

## ECO 395 K 1, GAME THEORY

UNIQUE NUMBERS 34773, 34775

Spring 2023

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**CLASS MEETS:** T, Th 9:30 a.m. – 11:00 a.m. , [BRB 1.118](#)

**Instructor:** Dr. Svetlana Boyarchenko

Office: BRB 2.160

Pronouns: she/her/hers      Office hours: Th 3:00 p.m. – 5:00 p.m. via Zoom

Join URL: <https://utexas.zoom.us/j/96071218107>

Email: [sboyarch@utexas.edu](mailto:sboyarch@utexas.edu)

Phone: 512-475-8521

**REVIEW SESSIONS:** F 9:00 a.m. – 10:00 a.m., [BRB 2.136](#)

**TA:** Edson Wu

Pronouns: he/him/his      Office hours: Th 5:00 p.m. – 6:30 p.m. via Zoom

Join URL: <https://utexas.zoom.us/j/98694498340>

Email: [edsonwu@utexas.edu](mailto:edsonwu@utexas.edu)

### Course Description

#### UNIVERSITY CATALOG COURSE DESCRIPTION

Restricted to Option III economics master's degree students. Restricted to master's students in the economics Option III program.

Introduction to game theoretic concepts and analyses and their application to study strategic interactions between individuals, firms, and other economic agents.

#### PRE-REQUISITES FOR THE COURSE

Graduate standing.

#### LEARNING OUTCOMES

1. Students will learn how to describe a game in its normal and extensive forms.
2. Students will learn various equilibrium concepts such as, e.g., Nash equilibrium, subgame perfect Nash equilibrium, Bayesian Nash equilibrium.
3. Students will be able to find an equilibrium in static and dynamic games with complete, incomplete, or imperfect information.

### How Will You Learn?

#### STATEMENT OF LEARNING SUCCESS

Your success in this class is important to me. We all learn differently, and everyone struggles sometimes. You are not, ever, the only one having difficulty! If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible.

Together we will develop strategies to meet both your needs and the requirements of the course. I also encourage you to reach out to the student resources available through UT and I am happy to connect you with a person or Center if you would like.

### TEACHING MODALITY INFORMATION

The class will meet in-person (unless requested otherwise by UT administration). No class recordings will be available for in-person meetings unless I am notified by SES that you are excused from class attendance.

### COMMUNICATION

The course Canvas site can be found at [utexas.instructure.com](https://utexas.instructure.com). Please email me through Canvas. You are responsible for ensuring that the primary email address you have recorded with the university is the one you will check for course communications because that is the email address that Canvas uses.

### ASKING FOR HELP

I will have weekly office hours online Join URL: <https://utexas.zoom.us/j/96071218107>  
If you reach me at [sboyarch@utexas.edu](mailto:sboyarch@utexas.edu) , I will answer within 24 hours (48 hours on weekends and holidays).

### DIVERSITY, EQUITY AND INCLUSION

It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students' learning needs be addressed, and that the diversity that students bring to this class can be comfortably expressed and be viewed as a resource, strength and benefit to all students. Please come to me at any time with any concerns.

### SERVICES FOR STUDENTS WITH DISABILITIES

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 Services for Students with Disabilities (SSD). Please refer to SSD's website for contact and more information: <http://diversity.utexas.edu/disability/>. If you are already registered with SSD, 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.

### Course Requirements and Grading

#### REQUIRED MATERIALS

The text for this course is

[A course in game theory by Martin J. Osborne and Ariel Rubinstein \(MIT Press, 1994\) ISBN 0-262-65040-1](#)

To obtain a pdf file of the book (for free), you need to follow the link above and instructions there.

For those of you who seek a more advanced exposition, I would recommend

Game Theory by Maschler M., Solan E., and Zamir S., Cambridge University Press; 2nd edition, 2020

## REQUIRED DEVICES

You will need a computer and a good quality camera or scanning device. You will also need a reliable internet connection.

