blank, problem solving, and essay type questions worth 25% of your grade each. The idea is to give you multiple types of questions to evaluate your understanding of the material, not your aptitude for a particular type of test question. A review sheet will be posted for each exam on ELC. The final is *not* cumulative. Note: up to 1/5 of each exam may come from the readings not covered in lecture, so Perusall should pay off in the end.

Extra Credit

In a typical semester I assign in-class games for additional points. These games are designed to help students think about the differences between human behavior and game theoretic behavior. There are no make-ups for these demonstrations, so please attend regularly.

Make-ups

Homework assignments require a fair amount of analysis time. Please plan ahead to avoid turning them in late. **Late assignments will be lowered one letter grade for every day they are late and will not be accepted after the next class begins.** This allows folks to get their homeworks back in a timely fashion. If an assignment is late, it would be a good idea to upload it to ELC then email me so I know it is posted. Grades are lowered for every *day* they are late, not every class day they are late.

If you miss the midterm for a good reason, such as coming down with COVID, and your excuse is *pre-approved* by me, you will be allowed to complete a make-up exam. The make-up for the midterm will be at 4 pm on Monday, March 13, meeting in Baldwin 408. There is no make-up exam for the final. Make-up exams are more difficult than regular exams and should be avoided.

	<u>Date</u>	<u>Percent of Grade</u>
PERUSALL (reading and discussions)	daily	10%
HOMEWORK 1 (two person games)	Feb 6	10%
HOMEWORK 2 (step-good games)	Mar 1	10%
MIDTERM EXAM	Mar 3	25%
HOMEWORK 3 (repeated games)	Mar 27	10%
HOMEWORK 4 (spatial voting)	Apr 28	10%
FINAL EXAM	May 5	25%

Student Honesty

All academic work must meet the standards contained in “A Culture of Honesty.” Students are responsible for informing themselves about these standards before performing academic work. The penalties for academic dishonesty are severe and ignorance is not an acceptable defense. Also note that the course syllabus is a general plan for the course and that deviations announced to the class by the instructor may be necessary.

Required Texts

All readings will be made available through Perusall. The best way to learn this type of material is to solve problems on your own. The Dixit, Skeath, and McAdams text (on Perusall) is full of questions you can work through. The “solved” questions have answers available to students. I recommend you work through a number of them each week. It will help. Most of the other readings are shorter but analytical, which may require more than one read to be fully comprehended. Remember, if you work hard and complete all the readings, this should be a very rewarding course.

If you want a hard copy of the Dixit, Skeath, and McAdams textbook, it is available at the bookstore.

Dixit, Avinash, Susan Skeath, and David McAdams (2021) *Games of Strategy*, 5th edition. W. W. Norton & Company – earlier editions acceptable though chapter numbers may vary.

Disclaimer

The course syllabus is a general plan for the course; deviations announced to the class by the instructor may be necessary.

Schedule of Topics and Readings

I. DISCRETE GAMES

Jan 9-11 **Introduction & Foundations**

Two-Person, Sequential Games

Jan 13 *Dixit, Skeath, McAdams, Ch 2, “How to Think about Strategic Games.”

Jan 16 *No Class. MLK Day!*

Jan 18-23 *Dixit, Skeath, McAdams, Ch 3, “Games with Sequential Moves.”

Application: Marbury v. Madison

Jan 25 *Clinton, “Game Theory, Legal History, and the Origins of Judicial Review”
American Journal of Political Science.

Two-Person, Simultaneous Games

Jan 27 *Dixit, Skeath, McAdams, Ch 4, “Simultaneous-Move Games: Discrete
- Feb 3 Strategies.”

Application: Government Reform

Feb 6 *Geddes, Barbara. 1991. “A game theoretic model of reform in Latin American
democracies.” *American Political Science Review.*

Mixed Strategies

Feb 8 *Chiappori, et al. “Testing Mixed-Strategy Equilibria When Players are
Heterogenous: The Case of Penalty Kicks in Soccer” *American Economic
Review.*

Feb 10 *Dixit, Skeath, McAdams, Ch 7, “Simultaneous-Move Games: Mixed Strategies.”

Incomplete Information Games

- Feb 13-15 *Dixit, Skeath, McAdams, Ch 9, “Uncertainty and Information.”
- Feb 17-20 *Dixit, Skeath, McAdams, Ch 13, “Brinkmanship: the Cuban Missile Crisis.”

Step-Good Games and Voter Turnout

- Feb 22-24 *Cain and Dougherty, “Suppressing Shays’ Rebellion.” *Journal of Theoretical Politics*.

Application: The Political Machines

- Feb 27 *Reichley, Ch 7 & 10, *The Life of the Parties*.
*Jac Heckelman, “The Effect of the Secret Ballot on Voter Turnout Rates,” *Public Choice*.

- Mar 1 *Catch-Up and Review.

Mar 3 MIDTERM EXAM

- Mar 6-10 *No class. Spring Break.*

Repeated Games

- Mar 13 *Dixit, Skeath, McAdams, Ch 10, “The Prisoners’ Dilemma and Repeated Games.”

- Mar 15 [Discount Factors](#) (video) – watch through Perusall.

- Mar 17 *No class. Public Choice Meetings.*

- Mar 20 [Geometric Series and Infinite Payoffs](#) (video) – watch through Perusall.

- Mar 22-27 *Joel Watson, 1997, Ch 22, “Repeated Games and Reputation,” *Strategy: An Introduction to Game Theory*.

II. SPATIAL VOTING MODELS

The Median Voter Theorem

- Mar 29-31 *Hinich and Munger, Ch 2, “The Spatial Model of Downs and Black,” *Analytical Politics*.
*Dixit, Skeath, McAdams, Ch 16, “Strategy and Voting,” pp. 652-657 only.

Application: The Median Justice

- Apr 3 *Bonneau et al. 2007. “Agenda Control, the Median Justice, and the Majority Opinion on the U.S. Supreme Court,” *AJPS*, 51(4): 890-905.

- Multidimensional Spatial Voting Models**
 Apr 5-12 *Hinich and Munger, Ch 3, “Two Dimensions: Elusive Equilibrium,” *Analytical Politics*.
- Application: The Powell Amendment**
 Apr 14 *Stewart, *Analyzing Congress*, Chapter 1 (pp. 33-35).
- The Core**
 Apr 17-19 *Ordeshook. 1986. *Game Theory and Political Theory*, sections 8.1 & 8.2 – focus on calculating the core in a spatial voting game. Skip alpha and beta core.
- Application: Stopping Rules in Committees**
 Apr 21-24 *Dougherty et al., 2018. “Stopping Rules for Majority Voting: A Public Choice Experiment,” *Journal of Economic Behavior and Organization*.
- Application: Roger Sherman at the Constitutional Convention**
 Apr 26 *Dougherty and Heckelman, “A Pivotal Voter from a Pivotal State,” *American Political Science Review*.
- Application: Vote Trading in the Election of 1824**
 Apr 28 *Jeffery Jenkins and Brian Sala, “The Spatial Theory of Voting and the Presidential Election of 1824” *American Journal of Political Science*.
- May 1 *Catch-Up & Review
- May 5 FINAL EXAM (online 12:00-2:00 pm)**