

Course Syllabus

Course Information

ECON 4301 001
Game Theory
Spring 2014, TTH 2:30-3:45
Room: GR3.606

Professor Contact Information

Prof. Kevin Siqueira
Office: GR 2.537
Phone: 972-883-6480
Email: siqueira@utdallas.edu
Hours: TTH 1-2 (& by appt.)

Course Pre-requisites, Co-requisites, and/or Other Restrictions

EC 3310 Intermediate Microeconomic Theory

Course Description

Game Theory has become an important tool for analysis in a variety of fields, not just in Economics (and Business). It is used in such diverse fields as Sociology, Political Science, International Relations, Biology, and Psychology to name just a few. Therefore Game Theory has many interesting applications. However, before we can start applying Game Theory to model and depict various situations of strategic interaction, one must have a solid understanding of the basics. To this end, the objective of this course is to give students a somewhat detailed knowledge of elementary Game Theory. Although we concentrate on the basics, don't be fooled. Game Theory is a very subtle tool and field and will require a substantial amount of investment of time and effort in order to obtain a sufficient understanding of the various methods and topics introduced in the course. For students, this means showing up regularly for class, understanding the lecture material, asking questions, reading and rereading the appropriate sections on the textbook, solving problems and studying hard for exams.

Student Learning Objectives/Outcomes

The course is designed to introduce students to the various rudimentary elements of Game Theory with the goal of providing the student with the tools and the ability to enhance their abilities for strategic and analytical thinking.

The basics of the course revolve around the following: classification of games (e.g. zero-sum and non-constant-sum games), various definitions in Game Theory (e.g. backward induction and common knowledge), sequential and simultaneous move games, pure and mixed strategies, equilibrium concepts (e.g. Nash equilibrium, dominant strategy equilibrium, minimax and maximin), and repeated games.

Required Textbooks and Materials

Games of Strategy, A. Dixit, S. Skeath, and D. Reiley, 3rd edition (NY: W.W. Norton & Company, 2009).

Assignments & Academic Calendar (Outline of the Course)

I. Introduction

Initial Concepts, Classification of Games, Definitions.

Chapters 1 and 2 (Dixit, Skeath, Reiley) and Lecture.

II. Games with Sequential Moves

Game Representation, Specification of Strategies, Backward Induction, Mover Advantage.
Chapter 3 (Dixit, Skeath, Reiley) and Lecture.

III. Games with Simultaneous Moves

Game Representation, Equilibrium Concepts, Games with Multiple Equilibrium (and games w/none in pure strategies). Discrete and Continuous Strategies.
Chapters 4 and 5 (Dixit, Skeath, Reiley) and Lecture.

IV. Application: Contracts, Law, and Enforcement

Full and Limited Verifiability, Self-enforcing Contracts, Externally-enforced Contracts and Court Imposed Breach Remedies.

Handout taken from Chapter 13 of *Strategy* by Joel Watson, NY: W. W. Norton & Company, 2002.

V. Simultaneous Move Games with Mixed Strategies

Chapters 7 & 8 and the Appendix on Probability and Expected Utility (Dixit, Skeath, Reiley) and Lecture.

VI. Simultaneous and Sequential Move Games

Converting Extensive Form Games to Strategic Form (and vice-versa), Combining Simultaneous and Sequential Moves, Subgame Perfection, Games of Perfect and Imperfect Information.
Chapter 6 (Dixit, Skeath, Reiley) and Lecture.

VII. Repeated Games

Stage Games, Finite Repetition, and Infinitely Repeated Games, Folk Theorem.
Chapter 11 (Dixit, Skeath, Reiley) and Lecture.

VIII. Extension and Application: Bargaining Theory

Nash Bargaining Solution, Ultimatum Game, Alternating-Offers Game, Threat Points, and Bargaining Shares.
Chapter 18 (Dixit, Skeath, Reiley) and Handout and Lecture.

IX. Extension and Application: The Theory of Auctions and Competitive Bidding

Types of Actions, Bidding Strategies, Revenue Equivalence Theorem, Winner's Curse.
Chapter 17 (Dixit, Skeath, Reiley) and Handout and Lecture.

X. Coalitional Games

Markets and Competition, The Core.
Chapter 19 (Dixit, Skeath, Reiley) and Lecture.

