Game Theory Economics (ECON 4180/8803)
Spring 2016
3:05 pm - 4:25 pm / Instruction Center 117

Instructor Associate Professor Byung-Cheol Kim (byung-cheol.kim@econ.gatech.edu)
Room 324 Old CE Building / Office Hours: Thursday 1:30-2:50PM and by appointment

Course home page
http://tsquare.gatech.edu
All teaching materials will be posted and notified via T-square system. The emails sent via T-Square will be sent only to the email on file with GT. Please make sure GT has your correct email, as recorded in the Oscar account.

Course Description / Learning Objectives
This course provides an introduction to game theory and some of its applications. Game theory is the study of strategic interactions among multiple parties (individuals, organizations, groups, etc.) in a game situation. By studying game theory, you will be able to think strategically, understand and explain a wide range of problems. Through this course, we aim to teach and learn the following concepts and skills:

1. To represent any strategic situation as an extensive-form game (game-tree), and convert it into a normal-form game (payoff matrix);
2. To analyze a game formally using solution concepts (Nash, subgame-perfect, Bayesian, perfect Bayesian);
3. To study repeated games and reputation building;
4. To develop your own "games" for economic analyses.

Textbook
1. Joel Watson, Strategy: An Introduction to Game Theory, 3rd Edition, W. W. Norton & Company, 2013. (Required)
2. Robert Gibbons, Game Theory for Applied Economists, Princeton University Press, 1992. (Complementary)

Attendance
There is no formal check of your attendance. If you miss class, talk to other student who attended class regarding what we covered. This is your responsibility. I will not go over this material with you on an individual basis. Active participation in the classroom is highly encouraged.

Tests and Grades
- Your grade in this course will be based on eight (8) problem sets (15%), Midterm I (25%), Midterm II (25%) and Final exam (35%).
- The midterm exams start at 3:05PM and end at 4:25PM as our regular class starts and finishes. There is no extra time provided. The final exam starts at 11:30AM and ends at 2:20PM following the GT final exam schedule.
- Final exam is partially cumulative in the sense that two questions are from Midterm I and Midterm II coverage, one for each.
- All tests are mandatory. There is NO makeup test. If you miss one midterm exam for health reasons or official GT events, you must provide the doctor's note that exactly

spells out that you cannot (or could not) take the test. For GT approved official activities that you have to participate in, you will have to produce the relevant official GT documentation noting this fact. To be fair to all students in the class, there will be no exceptions to the policy stated above.

- Letter grade cutoffs A: 90% B: 80% C: 70% D: 60% F: Below 60%

- Curve If the class mean on a particular test falls below 78%, I will add a curve to that test to bring it up to 78%. For example, if the class mean on Midterm I is 73%, I will add a 5% curve to Midterm I; similarly for Midterm II and Final Exam. This protects you from tests that may be somewhat more difficult than others. If there is a curve, it will be posted on the T-square site when the test scores are posted. There is NO additional curve at the end of the semester as each test is curved, if necessary.

- Correction After receiving each midterm, you must report any error or mistake within a week so as to regrade the test. After this period, there is no way to change your score and this is strictly applied.

Problem Sets

- Assigned homework will be collected at the beginning of the class on the due date. Delayed submission is counted as no submission. I will use your work on problem sets to provide more customized feedbacks by discussing selected problems in our class. They will be very useful to perform well in exams as the exam questions will be similarly designed.
- Due to the extensive workload associated with detailed grading, my TA will check only (i) whether you submitted it on time and (ii) whether your work is "complete" or not. For a completed your problem set, it will be considered as the full grade (2%). Your work is counted as "partially completed" if your answers miss more than 20% of the entire problem set, and it will be considered as 1%. Obviously, no submission is 0%.

Other Remarks

1. I honor all policy under ADAPS-Disability Services Program. If you are under this program, please obtain a form from the ADAPTS office and turn it in to me by Jan. 21.
2. Please do not use headphone or earphone during the class.
3. Laptops can be used only for class purposes such as taking a note.
4. No food (cookies, burger, sandwich, etc.) in the classroom.
5. Be on time at the class and do not leave earlier. If you need to leave early, please email me in advance.
6. Last minute emails, for instance, "dumping some questions at 9PM the night before the exam date" will not be answered.
7. Any violation of Honor Code will be referred to the Dean of Students Office.

Course Schedule

Ch 1. Introduction to Game Theory

Part I. Basics of Game Theory

Ch 2. The Extensive Form
Ch 3. Strategies and the Normal Form
Ch 4. Beliefs, Mixed Strategies, and Expected Payoffs
Ch 5. Rationality, Common Knowledge, Solution Concepts

Problem Set 1

Part II. Static Games of Complete Information

Ch 6. Dominance and Best Response
Ch 7. Rationalizability and Iterated Dominance
Ch 9. Nash Equilibrium

Problem Set 2

Applications: Chapter 8 and Chapter 10

Ch 11. Mixed-Strategy Nash Equilibrium

Problem Set 3

Midterm I (Feb 11, Thursday)

Part III. Dynamic Games of Complete Information

Ch 14-15. Backward Induction and Subgame Perfection

Applications: Topics in Industrial Organization (Chapter 16)

Problem Set 4

Ch 18. Bargaining Problems
Ch 19. Analysis of Simple Bargaining Games
Ch 20. Games with Joint Decisions; Negotiation Equilibrium

Applications: Hold-up problem (Chapter 21)

Problem Set 5

Ch 22. Repeated Games and Reputation

Applications: Chapter 23

Problem Set 6

Midterm II (Mar 17, Thursday before Spring Break)

Part IV. Information (Static/Dynamic Games of Incomplete Information)

Ch 24. Random Events and Incomplete Information
Ch 26. Bayesian Games, Bayesian Nash Equilibrium

Applications: Auction, Information Aggregation (Chapter 27)

Problem Set 7

Ch 28. Perfect Bayesian Equilibrium

Applications: Job Market Signaling and Reputation (Chapter 29)

Problem Set 8

Final Exam (May 5, Thursday, 11:30am - 2:20pm in our classroom)

Note: This schedule may be subject to some changes. As the schedule suggests, this course will follow closely our main textbook. However, class lectures and textbook should only be used as complements, not as substitutes. Attending class is important as I may deviate from the textbook materials whenever necessary.