Prof. Brett A. Saraniti
UC Davis
Winter 2021

Game Theory
MGT/P/B 490

Course Description

Game Theory is a discipline that provides a mathematical methodology for modeling and analyzing interactive decisions among multiple agents. Game theory has a wide range of applications in management, economics, political science, computer science, evolutionary biology and many other fields. Game Theorists have won a number of Nobel Prizes over the past 25 years including the 2020 prize which was the second time auction theory was celebrated with a win.

The approach of this course will be somewhere between that of a typical MBA elective and that of a typical economics class. Definitions will be stated formally, and arguments will be developed rigorously. At the same time, most of the course will be devoted to using game theory to understand applications in business. Taking these applications as a starting point, we will develop an understanding of what constitutes a good mathematical model for addressing an economic question.

The goal of the course is to teach you how to use structured thinking based on theory to enable your intuition about competition so that you increase your odds of making better and more focused strategic decisions.

Reading Materials

There is NO REQUIRED TEXTBOOK for this class. An excellent mid-level optional text is:

Martin Osborne (2004). *An Introduction to Game Theory*. Oxford.

Here are two game theory texts whose presentations are at a somewhat lower level than Osborne's.

Prajit K. Dutta (1999). *Strategies and Games*: *Theory and Practice*. MIT.
Joel Watson (2008). *Strategy*: *An Introduction to Game Theory*, 2nd ed. Norton.

To get a serious mathematical treatment of the topics we consider, I recommend these super high-level graduate textbooks:

Drew Fudenberg and Jean Tirole (1991). *Game Theory*. MIT.
Roger Myerson (1991). *Game Theory*: *Analysis of Conflict*. Harvard.

There will be a number of articles and/or case studies to compliment the lectures. These will be posted on the course canvas site.

Course Outline

Topic 1: Sequential Form and Deterrence
Topic 2: Hotelling, Disruption, and Judo
Topic 3: Auction Theory
Topic 4: The War of Attrition
Topic 5: Mixed Strategies (i.e. Poker)
Topic 6: Social Choice

Meetings

The course will meet on the following Monday evenings from 5:40 – 9pm via the zoom links posted on canvas:

Monday February 8th, February 22nd, and March 8th.

Grading

Each session will have a required preparation assignment that will be submitted on canvas BEFORE class begins. There will also be a short exam after the final session. Final grades will be based on:

Participation & preparation   60%
Exam   40%

Contact information

You can reach me by e-mail at brettsaraniti@gmail.com or on my cell phone at (808) 258-7701. My office hours will be affirmed the first day of class and by appointment.