

PSCI 3225-001 – Strategy and Politics
Spring, 2023
Monday, Wednesday, Friday: 2:30-3:20
HUMN 250

Contact Information

Steven Beard, (Steven.Beard@Colorado.edu)

Ketchum 212

Office Hours: Tuesday, Thursday 3:30-5:00

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Office Hours: Wednesday 12:15-2:15

Class Description

This course teaches a specific analytical technique known either as game theory or formal modeling, that helps us understand how individuals and groups act strategically. In many areas of politics, people and groups make decisions based on how they expect other people or groups to react. For instance, politicians make certain campaign positions based on how they think voters will respond, and craft legislation based on how they think other legislators will vote. Internationally, countries make many decisions, such as whether to go to war or negotiate, based on what they think other countries will do. Game theory helps us understand these strategic interactions, and even can help us make predictions about what will happen.

Course Learning Objectives

By the end of this course, you should:

- Know what game theory is and the various types of game theoretic models.
- Be able to create and solve game theory models from written descriptions.
- Be able to apply game theory to help understand real world situations by constructing and solving an appropriate game theoretic model for the situation.
- Have some understanding of the strengths and weaknesses of game theory as an analytic method.

Texts

All required reading will be placed on Canvas.

In addition, it is highly recommended that you read the specified chapters from the course textbook for a different perspective:

- Morrow, James. 1994. *Game Theory for Political Scientists*. Princeton: Princeton University Press.

You should be able to access this book for free through the university library. Directions will be provided on Canvas.

A Note on Math

Though the advanced study of game theory does require some knowledge of higher math, in this introductory class we will mostly be using fairly basic math, and most of what you will need I will teach as we go. The class will require deductive reasoning, but not advanced math. That said, if you are not comfortable with high-school level algebra (such as how to solve for x given a simple equation) you may struggle in this class. If you have concerns, come meet with me and we can talk about them.

Course Requirements and grades

Your grade will be determined by the following assignments:

- 6 problem sets (5 pts each)
- 3 application assignments (10 pts each)
- Midterm and Final (20 pts each)

You must turn in a paper copy of each assignment. You may also be required to upload an electronic copy of the application assignments and exams to Canvas.

Problem sets (5 pts each)

There will be a problem set every couple weeks, allowing you to practice solving the models and develop your understanding of these techniques. These problem sets will be due on February 10, February 24, March 10, March 22, April 14, and April 28.

Application assignments (10 pts each)

You will be required to write three short assignments applying the course material to a real world situation of your choice. In each assignment, you will develop a model and discuss how it helps you understand the real world situation. Each of these assignments will have a specific format, which will be provided separately. These will be due on March 3, April 7, and May 3.

Take-home Midterm and Final (20 pts each)

The midterm will be due on March 17 and the final will be due on May 7. I will post the midterm a couple days before the due date. Both exams will be open book and open note. However, you are not permitted to discuss the exam with anyone else. I will be available by e-mail for clarification questions only.

Schedule

- Week 1
 - Readings
 - Required - Beard and Strayhorn. 2018. “When Will States Strike First?”
 - Recommended - Morrow, Ch. 1
 - January 18
 - Introduction
 - January 20
 - Purpose of modeling
- Week 2
 - Readings
 - Recommended - Morrow, Ch. 2
 - January 23

- Rationality
 - January 25
 - Expected utility
 - January 27
 - Continued
- Week 3
 - Readings
 - Recommended - Morrow, pgs 104-111 (in ch. 4)
 - January 30
 - Median voter theorem
 - February 1
 - Agenda setting and the median voter theorem
 - February 3
 - Continued
- Week 4
 - Readings
 - Recommended – Morrow pgs 65-71 (in ch. 3)
 - Recommended – Morrow pgs. 74-104 (in ch. 4)
 - February 6
 - Introduction to simultaneous games
 - February 8
 - Dominant and dominated strategies
 - February 10
 - **Problem set 1 due**
 - Nash equilibria
- Week 5
 - February 13
 - Mixed strategy Nash equilibria
 - February 15
 - Multiple equilibria
 - February 17
 - Common 2x2 games
- Week 6
 - Readings
 - Recommended – Morrow Ch. 3
 - Recommended – Morrow Ch. 5
 - February 20
 - Extensive form games
 - February 22
 - Converting to strategic form, Nash equilibria
 - February 24
 - **Problem set 2 due**
 - Guess and check method without converting
- Week 7
 - February 27
 - Subgame perfect Nash equilibrium, backwards induction

- March 1
 - Continued
 - March 3
 - **Application assignment 1 due**
 - Risk and nature nodes
- Week 8
 - Readings
 - Recommended – Morrow, pgs 145-156 (in ch. 5)
 - March 6
 - Basic bargaining games
 - March 8
 - Bargaining with outside options
 - March 10
 - **Problem set 3 due**
 - Bargaining with counteroffers
- Week 9
 - Readings
 - Recommended – Morrow, Ch. 9
 - March 13
 - Review for midterm
 - March 15
 - Introduction to repeated games
 - March 17
 - **Midterm due**
 - Solving finitely repeated games
- Week 10
 - March 20
 - Infinitely repeated games
 - March 22
 - **Problem set 4 due**
 - Continued
 - March 24
 - Continued
- Spring Break (no class)
 - March 27-31
- Week 11
 - Readings
 - Recommended – Morrow, ch. 6
 - April 3
 - Risk and uncertainty review
 - April 5
 - Modeling uncertainty
 - April 7
 - **Application assignment 2 due**
 - Private information / screening games
- Week 12