Grading Policy

1 st Midterm	25%
2 nd Midterm	25%
Assignments (randomly graded)	20%
Final Exam	30%

Exam Dates: 1st Midterm, Feb 27; 2nd Midterm, April 10; Final, Finals Week (May 6-12)

Course & Instructor Policies

No make-up exams will be given. Any absence from an exam that is not excused, will result in a grade of zero. For an absence to be excused, the student must supply the appropriate documentation and give advance notification. By advanced notification, the professor must be notified at least a full day

(or more) prior to the exam date if possible. Note well, that notification by email or by phone the night before the exam or on exam day does not constitute sufficient advanced notification for most cases. For the *extreme* case where such advanced notification is not feasible, the student must not only supply the appropriate documentation for the absence itself, but must also supply the appropriate documentation related to his or her failure to notify the professor in a timely manner. Excused absences are granted only for medical or family emergencies (severe personal illness or injury, death of a parent, etc) and since no make-ups are given, the student's grade will be determined by adjusting the appropriate weights for the remaining exams or by giving a final cumulative exam.

The same policy as specified above, also applies to the turning in of assignments when they are due.
Homework is due in class on the assigned date. Late and unexcused homework will not be accepted.

There are no exemptions from taking the final.

If these policies are unacceptable or if you feel that you are unable to meet these requirements, then you should drop this course.

Attendance Policy: All students are expected to attend all classes and I'll occasionally take attendance. Any student missing more than 3 classes or coming sufficiently late can be considered ineligible for any rounding up of his or her overall average for their final grade.

Since I expect students to take a mature attitude and approach to learning Game Theory, I also expect students to have the same mature behavior and attitude in the classroom. This means no talking in class, entering and leaving the classroom, coming to class sufficiently late, or leaving class early. Such behavior is not only disruptive but also disrespectful to fellow students as well. **Therefore such behavior will not be tolerated.**

Field Trip Policies Off-campus Instruction and Course Activities

Not Applicable. Sorry.

Student Conduct & Discipline

The University of Texas System and The University of Texas at Dallas have rules and regulations for the orderly and efficient conduct of their business. It is the responsibility of each student and each student organization to be knowledgeable about the rules and regulations which govern student conduct and activities. General information on student conduct and discipline is contained in the UTD publication, *A to Z Guide*, which is provided to all registered students each academic year.

The University of Texas at Dallas administers student discipline within the procedures of recognized and established due process. Procedures are defined and described in the *Rules and Regulations, Series 50000, Board of Regents, The University of Texas System*, and in Title V, Rules on Student Services and Activities of the university's *Handbook of Operating Procedures*. Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations (SU 1.602, 972/883-6391).

A student at the university neither loses the rights nor escapes the responsibilities of citizenship. He or she is expected to obey federal, state, and local laws as well as the Regents' Rules, university regulations, and administrative rules. Students are subject to discipline for violating the standards of conduct whether such conduct takes place on or off campus, or whether civil or criminal penalties are also imposed for such conduct.

Academic Integrity

The faculty expects from its students a high level of responsibility and academic honesty. Because the value of an academic degree depends upon the absolute integrity of the work done by the student for that degree, it is imperative that a student demonstrate a high standard of individual honor in his or her scholastic work.

Scholastic dishonesty includes, but is not limited to, statements, acts or omissions related to applications for enrollment or the award of a degree, and/or the submission as one's own work or material that is not one's own. As a general rule, scholastic dishonesty involves one of the following acts: cheating, plagiarism, collusion and/or falsifying academic records. Students suspected of academic dishonesty are subject to disciplinary proceedings.

Plagiarism, especially from the web, from portions of papers for other classes, and from any other source is unacceptable and will be dealt with under the university's policy on plagiarism (see general catalog for details). This course will use the resources of turnitin.com, which searches the web for possible plagiarism and is over 90% effective.

Email Use

The University of Texas at Dallas recognizes the value and efficiency of communication between faculty/staff and students through electronic mail. At the same time, email raises some issues concerning security and the identity of each individual in an email exchange. The university encourages all official student email correspondence be sent only to a student's U.T. Dallas email address and that faculty and staff consider email from students official only if it originates from a UTD student account. This allows the university to maintain a high degree of confidence in the identity of all individual corresponding and the security of the transmitted information. UTD furnishes each student with a free email account that is to be used in all communication with university personnel. The Department of Information Resources at U.T. Dallas provides a method for students to have their U.T. Dallas mail forwarded to other accounts.

