

# Intro to Formal Political Analysis, GOV 385N

Spring 2023

**Instructor:** JBrandon Duck-Mayr

**Email:** Use Canvas to email

**Office:** MEZ 3.128

**Office Hours:** M 1–4 PM or appointment

**Classroom:** BAT 5.102

**Meeting times:** W 3–6 p.m.

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## Course Description

This course provides an introduction to game theory and its application to political science. It presupposes no technical background. We will cover basic game theory models and solution concepts, as well as how these methods are used specifically in political science, looking at applications to electoral competition, legislative bargaining, delegation to bureaucracy, and more.

## Course Objectives

When you complete the course, you will

- Understand the value of formal theory for social scientific research
- Be able to solve basic game theoretic models
- Be a competent consumer of political science research that uses game theoretic models
- Have experience with specific applications of game theory to political science research

## Required Readings

The text for the course is *An Introduction to Game Theory* by Martin J. Osborne. Any printing of the text is okay since Osborne keeps a list of all corrections and updates made since the first printing here: <https://www.economics.utoronto.ca/osborne/igt/corrections.html>.

You can also use any other text you prefer, since most game theory textbooks have pretty much the same material, just presented differently. I prefer Osborne for this introductory course for its accessibility, but I also like *Game Theory: An Introduction* by Steven Tadelis. Any other required or recommended short readings will be available on Canvas.

## Course Assignments

There will be a midterm exam, a final exam, and weekly problem sets.

### Problem Sets

Every week on Monday, the week's problem set will become available on Canvas. We then meet on Wednesday to go over skills and material relevant to that problem set, and I have office hours on the following Monday if you have additional questions. The problem set will be due the next Wednesday by the beginning of class (that is, you have roughly 9 days to complete the problem set).

Students are allowed, and honestly encouraged, to work together on the problem sets, but each student must write up and turn in solutions in their own words. I recommend using R Markdown or LaTeX to typeset your problem set solutions, but I do not care what software you use as long as it produces a PDF where any math that's included is legible.

### Exams

The midterm exam will cover games of complete information. The final exam covers all the material presented after the midterm (games of incomplete information and repeated games). The final is not explicitly cumulative; that is, it will not directly ask questions about the material presented before the midterm, though it may implicitly rely on skills developed before the midterm.

Exams will be made available on Canvas at 12:01 a.m. the day of the exam and must be turned in by 11:59 p.m. the day of the exam. So, you can take more or less as much time as you need within that day, you can take breaks if you need to, you can start/complete it as early or as late as you like, as long as it's turned in by 11:59 p.m. As with problem sets, I do not care what software you use to produce your PDF of answers as long as I can read it. **Unlike problem sets, collaboration with other students is forbidden**, though you are free to use your notes and your textbook.

## Grading

Course grades are determined using a weighted average of the following components:

- 50%: Problem sets
- 25%: Midterm
- 25%: Final exam

I may choose to curve exam grades; if so, the curve will satisfy the following properties:

- No student will have a lower score after the curve than they had before it
- The rank ordering of individual grades will be preserved
- Higher scoring students will not be helped more by the curve than lower scoring students

The lowest two problem set grades will be dropped.

## Course Policies

### Make-Up Exam Policy

The exam dates are listed below in the course schedule. If you know of a compelling reason that you cannot be present during a scheduled exam, please contact me via email at least one week ahead of time to discuss scheduling a makeup exam.

If you miss an exam without previously scheduling a makeup exam, you will likely not be permitted to take the exam. Only in extreme circumstances will makeup exams be permitted when not scheduled ahead of time.

### Regrading Policy

If you believe I have committed an error in grading your exam or other assignment, please submit a regrade request to me in writing via email outlining the specific errors you have discovered and explaining why you believe them to be grading errors. This request must be submitted within one week of receiving your graded assignment.

## Course Schedule

### 0. Introduction

- Why game theory, the nature of “utility” and “rationality”
- Week One: Read Chapter 1 of Osborne before class
- No problem set for week one

### 1. Games of complete information

#### A. Games and Nash Equilibrium

- Weeks Two and Three: Strategic games and Nash equilibria in pure strategies, Osborne Chapter 2
- Week Four: Mixed strategy Nash equilibria, Osborne Chapter 4

#### B. Sequential games and Subgame Perfect Nash Equilibrium

- Week Five through Seven: Sequential games, Osborne Chapter 5

#### C. **Midterm Exam** on Week Eight (March 1)

### 2. Games of incomplete information and repeated games

#### A. Repeated games

- Week Nine: Repeated games, Osborne Chapter 14

#### B. Bayesian games and Bayesian Nash Equilibrium

- Weeks Ten and Eleven: Bayesian games, Osborne Chapter 9

#### C. Sequential games with incomplete information and Perfect Bayesian Equilibrium

- Weeks Twelve through Fourteen: Sequential games with incomplete information, Osborne Chapter 10