## CLASSROOM EXPECTATIONS

**Class attendance** is mandatory – course performance has strong positive correlation with attendance frequency. You cannot be an active participant in the class if you are not in attendance.

**Class participation** You are welcome to ask questions during the class. I enjoy interactive teaching, therefore I will be asking you questions about the course material, offering you topics for discussion or requesting your feedback on the course. I believe that together we can create an environment effective for teaching and learning.

**Behavior expectations** Being late to a class, leaving a class early, using electronic devices in class except for taking class notes, or chatting with each other will be regarded as disrespect for me and your classmates.

**Professional Standards** Students are not allowed to

- engage in unauthorized collaboration with another student on an assignment for credit;
- submit plagiarized materials obtained from the Internet and / or other sources for credit.

## ASSIGNMENTS

There will be regular problem sets, two midterm exams and the final.

All problem sets have to be submitted via Gradescope by the due date. You will need to take pictures of your answers to upload them to Gradescope. Unless indicated otherwise, problem sets are due on Fridays before 5 p.m., and solutions will be posted on Mondays at 9 a.m.

Midterm exams are NOT cumulative: material covered in one exam will not be covered in the later exam. The final exam is **cumulative**.

Before each of the exams, you will be given a practice test to be submitted online via Gradescope. You will have a 24 hour window for this submission.

You will see my solutions to the practice test after all submissions have been made. Then you will be given a 24 hour window for submission of the actual test. **A weighted average between the practice (30%) and actual (70%) test will be your midterm or final exam grade.**

**It is your responsibility to make all materials uploaded to Gradescope legible!**

The final score will be the weighted sum of the following:

- problem sets 20% (total)
- midterms 50% (25% each)
- final 30%

### **Due dates:**

- Practice test for midterm 1 – Feb. 8, 5:00 p.m.
- Midterm 1 – Feb. 10, 5:00 p.m.
- Practice test for midterm 2 – March 22, 5:00 p.m.
- Midterm 2 - March 24, 5:00 p.m.
- Practice test for the final – April 19, 5:00 p.m.
- Final exam – April 21, 5:00 p.m.

### **LATE WORK AND MAKING UP MISSED WORK**

Problem sets or tests submitted after the deadline, but before solutions had been posted will receive 50% of the grade. Assignments submitted after the solutions had been posted will receive zero scores.

There are no make-up tests - since the class will be curved, everyone must have the same tests. If you miss one midterm test due to a well-documented excusable reason, the corresponding material will be assigned double weight on the final. If you miss both midterms or the final you will be assigned “Incomplete” for the course.

**+/- GRADNG POLICY** I will use Plus/Minus grading for the final grade.

**USE OF A CURVE** I expect around 40% of the class to get A and A-, and around 85% of the class get grades in A and B range.

### **COURSE OUTLINE**

All instructions, assignments, readings, rubrics and essential information will be on the Canvas website at [utexas.instructure.com](https://utexas.instructure.com). Check Canvas regularly. **Changes** to the schedule may be made at my discretion if circumstances require. I will announce any such changes in class and will also communicate them via a Canvas announcement. It is your responsibility to note these changes when announced, and I will do my best to ensure that you are notified of changes with as much advance notice as possible.

Date	Class Topic	Readings
Jan. 10	Introduction	Chapter 1
Jan. 12-19	Nash equilibrium	Chapter 2, LN 1
Jan. 24-31	Mixed, correlated and evolutionary strategies	Chapter 3, LN 2
Feb. 2, 7	Rationalizability and iterated elimination of dominated actions	Chapter 4, LN 3
Feb. 9-16	Extensive games	Chapters 6 and 11, LN 4
Feb. 21 – March 2	Bargaining games	Chapter 7, LN 5
March 7,9, 21, 23	Repeated games	Chapter 8, LN 6
March 28, 30, April 4, 6	Sequential equilibrium	Chapter 12, LN 7
April 11 – 20	Applications	LN 8, LN 9

## Course Policies and Disclosures

### 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>.

### CONFIDENTIALITY OF CLASS RECORDINGS

Class recordings are reserved only for students in this class for educational purposes and are protected under FERPA. The recordings should not be shared outside the class in any form. Violation of this restriction by a student could lead to Student Misconduct proceedings.