Withdrawal from Class

The administration of this institution has set deadlines for withdrawal of any college-level courses. These dates and times are published in that semester's course catalog. Administration procedures must be followed. It is the student's responsibility to handle withdrawal requirements from any class. In other words, I cannot drop or withdraw any student. You must do the proper paperwork to ensure that you will not receive a final grade of "F" in a course if you choose not to attend the class once you are enrolled.

Student Grievance Procedures

Procedures for student grievances are found in Title V, Rules on Student Services and Activities, of the university's *Handbook of Operating Procedures*.

In attempting to resolve any student grievance regarding grades, evaluations, or other fulfillments of academic responsibility, it is the obligation of the student first to make a serious effort to resolve the matter with the instructor, supervisor, administrator, or committee with whom the grievance originates (hereafter called "the respondent"). Individual faculty members retain primary responsibility for assigning grades and evaluations. If the matter cannot be resolved at that level, the grievance must be submitted in writing to the respondent with a copy of the respondent's School Dean. If the matter is not resolved by the written response provided by the respondent, the student may submit a written appeal to the School Dean. If the grievance is not resolved by the School Dean's decision, the student may make a written appeal to the Dean of Graduate or Undergraduate Education, and the deal will appoint and convene an Academic Appeals Panel. The decision of the Academic Appeals Panel is final. The results of the academic appeals process will be distributed to all involved parties.

Copies of these rules and regulations are available to students in the Office of the Dean of Students, where staff members are available to assist students in interpreting the rules and regulations.

Incomplete Grade Policy

As per university policy, incomplete grades will be granted only for work unavoidably missed at the semester's end and only if 70% of the course work has been completed. An incomplete grade must be resolved within eight (8) weeks from the first day of the subsequent long semester. If the required work to complete the course and to remove the incomplete grade is not submitted by the specified deadline, the incomplete grade is changed automatically to a grade of F.

Disability Services

The goal of Disability Services is to provide students with disabilities educational opportunities equal to those of their non-disabled peers. Disability Services is located in room 1.610 in the Student Union. Office hours are Monday and Thursday, 8:30 a.m. to 6:30 p.m.; Tuesday and Wednesday, 8:30 a.m. to 7:30 p.m.; and Friday, 8:30 a.m. to 5:30 p.m.

The contact information for the Office of Disability Services is:
The University of Texas at Dallas, SU 22
PO Box 830688
Richardson, Texas 75083-0688
(972) 883-2098 (voice or TTY)

Essentially, the law requires that colleges and universities make those reasonable adjustments necessary to eliminate discrimination on the basis of disability. For example, it may be necessary to remove classroom prohibitions against tape recorders or animals (in the case of dog guides) for students who are blind. Occasionally an assignment requirement may be substituted (for example, a research paper versus an oral presentation for a student who is hearing impaired). Classes enrolled students with mobility impairments may have to be rescheduled in accessible facilities. The college or university may need to provide special services such as registration, note-taking, or mobility assistance.

It is the student's responsibility to notify his or her professors of the need for such an accommodation. Disability Services provides students with letters to present to faculty members to verify that the student has a disability and needs accommodations. Individuals requiring special accommodation should contact the professor after class or during office hours.

Religious Holy Days

The University of Texas at Dallas will excuse a student from class or other required activities for the travel to and observance of a religious holy day for a religion whose places of worship are exempt from property tax under Section 11.20, Tax Code, Texas Code Annotated.

The student is encouraged to notify the instructor or activity sponsor as soon as possible regarding the absence, preferably in advance of the assignment. The student, so excused, will be allowed to take the exam or complete the assignment within a reasonable time after the absence: a period equal to the length of the absence, up to a maximum of one week. A student who notifies the instructor and completes any missed exam or assignment may not be penalized for the absence. A student who fails to complete the exam or assignment within the prescribed period may receive a failing grade for that exam or assignment.

If a student or an instructor disagrees about the nature of the absence [i.e., for the purpose of observing a religious holy day] or if there is similar disagreement about whether the student has been given a reasonable time to complete any missed assignments or examinations, either the student or the instructor may request a ruling from the chief executive officer of the institution, or his or her designee. The chief executive officer or designee must take into account the legislative intent of TEC 51.911(b), and the student and instructor will abide by the decision of the chief executive officer or designee.

These descriptions and timelines are subject to change at the discretion of the Professor.