

Economics 340: Introduction to Game Theory Spring 2009

Instructor: Simon Grant

Room 212, Baker Hall ph 713-348 3332 email: sgrant@rice.edu

Office Hours: Tu & Th 10:00am – 11:00am.

Classes: Tu & Th 8:00am – 9:15am TBA.

Web Page: <http://www.owlnet.rice.edu/%7Eecon472/>

Text book: J. Watson: *Strategy: An introduction to Game Theory*, 2nd edition Norton 2008.

TAs: Rajnish Kumar email:Rajnish.Kumar@rice.edu

& Burcu Cigerli email: Burcu.Cigerli@rice.edu

Background:

A. Dixit & B. Nalebuff: *Thinking Strategically*, Norton 1991.

Assessment: The final grade will be based on a mid-term exam (25%), a final exam (50%) and problem sets (25%).

If the *minimum percentage score* earned on the mid-term exam or on the problem sets is *lower* than the *percentage score* earned on the final, then the mid-term exam or the problem sets will not be used in the calculation of the final grade. Instead, the weight of the final exam will be increased to 75%. That is, the final exam's weight will be increased from 50% to 75% only if that improves a student's overall percentage score.

There will be fortnightly problem sets.¹ Doing the assignments is important for your understanding, and therefore shortcuts are not recommended. Sometimes, problems will be assigned on material not yet covered in class or that extends the lecture material; it's all right if you make mistakes, you will learn a lot from them. *Each student must hand in an individually written answer to each assignment*, but group discussion is encouraged.

Midterm will be held in class on:

Thursday, February 26.

Any student with a documented disability needing academic adjustments or accommodations is requested to speak with me during the first two weeks of class. All discussions will remain confidential. Students with disabilities will need to also contact Disability Support Services in the Ley Student Center.

¹ The *fortnight* is a unit of time equivalent to fourteen days. The word derives from the Old English feorwertyne niht, meaning "fourteen nights".

Course Aims and Methods: Game theory is a way of thinking about strategic situations. One aim of the course is to teach you some strategic considerations to take into account when making your own choices. A second aim is to predict how other people or organizations behave when they are in strategic settings. We will see that these aims are closely related. We will learn new concepts, methods and terminology. A third aim is to apply these tools to settings from economics and other disciplines. The course will emphasize examples. We will also play several games in class.

Outline and Reading: W=Watson; DN=Dixit-Nalebuff.

A number such as 2.1 refers to Chapter 2, section 1.

Week 1

Introduction.

Prisoners dilemmas; coordination.

Ingredients of Strategic Form Games.

Dominance & Iterative Deletion

Reading. W:1,6,7; DN:3.1-3.3.

Week 2

Dominance & Iterative Deletion: Applications.

Best Response and Rationalizability: Applications.

Reading. W:7,8.

Week 3

Introduction to Nash Equilibrium.

Application: Imperfect Competition.

Reading. W:9,10; DN:3.4-3.6

Week 4

Nash Equilibrium Applications continued.

Voter-Candidate Model; Shelling Location Game.

Reading. W:10; DN:9.5

Week 5

Mixed Strategies: Applications

Evolution and Game Theory

Reading: W: 11,12; DN:7

& Osborne Chapter 13 (especially 13.1 & 13.2).

Week 6

Evolution and Game Theory cont.

Intro to Sequential Games: Backward Induction, Commitment

Osborne Chapter 13 (especially 13.1 & 13.2)& W:21;

Week 7

Games of Perfect Information,:

Credibility, Reputation, the Game of Duel,

Reading.W:21

Week 8

Bargaining

Reading. W:19

Midterm Exam in-class Thursday February 26.

Week 9

Intro to imperfect information

Information sets, Sub-game Perfection,

Applications of SPE: Direct and Strategic Effects

Reading. W:14, 15

Week 10

Wars of Attrition.

Repeated Games: cooperation in Prisoner's dilemma

Reading W16, 22

Week 11

Infinitely repeated games.

Asymmetric Information, information economics

Applications of Incomplete Information: signaling

Reading. W22-23, 24-26, 29

Week 12

Screening.

Applications of Incomplete Information: screening

Reading: Lecture handouts.

Week 13

No lectures

Week 14

Auctions.

Reading: W27.