

Syllabus

Instructor: Marco A. Castaneda
Location: CAS 138
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Lectures: Tuesday and Thursday, 11:00-12:20pm
RBN 4032

Hours: Wednesday, 09:30:00-10:30am
Thursday, 03:30-04:30pm
By appointment

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 games with simultaneous and sequential moves and games with complete and incomplete information. In addition, the material includes several applications, including the analysis of many strategic situations frequently observed in economic, political, and social environments.

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 games with incomplete information.
- Describe and analyze several strategic situations frequently observed in economic, political, and social environments and explain the nature of the equilibrium.

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 assignments 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, Strategy, and Decision Making 2e* (MacMillan) by Harrington. 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 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

Your grade for the course will be determined by your performance on the assignments and examinations, as follows:

i. Examinations

There will be two examinations. Your performance on each examination will determine 25% of your grade. The examinations will consist of problems similar to the problems presented in class or in the homework assignments.

ii. Homework Assignments

There will be a number of homework assignments during the semester. Your performance on the homework assignments will determine 25% of your grade. The homework will consist mainly of practice problems.

iii. Empirical Project

Your performance on the empirical project will determine 15% of your grade. There will be an in-class experiment and data will be collected. For your empirical project, you will analyze the data, compare outcomes with theoretical predictions, and write a report with your analysis and results. I will give you more information and instructions later in class.

iv. 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	25%
Exam II	25%
Homework Assignments	25%
Empirical Project	15%
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	TEXTBOOK	TOPIC
1	AUG 25, 27	Chapter 1	Introduction to Strategic Behavior
2	SEP 1, 3	Chapter 2	Modeling Strategic Situations
3	SEP 8, 10 *	Chapter 3	Games with Simultaneous Moves: Rationality and Equilibrium
4	SEP 15, 17	Chapter 4	Games with simultaneous moves: Nash Equilibrium
5	SEP 22, 24	Chapter 5, 6	Extensions of Nash Equilibrium Analysis
6	SEP 29, OCT 1	Chapter 8	Games with Sequential Moves: Perfect Information
7	OCT 6, 8	Chapter 9	Games with Sequential Moves: Imperfect Information
8	OCT 13, 15	Exam I	
9	OCT 20, 22	Chapter 10	Games with Incomplete Information
10	OCT 27, 29 *	Chapter 11	Games with Incomplete Information: Applications and Extensions
11	NOV 3, 5	Chapter 13	Repeated Games
12	NOV 10, 12	Chapter 14, 15	Repeated Games: Applications and Extensions
13	NOV 17, 19		Applications and Extensions
14	NOV 24, 26	Thanksgiving Break	
15	DEC 1, 3		Applications and Extensions
16	DEC 8	Exam II [Final]	

* **SEP 8: Census Date:** Deadline for all registration and schedule changes.

* **OCT 30: 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.

Withdrawing from Class

Students may [withdraw](#) (drop) from this course using the [Withdrawal Portal](#). Withdrawing (dropping) this course can impact your Financial Aid, Scholarships, Veteran Benefits, Exemptions, Waivers, International Student Status, housing, and degree progress. Please speak with your instructors, consider your options, speak with your advisor, and visit the One-Stop Service Center (STE 230) or email enroll@uttyler.edu to get a complete review of your student account and the possible impacts to withdrawing. We want you to make an informed decision. UT Tyler faculty and staff are here for you and often can provide additional support options or assistance. Make sure to carefully [read the implications for withdrawing from a course and the instructions](#) on using the [Withdrawal portal](#).

Texas law prohibits students from dropping more than six courses during their entire undergraduate career*. The six courses dropped includes those from other 2-year or 4-year Texas public colleges and universities. Consider the impact withdrawing from this class has on your academic progress and other areas, such as financial implications. We encourage you to consult your advisor(s) and Enrollment Services for additional guidance. **CAUTION #1:** Withdrawing before census day does not mean you get a full refund. Please see the [Tuition and Fee Refund Schedule](#).

CAUTION #2: All international students must check with the [Office of International Programs](#) before withdrawing. All international students are required to enroll full-time for fall and spring terms. **CAUTION #3:** All UT Tyler Athletes must check with the Athletic Academic Coordinator before withdrawing from a course. **CAUTION #4:** All veterans or military-affiliated students should consult with the [Military and Veterans Success Center](#).

* Students who began college for the first time before 2007 are exempt from this law.

Artificial Intelligence Statement

UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

In this course, you can use AI programs (such as ChatGPT or Copilot). These programs can be powerful tools for learning and other productive pursuits, including completing assignments in less time, helping you generate new ideas, or serving as a personalized learning tool. However, your ethical responsibilities as a student remain the same. You must follow UT Tyler's Honor Code and uphold the highest standards of academic honesty. This applies to all uncited or improperly cited content, whether created by a human or in collaboration with an AI tool. If you use an AI tool to develop content for an assignment, you must cite the tool's contribution to your work.

