

STRATEGIC BEHAVIOR
ECO 4341-002
Fall, 2022.

Instructor: Santanu Roy,
University Distinguished Professor, Department of Economics.

Office: 301-NA, Umphrey Lee Building, SMU.

E-mail: sroy@smu.edu

Phone: 214 768 2714

Fax: 214 768 1821

Course web-page: <https://s2.smu.edu/sroy/index4.html>

Lectures: Tuesday and Thursday, 2 - 3.20 PM, Clements 126.

Office Hours: Monday and Wednesday, 10.30 - 12 noon & by appointment.

Teaching Assistant: Mr. Abdullah Shamim, E-mail: ashamim@smu.edu

Prerequisite: ECO 3301 (Price Theory).

Expected background: *The course will require familiarity with basic algebra, calculus and probability theory.*

Textbook: *Game Theory for Applied Economists* by Robert Gibbons, Princeton University Press, 1992. [ISBN: 0-691-00395-5]

Course Description:

This is an introductory course on non-cooperative game theory and its application to selected areas of economics. Game theory deals with multi person decision making when every individual cares about how others choose to act and therefore, each individual's behavior is strategic in the sense that it takes into account decisions made by other individuals and the fact that others may also behave in a similarly strategic fashion. Non-cooperative game theory specifically addresses a class of such multi person decision problems where the individual objectives may, in principle, be in "conflict."

Over the last four decades, non-cooperative game theory has been applied very extensively in economics and several other social sciences (such as political science). It is the primary tool used to analyze market competition between small numbers of big firms (oligopolies), corporate decision making, interaction between buyers and sellers in auctions, behavior of parties involved in bargaining (such as labor unions and management of corporate firms), strategic interaction of governments in the determination of international trade policy, interaction

over time between macroeconomic policy makers and economic agents, lobbying, competitive extraction of natural resources and so on. Indeed, it is impossible to understand and analyze theoretical models in most areas of modern economics without some basic knowledge of game theory.

This course aims to equip students with the foundations of game theoretic analysis and show how they can be applied to obtain insights in concrete economic problems. While most of the applications will be drawn from industrial organizations, the course will also cover problems from other areas of economics.

Learning Objectives:

1. Equip students with basic tools and equilibrium concepts in noncooperative game theory.
2. Enable students to apply these tools and concepts to analyze strategic interaction in markets and other economic institutions
3. Develop the ability to think strategically as economic decision makers

List of topics:

Static Games of Complete Information: Normal form games and Nash Equilibrium; Applications to Cournot and Bertrand oligopoly, Tragedy of the Commons, Introduction to Mixed Strategy.

[Textbook: Chapter 1: Sections 1.1, 1.2 and 1.3.A]

Dynamic Games of Complete Information: Backward Induction, Applications to Stackelberg Duopoly & Sequential Bargaining; Two Stage games of Imperfect Information, Subgame Perfection, Applications to Bank Runs, International Tariff Competition; Extensive form representations. *Repeated Games:* Finitely and Infinitely Repeated Games; Applications to Collusion in Oligopoly, Efficiency Wages, Time Consistent Monetary Policy.

[Textbook: Chapter 2: Sections 2.1, 2.2, 2.3 and 2.4]

Static Game of Incomplete Information: Bayes Nash Equilibrium; Application to Auctions.

[Textbook: Chapter 3: Sections 3.1, 3.2.B]

Dynamic Games of Incomplete Information: Perfect Bayesian Equilibrium and Signaling Games.

[Textbook: Chapter 4: Sections 4.1 and 4.2]

Rules

Lectures:

Students are expected to attend all lectures in person.

There will no option for a student to join the class on zoom

No class will be recorded.

Slides will not be used in the lectures; lecture notes will only be provided for supplementary material not covered in the textbook.

If a student misses a class, it will be their responsibility to figure out the material covered in class by contacting other students and the instructor.

Students unable to attend classes for valid and documented medical reasons should contact the instructor as soon as possible and work out a plan to make up the missed classes and assignments.

No student should enter the class more than five minutes late.

Home Assignments:

About five to six home assignments will be given out in the semester and will be due in class on a certain date.

Assignments turned in late will not be accepted unless a valid reason for the delay can be provided and substantiated. Solutions may be handed out, e-mailed or discussed in class.

Exams and Grading:

10% of final grade will be based on attendance

20% of final grade will be based on performance in home-assignments.

There will be two written exams - one Midterm exam and one Final exam.

30% of final grade will be based on performance in the Midterm Exam.

40% of final grade will be based on performance in the Final Exam

The exam schedule will be as follows:

Midterm Exam: Tuesday, October 4, 2 - 3.15 PM

Final Exam: Wednesday, December 14, 11.30 AM - 2.30 P.M.

All exams will be in person, in class and "closed book". No exam will be provided online regardless of circumstances.