#### D. **Final Exam** (Date TBD, sometime between April 27 and May 1)

## University Policies and Resources

### Academic Integrity Expectations

Students who violate University rules on academic dishonesty are subject to disciplinary penalties, including the possibility of failure in the course and/or dismissal from the University. Since such dishonesty harms the individual, all students, and the integrity of the University, policies on academic dishonesty will be strictly enforced. For further information, please visit the Student Conduct and Academic Integrity website at: <http://deanofstudents.utexas.edu/conduct>.

Plagiarism is taken very seriously at UT and is subject to academic disciplinary action, including failure of the course. To learn more about what plagiarism is and how to avoid it, see the [Avoiding Plagiarism tutorial](#) developed by the UT Libraries in partnership with the Writing Flag program and Student Judicial Services.

### Getting Help with Technology

Students needing help with technology in this course should contact the [ITS Service Desk](#).

### Basic Needs Security

Any student who faces challenges securing their food or housing and believes this may affect their performance in the course is urged to contact the Dean of Students for support. UT maintains the [UT Outpost](#), which is a free on-campus food pantry and career closet. Furthermore, if you are comfortable notifying me, please do so, as I may have additional resources I can share.

### Sharing of Course Materials is Prohibited

No materials used in this class, including, but not limited to, lecture hand-outs, videos, assessments (quizzes, exams, papers, projects, homework assignments), in-class materials, review sheets, and additional problem sets, may be shared online or with anyone outside of the class without explicit, written permission of the instructor. Unauthorized sharing of materials promotes cheating. The University is well aware of the sites used for sharing materials, and any materials found online that are associated with you, or any suspected unauthorized sharing of materials, will be reported to Student Conduct and Academic Integrity in the Office of the Dean of Students. These reports can result in sanctions, including failure of the course.

## Religious Holy Days

By [UT Austin policy](#), you must notify me of your pending absence as far in advance as possible of the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, you will be given an opportunity to complete the missed work within a reasonable time after the absence.

## Names and Pronouns

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender identity & expression, and nationalities. Class rosters are provided to the instructor with the student's legal name, unless they have added a "chosen name" with the registrar's office, which you can do so [here](#). I will gladly honor your request to address you by a name that is different from what appears on the official roster, and by the pronouns you use (she/he/they/ze, etc). Please advise me of any changes early in the semester so that I may make appropriate updates to my records. For instructions on how to add your pronouns to Canvas, visit [this site](#). More resources available on the Gender and Sexuality Center's website, <http://www.utgsc.org>.

## Disability & Access

The university is committed to creating an accessible and inclusive learning environment consistent with university policy and federal and state law. Please let me know if you experience any barriers to learning so I can work with you to ensure you have equal opportunity to participate fully in this course. If you are a student with a disability, or think you may have a disability, and need accommodations please contact Disability & Access (D&A). Please refer to the D&A website for more information: <http://diversity.utexas.edu/disability/>. If you are already registered with D&A, please deliver your Accommodation Letter to me as early as possible in the semester so we can discuss your approved accommodations and needs in this course.

## Counseling and Mental Health Center (CMHC)

All of us benefit from support during times of struggle. Know you are not alone. If you or anyone you know is experiencing symptoms of stress, anxiety, depression, academic concerns, loneliness, difficulty sleeping, or any other concern impacting your wellbeing, you are strongly encouraged to connect with CMHC. The Counseling and Mental Health Center provides a wide variety of mental health services to all UT students including crisis services, counseling services with immediate support and well-being resources. Additionally, CARE Counselors are located

within the academic schools and colleges. These counselors get to know the concerns that are unique to their college's students. For more information on CMHC, visit <https://cmhc.utexas.edu> or call 512-471-3515.

## **University Health Services (UHS)**

Your physical health and wellness are a priority. University Health Services is an on-campus high-quality medical facility providing care to all UT students. Services offered by UHS include general medicine, urgent care, a 24/7 nurse advice line, gynecology, sports medicine, physical therapy, lab and radiology services, COVID-19 testing and vaccinations and much more. For additional information, visit <https://healthyhorns.utexas.edu> or call 512-471-4955.

## **Sanger Learning Center**

Did you know that more than one-third of UT undergraduate students use the Sanger Learning Center each year to improve their academic performance? All students are welcome to take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. For more information, please visit <https://ugs.utexas.edu/slc> or call 512-471-3614 (JES A332).

