

Economics 308, Game Theory

Term: Fall 2009

Instructor: Tayfun Sönmez, *e-mail:* sonmezt@bc.edu, *Office:* 21 Campanella Way, Room 472

Office Hours: Mondays and Thursdays 12:00 noon - 1:15 PM or by appointment.

Teaching Assistant: Orhan Aygun.

TA will be holding office hours at 21 Campanella Way, Room 480 on Tuesdays and Wednesdays 12:00 noon - 1:30PM.

Course Objectives:

Strategic thinking is the art of outdoing an adversary, knowing that the adversary is trying to do the same to you. All of us must practice strategic thinking at work as well as at home. Businessmen and corporations must use good competitive strategies to survive. Politicians have to devise campaign strategies to get elected, and legislative strategies to implement their visions. Parents trying to elicit good behavior from children must become good strategists. The science of strategic thinking is called game theory. This course is an introduction to game theory. Tools of game theory will be presented via simple examples and real-life applications. Applications include, competitions between firms, strategic voting, incentives, sports competitions, auctions, college admissions, cost sharing, kidney allocation, bankruptcy laws, etc.

Course Materials:

- A. Dixit and S. Skeath, *Games of Strategy*, Norton, 2nd edition. (D & S)
- P. Young, *Equity: In Theory and Practice*, Princeton University Press. (Y)
- Lecture notes (LN), exercises and sample exams. Available at:
<http://www2.bc.edu/~sonmezt/>

Grades and Requirements: Students are expected to come to each class, read the assigned material and solve the homework questions as scheduled.

Homework assignments: There will be four homework assignment sets. Answers to homework assignments will not be collected. However following each homework assignment there will be a quiz where at least one question will be similar to those in the homework.

Solutions of the homework assignments will be distributed in class after the quiz.

Quizzes: There will be 4 quizzes each of which will be announced at least one week before the quiz. The worst quiz will be dropped and therefore quiz grades will be based on the best 3 quizzes. Quizzes will cover the material covered in class as well as questions solved in homework assignments.

Grading: Grades will be based on quizzes (12%), two midterms (30% and 28%), and a final exam (30%). There will be no make up exams or quizzes.

Academic Integrity: There will be zero tolerance for cheating. See:

<http://www.bc.edu/offices/stserv/academic/resources/policy/#integrity>

Course Outline:

- Part 1: Strategy
 - Introduction to Strategy (D & S Ch. 1, Ch. 2, LN)
 - Extensive Form Games (D & S Ch. 3.1, LN)
 - Sequential Games and Backwards induction (D & S Ch. 3.2-3.7, LN)
 - Simultaneous Games, Dominant and Dominated Strategies, Nash Equilibrium (D & S Ch. 4, Ch. 5.1, LN)
 - Nash Equilibrium and Subgame Perfect Nash Equilibrium in Extensive Form Games (D & S Ch. 6, LN)
 - Repeated Games (D & S Ch. 11, LN)
 - Mixed Strategies (D & S Ch. 7, Ch. 8, LN)
 - Cooperation and Coordination (D & S Ch. 12, LN)
 - Voting (D & S Ch. 15, LN)
 - Incentives (D & S Ch. 16, LN)
- Part 2: Equity
 - Introduction to Equity (Y Ch. 1, LN)
 - Equity and Priority (Y Ch. 2, LN)
 - Apportionment (Y Ch. 3, LN)
 - Bankruptcy Problems (Y Ch. 4, LN)
 - Cost Sharing (Y Ch. 5, LN)