- Readings
 - Recommended – Morrow, ch. 8
- April 10
 - Private information / screening games (continued)
- April 12
 - Bayes' rule
- April 14
 - **Problem set 5 due**
- Week 13
 - April 17
 - Signaling games
 - April 19
 - Continued
 - April 21
 - Continued
- Week 14
 - Readings
 - Required – Clark and Primo, 2007, “Modernizing Political Science: A Model Based Approach.”
 - Required – Beard and Strayhorn 2018, “When Will States Strike First.”
 - Recommended – Morrow Ch. 10
 - Others TBA
 - April 24
 - Game theory in political science
 - April 26
 - Example 1
 - April 28
 - **Problem set 6 due**
 - Example 2
- Week 15
 - May 1
 - Example 3
 - May 3
 - **Application assignment 3 due**
 - Review for final
 - May 5 – Reading day, no class
- Final
 - May 7 (1:30-4:00)
 - **Final due**

Policies

Zoom recording agreement

To make the course accessible to students who may have to miss class, I intend to record all class sessions and post the recordings on Canvas. By attending class, you consent to the session being

recorded. By maintaining enrollment in this class, you agree not to share the recordings with anyone outside of class.

Late policy

All assignments are due at the beginning of class. Assignments turned in after this point will receive at single 15% late penalty. I am relatively willing to grant extensions as needed, provided you contact me.

Communication

I will use both e-mail and Canvas to communicate important announcements. You are expected to check both regularly. The best way to contact me is through e-mail. For administrative questions (e.g. needing extensions), please e-mail both me and the TA so that we are all on the same page. I will do my best to respond reasonably promptly, but please be patient. For more complex issues or substantive questions I will probably suggest setting up an appointment to meet on zoom office hours.

In addition, I will create a discussion board for each week for you to ask substantive questions about the assignment. I would encourage you to ask any substantive questions we don't get to in class on these discussion boards so that others may benefit from your question. If you do know the answer to someone else's question, I would encourage you to go ahead and answer.

Grading Grievances

Objectively assigning grades is a tough business, and mistakes do happen. I am happy to go over the assignment and explain why I assigned the given grade during office hours. If you wish to appeal a grade, you must submit in writing an explanation detailing where (i.e. what question) and why you think that you received insufficient credit for your answer. Be forewarned: I will not accept explanations arguing that because you worked really hard on a paper, your overall grade was just not high enough. You need to be able to show specific grading errors on my part.

Classroom Behavior

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the classroom behavior policy, the Student Code of Conduct, and the Office of Institutional Equity and Compliance.

Requirements for Covid-19

As a matter of public health and safety, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements and all public health orders in place to reduce the risk of spreading infectious disease. CU Boulder currently requires COVID-19 vaccination and boosters for all faculty, staff and students. Students, faculty and staff must upload proof of vaccination and boosters or file for an exemption based on medical, ethical or moral grounds through the MyCUHealth portal.

The CU Boulder campus is currently mask-optional. However, if public health conditions change and masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policy on classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these safety measures, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus.

If you feel ill and think you might have COVID-19, if you have tested positive for COVID-19, or if you are unvaccinated or partially vaccinated and have been in close contact with someone who has COVID-19, you should stay home and follow the further guidance of the Public Health Office (contacttracing@colorado.edu). If you are fully vaccinated and have been in close contact with someone who has COVID-19, you do not need to stay home; rather, you should self-monitor for symptoms and follow the further guidance of the Public Health Office (contacttracing@colorado.edu).

Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the Disability Services website. Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see Temporary Medical Conditions on the Disability Services website.

Preferred Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

If you would like me to use a name or pronoun other than that listed, please let me know.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the Honor Code. Violations of the Honor Code may include, but are not limited to: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution (honor@colorado.edu); 303-492-5550). Students found responsible for violating the Honor Code will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found on the Honor Code website.

My policy is that I will report all suspected violations to the honor code office. If the honor code office finds that you did violate the honor code, you will receive a zero on the affected assignment. Subsequent violations will result in automatically failing the course.

Sexual Misconduct, Discrimination, Harassment, and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, protected-class discrimination and harassment, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and support resources can be found on the OIEC website.

Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of any issues related to these policies regardless of when or where they occurred to ensure that individuals impacted receive information about their rights, support resources, and resolution options. To learn more about reporting and support options for a variety of concerns, visit Don't Ignore It.

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class, if religious observances affect any graded assignment, let me know so we can work out alternate arrangements. See the campus policy regarding religious observances for full details.