

## Syllabus

Instructor: Marco A. Castaneda  
Location: CAS 138  
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Lectures: TR 09:30-10:50am  
CAS 210

Hours: WF 09:00-10:00am Online

### 1 Description

Game theory is the study of strategic situations. This course provides an introduction to game theory and its applications. The course will cover the basic analysis of simultaneous and sequential move games with perfect information. In addition, this material will be followed by a number of applications which illustrate how the use of game theory can help us to improve our understanding of strategic behavior in situations.

**Learning Outcomes:** At the successful completion of this course, the students will be able to

- Describe the basic elements of a game, including players, strategies, and preferences and explain the basic assumptions for the analysis.
- Analyze games with simultaneous moves and apply best response analysis to determine the equilibrium of a game.
- Analyze games with sequential moves and apply backwards induction to determine the equilibrium of a game.
- Describe and analyze a number of strategic situations frequently observed in economic, political, and social environments and explain the nature of the equilibrium.
- Describe and analyze a number of strategic situations frequently observed in the business world, including imperfect competition and incentives in organizations.

The students will learn the material by attending lectures, reading the textbook, and completing a number of homework assignments. The comprehension of the material will be measured by the performance of the students on the homework, quizzes, and examinations.

## 2 Prerequisites

The only formal academic prerequisite for this course is a course in introductory microeconomics. A course in calculus and a course in probability and statistics would be helpful but are not required.

### a. Textbook

The required textbook for the class is *Games of Strategy 4e* (Norton) by Dixit, Reiley, and Skeath. This book will be our main reference for the material in game theory and many of the applications. In addition, you may be asked to read a number of supplementary articles which contain additional applications of the theory.

### b. Mathematics

The study of game theory is considerably technical and makes extensive use of mathematics, but this course will be relatively non-technical. I believe you can obtain the intuition from a simple model and understand the results can be extended to more general formulations. Therefore, only basic knowledge of algebra and elementary calculus is required, which I will review in class as necessary.

## 3 Structure of the course

I will dedicate as much time to the course as necessary. The material in the course is closely related to my teaching and research interests and I intend to make this course a fun and productive experience for you.

### a. Lectures

Research in Psychology has demonstrated that a central element in the learning process is active participation by the learner. I understand lectures can promote passive observation rather than active participation. Therefore, to promote active participation, my lectures will generally include:

- i. Presentation of technical material in which students participate in the derivation of the results,
- ii. Discussion of the results and implications for the real world, and
- iii. The opportunity for students to work in teams on practice problems or in informal experiments.

The lectures will be more fun and productive if you have read the material ahead of time and come to class prepared to contribute to the discussion.

### b. Grades

To measure your performance in the course and determine your grade, you are required to attend and participate in class, complete a number of homework assignments and examinations, and write a short research paper.

### i. Examinations

There will be two examinations. Your performance on each examination will determine 30% of your grade. The examinations will consist of problems similar to the ones presented in class or in the homework.

### ii. Homework

There will be a number of homework activities during the semester. Your performance in the homework will determine 30% of your grade. The homework will consist mainly of (i) practice problems or (ii) essays where you summarize or discuss the material covered in the supplementary readings.

### iii. Attendance and Participation

Attendance and participation will determine 10% of your grade. You are required to attend and participate in class because attendance and participation are essential if you want to do well in this class. For instance, I will cover material not contained in the textbook but that I will include in the homework and examinations. Finally, if you have to miss class, make sure you talk to me or your classmates about the material you missed.

Table with Grade Policy

Examinations	
Exam I	30%
Exam II	30%
Homework	30%
Attendance and Participation	10%

Your grade for the class will be computed based on your overall performance using the standard scale:

Score	Grade
90%+	A
80-89%	B
70-79%	C
60-69%	D
59%-	F

## 4 Outline

This section describes the material we will cover in the course and the approximate dates. I expect you to read the material ahead of time and to come to class prepared to contribute to the discussion.

