

# **Game Theory**

Economics 478, Winter 2007  
TTh 4:30 – 5:45

Professor Val Lambson  
Office: 151 FOB  
Office Hours: TTh 3:00-4:00

## **Course Description and Objectives**

Game theory is a branch of mathematics used to model strategic choices. Many problems in economics are decision-theoretic, that is, bereft of strategic interactions. For example, in competitive markets each participant is inconsequential and can optimize without worrying about the effects of his choices on other participants. For another example, monopolists can optimize without regard to competitors because, by definition, there are none. By contrast, oligopolists make strategic decisions, because it is useful for each participant to predict the strategies of the others and behave accordingly, taking into account that their opponents have the incentive to do likewise.

Prerequisites are few. Familiarity with the basic concepts from an introductory economics course like Economics 110 is helpful, but not essential. The instructor assumes that the student can competently apply basic calculus techniques, can calculate expected values of given distributions, and is capable of abstract logical/mathematical thinking.

## **Some Class, College, and University Policies**

Students, whether present or absent, are responsible for all announcements made in class.

Grading will be on the basis of homework (10%), two midterm examinations (20% and 20%) and a final examination (50%). The professor understands that the final examination is to be given in class on Wednesday, 25 April at 2:30, but students should verify this. The final will be given at the scheduled time only. Examinations are **never** given early, even if you buy a non-refundable ticket before talking to me because you think I don't really understand sunk costs..

Homework from each section is due at the beginning of class on the Tuesday following their assignment. Late homework receives no credit, even if you missed the bus or your computer ate it.

Please refer to the Class Schedule for the University's statements on harassment, discrimination and the honor code.

## Course Outline

Students should find the textbook, by Osborne, useful as they work to understand game theory and its applications. Other books on game theory may also be helpful. By contrast, the course has little to do with the film, *A Beautiful Mind*. An outline of the course follows:

### Introduction

Reading: Mathematics and the Social Sciences

### Normal (Strategic) Form Games

Reading: Chapters 2-3

### Mixed Strategies

Reading: Chapter 4

### Extensive Form Games

Reading: Chapters 5-6

### Imperfect Information

Reading: Chapters 9-10

### Repeated Games

Reading: Chapters 14-15