

Game Theory

Fall 2006

Times: TuF 1.30–2.50

Place: Sci 217

Instructor: Matt Ollis

Credits: 3

Web: http://cs.marlboro.edu/courses/fall2006/game_theory/home

Description: This course introduces several aspects of game theory from a mathematical point of view. We'll begin by considering the surprisingly complex children's game dots and boxes and move on from there to consider other two-player games (such as nim, the prisoner's dilemma and chicken), Nash equilibria, voting systems and the theory of auctions. We will see applications of the math we develop in other disciplines, particularly economics and political science. A tentative schedule can be found on the website.

Main texts: The Dots and Boxes Game: Sophisticated Child's Play, by Elwyn Berlekamp (AK Peters, 2000). Mathematics and Politics: Strategy, Voting, Power and Proof, by Alan D. Taylor (Springer 1995).

Grading: There will be regular assignments and quizzes through the semester. The assignments will contribute 40% of your grade and the quizzes will contribute 10%. There will be a final project and presentation, worth 20%, and a take-home final exam worth 30%. Your grade may be adjusted by up to one full letter—either up or down—depending on attendance and participation in class, preparation for class and promptness of assignment submission.

Assignment 0: Play several games of Dots and Boxes. Here is a description of the rules, from Berlekamp's book (p. 3):

“Two players start from a rectangular array of dots and take turns to join two horizontally or vertically adjacent dots. If a player completes the fourth side of a square (box) he initials that box and must then draw another line. When all the boxes have been completed the game ends and whoever has initialed more boxes is declared the winner.

“A player who can complete a box is not obligated to do so if he has something else he prefers to do.”