Table with Course Outline

WEEK	DATE		
1	JAN 10	Chapter 1	Introduction
2	JAN 17	Chapter 2	Rationality and Decision Theory
3	JAN 24 *	Chapter 4	Games with Simultaneous Moves: Discrete Strategies
4	JAN 31	Chapter 3	Games with Sequential Moves
5	FEB 7	Chapter 5	Games with Simultaneous Moves: Continuous Strategies
6	FEB 14	Chapter 6	Games with Simultaneous and Sequential Moves
7	FEB 21	Chapter 7	Mixed Strategies
8	FEB 28	<b>Exam I</b>	
9	MAR 7	Spring Break	
10	MAR 14	Chapter 9	Strategic Moves
11	MAR 21	Chapter 10	Repeated Games and Cooperation
12	MAR 28 *	Chapter 11	Collective Action
13	APR 4	Chapter 15	Voting Games
14	APR 11	Chapter 13	Mechanism Design
15	APR 18	Chapter 8	Games with Incomplete Information
16		<b>Exam II</b>	

\* **JAN 24 - Census Date:** Deadline for all registration and schedule changes.

\* **MAR 28 - Withdraw Date:** Last day to withdraw from the course.

## UNIVERSITY POLICIES

This section contains a number of university policies which you should be familiar with. Follow the links for additional information.

### Important COVID Information for Classrooms

Students are expected to wear face masks covering their nose and mouth, and follow social distancing guidelines, at all times in public settings (including classrooms). The UT Tyler community of Patriots views adoption of these practices consistent with its Honor Code and a sign of good citizenship and respectful care of fellow classmates, faculty, and staff.

Students who are feeling ill or experiencing symptoms such as sneezing, coughing, or a higher than normal temperature will be excused from class and should stay at home and may join the class remotely. Students who have difficulty adhering to the safety policies for health reasons are also encouraged to join the class remotely. Students needing additional accommodations may contact the Office of Student Accessibility and Resources.

### Recording of Class Sessions

Class sessions may be recorded by the instructor for use by students enrolled in this course. Recordings that contain personally identifiable information or other information subject to FERPA shall not be shared with individuals not enrolled in this course unless appropriate consent is obtained from all relevant students. Class recordings are reserved only for the use of students enrolled in the course and only for educational purposes. Course recordings should not be shared outside of the course in any form without express permission.

### UT Tyler Honor Code

Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

### Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link:

<http://www.uttyler.edu/wellness/rightsresponsibilities.php>

### Campus Carry

We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at <http://www.uttyler.edu/about/campus-carry/index.php>

### UT Tyler a Tobacco-Free University

All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling,

quitlines, and group support. For more information on cessation programs please visit [www.uttyler.edu/tobacco-free](http://www.uttyler.edu/tobacco-free).

### **Grade Replacement/Forgiveness and Census Date Policies**

Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/registrar>. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract.

The Census Date is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

### **State-Mandated Course Drop Policy**

Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

### **Disability/Accessibility Services**

In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <https://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more

information, including filling out an application for services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices>, the SAR office located in the University Center, #3150 or call 903.566.7079.

### **Student Absence due to Religious Observance**

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second class meeting of the semester.

### **Student Absence for University-Sponsored Events and Activities**

If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

### **Social Security and FERPA Statement**

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (such as e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

### **Emergency Exits and Evacuation**

Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

### **Student Standards of Academic Conduct**

Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

- i. "Cheating" includes, but is not limited to:
  - copying from another student's test paper;
  - using, during a test, materials not authorized by the person giving the test;
  - failure to comply with instructions given by the person administering the test;
  - possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;
  - using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
  - collaborating with or seeking aid from another student during a test or other assignment without authority;
  - discussing the contents of an examination with another student who will take the examination;

- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
  - substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
  - paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
  - falsifying research data, laboratory reports, and/or other academic work offered for credit;
  - taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
  - misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.
- ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.
- iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.
- iv. All written work that is submitted will be subject to review by plagiarism software.

#### **UT Tyler Resources for Students**

- [UT Tyler Writing Center](https://www.uttyler.edu/writingcenter) (903.565.5995), [writingcenter@uttyler.edu](mailto:writingcenter@uttyler.edu)
- [UT Tyler Tutoring Center](https://www.uttyler.edu/tutoring) (903.565.5964), [tutoring@uttyler.edu](mailto:tutoring@uttyler.edu)
- The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.
- [UT Tyler Counseling Center](https://www.uttyler.edu/counseling) (903.566.7254)