STRATEGIC BEHAVIOR
ECO-5341
Summer II Term, 2011.

Instructor: Santanu Roy, Professor, Department of Economics.
Office: 301-L, Umphrey Lee Building, SMU.
E-mail: sroy@smu.edu
Phone: 214 768 2714
Fax: 214 768 1821

Course web-page: http://faculty.smu.edu/sroy/index4.html
Lectures: Monday - Friday, 2 - 3.50 PM., Umphrey Lee 303, June 30 - August 1, 2011.
Office Hours: Monday & Wednesday, 10 - 1130 AM & by appointment.

Prerequisite: ECO 3301 (Price Theory).
Expected background: The course will require familiarity with basic algebra, calculus and probability theory.


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.”

In the last three 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.

**Objectives:**
1. Explain the basic tools and equilibrium concepts in noncooperative game theory.
2. Discuss how these tools and concepts are applied to obtain insights in economic problems.

**Tentative 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.

*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.

*Additional topics* (to be covered only if time permits):

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

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

**Rules:**

Students are expected to attend all lectures. If a student misses a lecture, it is his/her personal responsibility to find out the material covered in class. No student should enter the class more than five minutes late.

Four practice assignments will be given out in the semester. Students should work on these assignments on their own, but they do not have to be turned in. Solutions will be handed out, e-mailed or discussed in class.

There will be four in-class exams each counting towards 25% of the final grade.

The exam schedule will be as follows:

- Exam 1: Friday, July 8, 2 PM.
- Exam 2: Friday, July 15, 2 PM.
- Exam 3: Friday, July 22, 2 PM
- Exam 4: Friday, July 29, 2 PM

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. It is the responsibility of the student to check the course web-site frequently for updates, amendments to problem sets and other handouts.

Disability Accommodations: Students needing academic accommodations for a disability must first be registered with Disability Accommodations & Success Strategies (DASS) to verify the disability and to establish eligibility for accommodations. Students may call 214-768-1470 or visit http://www.smu.edu/alec/dass.asp to begin the process. Once registered, students should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4; an attachment describes the DASS procedures and relocated office.)

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. (See University Policy No. 1.9.)

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity will be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. Disability Accommodations: Students needing academic accommodations for a disability must first contact Ms. Rebecca Marin, Coordinator, Services for Students with Disabilities (214-768-4557) to verify the disability and establish eligibility for accommodations. They should then schedule an appointment with the professor to make appropriate arrangements. (See University Policy No. 2.4.)