## **Student Emergency Services (SES)**

Student Emergency Services in the Office of the Dean of Students helps students and their families during difficult or emergency situations. Assistance includes outreach, advocacy, intervention, support, and referrals to relevant campus and community resources. If you need to be absent from class due to a family emergency, medical or mental health concern, or academic difficulty due to crisis or an emergency situation, you can work with Student Emergency Services. SES will document your situation and notify your professors. Additional information is available at <https://deanofstudents.utexas.edu/emergency/> or by calling 512-471-5017.

## **BeVocal**

BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus, go to: <https://wellnessnetwork.utexas.edu/BeVocal>.

## Wellbeing Resources

You can find resources for self-care at [Longhorn Wellness Center](#). See also [Virtual Mindfulness and Stress Reduction Activities](#).

## Other resources

- Undergraduate Writing Center: <http://uwc.utexas.edu/>
- UT Libraries: <http://www.lib.utexas.edu/>

## Important Safety Information

If you have concerns about the safety or behavior of fellow students, TAs or professors, contact BCCAL (the Behavior Concerns and COVID-19 Advice Line) at <https://safety.utexas.edu/behavior-concerns-advice-line> or by calling 512-232-5050. Confidentiality will be maintained as much as possible, however the university may be required to release some information to appropriate parties.

## Classroom safety and COVID-19

- For any illness, students should stay home if they are sick or contagious, not only to stop the spread, but also to promote their personal wellness.
- The university will continue to provide rapid antigen self-test kits at distribution sites throughout campus. Students can receive up to four tests at a time.
- The university will provide symptomatic COVID-19 testing on campus for all students, faculty and staff.
- UHS maintains up-to-date resources on COVID, which can be found here:
  - COVID-19 Information and Resources
  - COVID-19 Exposure Action Chart

## Carrying of Handguns on Campus

Texas' Open Carry law expressly prohibits a licensed to carry (LTC) holder from carrying a handgun openly on the campus of an institution of higher education such as UT Austin. Students in this class should be aware of the following university policies:

- Students in this class who hold a license to carry are asked to review the university policy regarding campus carry.



- Individuals who hold a license to carry are eligible to carry a concealed handgun on campus, including in most outdoor areas, buildings and spaces that are accessible to the public, and in classrooms.
- It is the responsibility of concealed-carry license holders to carry their handguns on or about their person at all times while on campus. Open carry is NOT permitted, meaning that a license holder may not carry a partially or wholly visible handgun on campus premises or on any university driveway, street, sidewalk or walkway, parking lot, parking garage, or other parking area.
- Per my right, I prohibit carrying of handguns in my personal office. Note that this information will also be conveyed to all students verbally during the first week of class. This written notice is intended to reinforce the verbal notification, and is not a “legally effective” means of notification in its own right.

### **Title IX Disclosure**

Beginning January 1, 2020, Texas Education Code, Section 51.252 (formerly known as Senate Bill 212) requires all employees of Texas universities, including faculty, to report any information to the Title IX Office regarding sexual harassment, sexual assault, dating violence and stalking that is disclosed to them. Texas law requires that all employees who witness or receive any information of this type (including, but not limited to, writing assignments, class discussions, or one-on-one conversations, or third party reports) must be report it. Before talking with me, or with any faculty or staff member about a Title IX related incident, please remember that I will be required to report this information to the Title IX Coordinator. If you would like to speak with someone who can provide support or remedies without making an official report to the university, please email [supportandresources@austin.utexas.edu](mailto:supportandresources@austin.utexas.edu). For more information about reporting options and resources, visit <http://www.titleix.utexas.edu/>, contact the Title IX Office via email at [titleix@austin.utexas.edu](mailto:titleix@austin.utexas.edu), or call 512-471-0419.

Although graduate teaching and research assistants are not subject to Texas Education Code, Section 51.252, they are still mandatory reporters under Federal Title IX laws and are required to report a wide range of behaviors we refer to as sexual misconduct, including the types of sexual misconduct covered under Texas Education Code, Section 51.252. The Title IX office has developed supportive ways to respond to a survivor and compiled campus resources to support all impacted by a Title IX incident.

### **Campus Safety**

The following are recommendations regarding emergency evacuation from [the Office of Campus Safety and Security](#), 512-471-5767,

- Students should sign up for Campus Emergency Text Alerts at the page linked above.
- Occupants of buildings on The University of Texas at Austin campus must evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.
- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- For more information, please visit [emergency preparedness](#).