Final Exam Policy

Final examinations are administered as scheduled. If unusual circumstances require that special arrangements be made for an individual student or class, the Dean of the appropriate college, after consultation with the faculty member involved, may authorize an exception to the schedule. Faculty members must maintain student final examination papers for a minimum of three months following the examination date.

Incomplete Grade Policy

If a student, because of extenuating circumstances, is unable to complete all of the requirements for a course by the end of the semester, then the instructor may recommend an Incomplete (I) for the course. The "I" may be assigned in place of a grade *only when **all** of the following conditions are met:* (a) the student has been making satisfactory progress in the course; (b) the student is unable to complete all coursework or final exam due to unusual circumstances that are beyond personal control and are acceptable to the instructor, and (c) the student presents these reasons before the time that the final grade roster is due. The semester credit hours for an Incomplete will not be used to calculate the grade point average.

The student and the instructor must submit an Incomplete Form detailing the work required and the time by which the work must be completed to their respective department chair or college dean for approval. The time limit established must not exceed one year. Should the student fail to meet all of the work for the course within the time limit, then the instructor may assign zeros to the unfinished work, compute the course average for the student, and assign the appropriate grade. If a grade has yet to be assigned within one year, then the Incomplete will be changed to an F, or NC. If the course was initially taken under the CR/NC grading basis, this may adversely affect the student's academic standing.

Grade Appeal Policy

Disputes regarding grades must be initiated within sixty (60) days from the date of receiving the final course grade by filing a Grade Appeal Form with the instructor who assigned the grade. A grade appeal should be used when the student thinks the final course grade awarded does not reflect the grades earned on assessments or follow the grading scale as documented in the syllabus. The student should provide the rationale for the grade appeal and attach supporting document about the grades earned. The form should be sent via email to the faculty member who assigned the grade. The faculty member reviews the rationale and supporting documentation and completes the instruction section of the form. The instructor should return the form to the student, even if a grade change is made at this level. If the student is not

satisfied with the decision, the student may appeal in writing to the Chairperson of the department from which the grade was issued. In situations where there is an allegation of capricious grading, discrimination, or unlawful actions, appeals may go beyond the Chairperson to the Dean or the Dean's designee of the college from which the grade was issued, with that decision being final. The Grade Appeal form is found in the [Registrar's Form Library](#).

NOTE: The Grade Appeal Form is different from the Application for Appeal form submitted to the Student Appeals Committee, which does not rule on grade disputes as described in this policy.

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 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 the Assistant Director Student Accessibility and Resources/ADA Coordinator. For more information, including filling out an application for services, please visit the SAR webpage at <https://www.uttyler.edu/disability-services>, the SAR office located in the Robert Muntz Library, LIB 460, email saroffice@uttyler.edu, or call 903.566.7079.

Military Affiliated Students

UT Tyler honors the service and sacrifices of our military-affiliated students. If you are a student who is a veteran, on active duty, in the reserves or National Guard, or a military spouse or dependent, please stay in contact with your faculty member if any aspect of your present or prior service or family situation makes it difficult for you to fulfill the requirements of a course or creates disruption in your academic progress. It is important to make your faculty member aware of any complications as far in advance as possible. Your faculty member is willing to work with you and, if needed, put you in contact with university staff who are trained to assist you. The [Military and Veterans Success Center \(MVSC\)](#) has campus resources for military-affiliated students. The MVSC can be reached at MVSC@uttyler.edu or via phone at 903.565.5972.

Students on an F-1 Visa

To remain in compliance with Federal Regulations requirements you must do the following:

- Traditional face-to-face classes: Attend classes on the regular meeting days/times.
- Hybrid Classes: Attend all face-to-face classes convened by the instructor according to the schedule set for your specific course.
- Online course: Only one online course can count toward your full-time enrollment. Students are expected to be fully engaged and meet all requirements for the online course.

Academic Honesty and Academic Misconduct

The UT Tyler community comes together to pledge that "Honor and integrity will not allow me to lie, cheat, or steal, nor to accept the actions of those who do."

Therefore, we enforce the [Student Conduct and Discipline policy](#) in the Student Manual Of Operating Procedures (Section 8).

FERPA

UT Tyler follows the Family Educational Rights and Privacy Act (FERPA) as noted in [University Policy 5.2.3](#). The course instructor will follow all requirements to protect your confidential information.

Absence for Official University Events or Activities

This course follows the practices related to [Excused Absences for University Events or Activities](#) as noted in the Catalog.

Absence for Religious Holidays

This course follows the practices related to [Excused Absences for Religious Holy Days as noted in the Catalog](#).

Absence for Pregnant Students

This course follows the requirements of Texas Laws SB 412, SB 459, SB 597/HB 1361 to meet the needs of pregnant and parenting students. Part of the supports afforded pregnant students includes excused absences. Faculty who are informed by a student of needing this support should make a referral to the Parenting Student Liaison. NOTE: Students must work with the Parenting Student Liaison in order to receive these supports. Students should reach out to the Parenting Student Liaison at parents@uttyler.edu and also complete the [Pregnant and Parenting Self-Reporting Form](#).

Campus Carry

We respect the right and privacy of students 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>.