The final exam will be based on material covered in the entire semester.

If you foresee a conflict with any of the exam dates, please contact the instructor immediately.

No make-up exam will be given except for documented medical reasons or in case there is a conflict with university extracurricular activity. It is the responsibility of the student to schedule a make-up exam with the instructor and to keep the instructor informed about his/her inability to appear in an exam due to university extracurricular activity.

No incomplete grades will be given except in case of a documented medical emergency that prevents a student, who has performed satisfactorily in the midterm exam and in the home assignments, from appearing in the final exam and, in addition, also prevents him/her from taking a makeup exam prior to the university deadline for submission of grades.

Academic Dishonesty:

Students are expected to embrace and uphold the SMU Honor Code
(<https://www.smu.edu/StudentAffairs/officeofthedeanofstudents/StudentHandbook>).

Violations of the Honor Code will be acted upon in accordance with the
policies and procedures outlined in the Mustang Student Handbook
(<https://www.smu.edu/StudentAffairs/officeofthedeanofstudents/StudentHandbook>).

Title IX and Disability Accommodations

Disability Accommodations

Students who need academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit smu.edu/DASS to begin the process. Once they are registered and approved, students then submit a DASS Accommodation Letter through the electronic portal, DASS Link, and then communicate directly with each of their instructors to make appropriate arrangements. Please note that accommodations are not retroactive, but rather require advance notice in order to implement.

Sexual Harassment

All forms of sexual harassment, including sexual assault, dating violence, domestic violence and stalking, are violations of SMU's Title IX Sexual Harassment Policy and may also violate Texas law. Students who wish to file a complaint or to receive more information about the grievance process may contact Samantha Thomas, SMU's Title IX Coordinator, at accessequity@smu.edu or 214-768-3601. Please note that faculty and staff are mandatory reporters. If students notify faculty or staff of sexual harassment, they must report it to the Title IX Coordinator. For more information about sexual harassment, including resources available to assist students, please visit smu.edu/sexualmisconduct.

Pregnant and Parenting Students

Under Title IX, students who are pregnant or parenting may request academic adjustments by contacting the Office of Student Advocacy and Support by calling 214-768-4564. Students seeking assistance must schedule an appointment with their professors as early as possible, present a letter from the Office of the Dean of Students, and make appropriate arrangements. Please note that academic adjustments are not retroactive and, when feasible, require advance notice to implement.

SMU Requirements

Religious Observance

Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. Check

<https://www.smu.edu/StudentAffairs/ChaplainandReligiousLife/ReligiousHolidays>
for a list of holidays.

Medical-Related Absences

To ensure academic continuity and avoid any course penalties, students should follow procedures described by their instructors in order to be provided with appropriate modifications to assignments, deadlines, and exams.

Excused Absences for University Extracurricular Activities

Students participating in an officially sanctioned, scheduled university extracurricular activity should be given the opportunity to make up class assignments or other graded assignments that were missed as a result of their participation. It is the responsibility of the student to make arrangements for make-up work with the instructor prior to any missed scheduled examinations or other missed assignments. (See current Catalog "<https://catalog.smu.edu/>" under heading of "Academic Records/Excused Absences.")

Student Support

Student Academic Success Programs

Students needing assistance with writing assignments for SMU courses may schedule an appointment with the Writing Center through Canvas. Students who would like support for subject-specific tutoring or success strategies should contact SASP, Loyd All Sports Center, Suite 202; 214-768-3648; smu.edu/sasp.

Caring Community Connections Program

CCC is a resource for anyone in the SMU community to refer students of concern to the Office of the Dean of Students. The online referral form can be found at smu.edu/deanofstudentsccc. After a referral form is submitted, students will be contacted to discuss the concern, strategize options, and be connected to appropriate resources. Anyone who is unclear about what steps to take if they have concerns about students should contact the Office of the Dean of Students at 214-768-4564.

Mental Health Resources: On-Call and Ongoing Counseling Services

Throughout the academic year, students may encounter different stressors or go through life experiences which impact their mental health and academic performance. Students who are in distress or have concerns about their mental health can schedule a same-day or next-day appointment to speak with a counselor by calling Counseling Services

(<https://www.smu.edu/StudentAffairs/DrBobSmithHealthCenter/Counseling-Services>).

Counselors are available at any time, day or night for students in crisis at this number: 214-768-2277 (then select option 2) They will be connected with a counselor immediately. Students seeking ongoing counseling should call the same number (214-768-2277, then select option 1) during normal business hours to schedule an initial appointment.

Campus Carry Law

In accordance with Texas Senate Bill 11, also known as the ‘campus carry’ law, and following consultation with entire University community, SMU chooses to remain a weapons-free campus. Specifically, SMU prohibits possession of weapons (either openly or in a concealed manner) on campus. For more information, please see smu.edu/campuscarrylaw.