### GETTING HELP WITH TECHNOLOGY

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

### CONTENT WARNING

Our classroom provides an open space for the critical and civil exchange of ideas. Some readings and other content in this course will include topics that some students may find offensive and/or traumatizing. I'll aim to forewarn students about potentially disturbing content and I ask all students to help to create an atmosphere of mutual respect and sensitivity.

### 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, gender variance, and nationalities. I will gladly honor your request to address you by your chosen name and by the gender pronouns you use. Class rosters are provided to the instructor with the student's chosen (not legal) name, if you have provided one. If you wish to provide or update a chosen name, that [can be done easily at this page](#), and you can [add your pronouns to Canvas](#).

### LAND ACKNOWLEDGMENT

I would like to acknowledge that we are meeting on the Indigenous lands of Turtle Island, the ancestral name for what now is called North America. Moreover, I would like to acknowledge the Alabama-Coushatta, Caddo, Carrizo/Comecrudo, Coahuiltecan, Comanche, Kickapoo, Lipan Apache, Tonkawa and Ysleta Del Sur Pueblo, and all the American Indian and Indigenous Peoples and communities who have been or have become a part of these lands and territories in Texas.

### University Resources for Students

#### SERVICES FOR STUDENTS WITH DISABILITIES (SSD)

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 Services for Students with Disabilities (SSD). Please refer to SSD's website for contact and more information:



<http://diversity.utexas.edu/disability/>. If you are already registered with SSD, 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, women's health, 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.

### **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.

### **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**

To help preserve our in-person learning environment, the university recommends the following.

- Adhere to university [mask guidance](#). Masks are strongly recommended, but optional, inside university buildings for vaccinated and unvaccinated individuals, except when alone in a private office or single-occupant cubicle.
- [Vaccinations are widely available](#), free and not billed to health insurance. The vaccine will help protect against the transmission of the virus to others and reduce serious symptoms in those who are vaccinated.

- [Proactive Community Testing](#) remains an important part of the university's efforts to protect our community. Tests are fast and free.
- We encourage the use of the [Protect Texas App](#) each day prior to coming to campus.
- If you develop COVID-19 symptoms or feel sick, stay home and contact the [University Health Services](#) Nurse Advice Line at 512-475-6877. If you need to be absent from class, contact [Student Emergency Services](#) and they will notify your professors. In addition, to help understand what to do if you have been had close contact with someone who tested positive for COVID-19, see this [University Health Services link](#).
- [Behavior Concerns and COVID-19 Advice Line](#) (BCCAL) remains available as the primary tool to address questions or concerns from the university community about COVID-19.
- Students who test positive should contact [BCCAL](#) or self-report (if tested off campus) to [University Health Services](#).
- Visit [Protect Texas Together](#) for more information.

### 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 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) must be report it. If you would like to speak with someone who can provide support or remedies without making an official report to the university, please email [advocate@austin.utexas.edu](mailto:advocate@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 Senate Bill 212, 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 Senate Bill



212. The Title IX office has developed supportive ways to respond to a survivor and compiled campus resources to support survivors.

Faculty members and certain staff members are considered “Responsible Employees” or “Mandatory Reporters,” which means that they are required to report violations of Title IX to the Title IX Coordinator. **I am a Responsible Employee and must report any Title IX-related incidents** that are disclosed in writing, discussion, or one-on-one. Before talking with me or with any faculty or staff member about a Title IX-related incident, be sure to ask whether they are a responsible employee. If you want to speak with someone for support or remedies without making an official report to the university, email [advocate@austin.utexas.edu](mailto:advocate@austin.utexas.edu) For more information about reporting options and resources, visit the [Title IX Office](#) or email [titleix@austin.utexas.edu](mailto:titleix@austin.utexas.edu).

### 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](#).