PSC/ECO 288 Introduction to Game Theory

Spring, 2001
T, Th 9:40-10:55
Gavett 301

Professor Duggan
Office: Harkness 111A
Hours: MW 1:00-2:00

Game theory, despite its frivolous sounding name, gives us a unified approach to understanding social phenomena. It helps us understand not just the way people play games in the usual sense, like tic-tac-toe, chess, or poker, but the way they behave in complex social situations as well. Examples of situations to which we will apply the theory include (but are not limited to): arms races, provision of public goods, competition between firms, electoral campaigns, voting, auctions, and bargaining. There are no formal prerequisites, but some aptitude for logical or mathematical reasoning is desirable.

Readings: The main textbook for the course is *Strategies and Games,* by Prajit Dutta. Lectures will be based on — but not limited to — the material in this book. An optional text, *Thinking Strategically,* by Dixit and Nalebuff, is informal yet informative.

Course work: Work in the course will consist of readings from textbooks; homeworks assigned approximately every two weeks; possibly some short quizzes throughout the semester; a mid-term; and a final. One or two homeworks may take the form of a short essay.

The worst of the homework grades will be dropped, and, for this reason, I will not accept late homeworks. (If you come to me with pressing circumstances, like illness, *before* an assignment is due, we may be able to work out an alternative arrangement.)

Note: Because I drop the worst homework grade, the homework policy provides you with some insurance against random disasters (like, "I forgot the homework was due."); you should try not to take advantage of it too early in the semester.

Teaching assistance: The teaching assistant for the course is **Seok-Ju Cho.** Recitation will be held **Monday, 2:00-3:15, in Hylan 202.** Seok-Ju will answer questions about homework and questions about material from lectures or from the textbook.

Grading: Final grades will be determined on the basis of course work with the following weights: 20% homework, 30% mid-term, 40% final, and 10% participation. Your "participation" mark will depend on attendance, participation in class (asking/answering questions), quizzes (if any), and generally demonstrating an interest in the material.

Outline: Below, I list the main topics to be covered during the semester and their approximate timing. The mid-term exam is tentatively scheduled for Thursday, March 15 (week 8).

Week

1. Introduction
2. Individual Decision-making
3. Strategic Form Games (no class Thursday, Feb. 1)
4. Extensive Form Games
5. Dominance Concepts
6. Nash Equilibrium
7. Applications
8. Mixed Strategy Nash Equilibrium
9. Zero-sum Games
10. Backward Induction
11. Applications
12. Subgame Perfect Nash Equilibrium
13. Finitely Repeated Games
14. Infinitely Repeated Games
15. Review