

# BA 501 Game Theory

(with Applications to the Economics of Collusion)

## Fall 2007

Instructor: Leslie M. Marx

<http://www.fuqua.duke.edu/faculty/alpha/marx.htm>

This course covers basic topics in noncooperative game theory with applications to the study of collusion in auctions and other markets. We will cover representations of games in normal and extensive form and solution concepts, including Nash equilibrium, subgame perfect Nash equilibrium, perfect Bayesian equilibrium, sequential equilibrium, correlated equilibrium, iterated dominance, and rationalizability. In applying game theory to the study of collusion, we will cover a variety of topics in repeated games, with emphasis on tacitly collusive and explicitly collusive equilibria. We will also discuss legal issues relating to collusion and a number of case studies of cartels. The course is suitable for Ph.D. students in Economics and Fuqua, students at the Law School, and graduate students at the Public Policy Institute.

1. Meetings – Wednesdays, 8:45am–11:15am, Fuqua Seminar Room C

The first class meeting is August 29, 2007. There is no class on October 24 (I have an MBA teaching obligation that day), and there is no class on November 21 (Thanksgiving Break). The last class is on November 28, 2007. The final exam will be offered on December 12, 2007, at the usual class time.

2. Office hours – Please call 660-7762 or e-mail [marx@duke.edu](mailto:marx@duke.edu) to make an appointment (office is Fuqua A411)
3. Evaluation – Evaluation will be based on four components:
  - (a) Case preparation assignments – 10%
  - (b) Midterm exam (October 17, 2007) – 15%
  - (c) Problem set (math track) or essay assignments (non-math track) – 50%
  - (d) Final exam – 25%

4. Textbooks – We will use material from three books:
  - (a) Primary reference for game theory: Fudenberg and Tirole (1993), *Game Theory*, MIT Press.
  - (b) Reference for repeated and dynamic games: Gibbons (1992), *Game Theory for Applied Economists*, Princeton University Press.
  - (c) Background on collusion: Stocking and Watkins (1991), *Cartels in Action*, William S. Hein & Co., Inc.
5. Readings – e-reserves are available at [http://library.fuqua.duke.edu/internal/ba501\\_07.htm](http://library.fuqua.duke.edu/internal/ba501_07.htm). You need a Duke NetIDs to access the site.

## Additional Details

- I will offer two “tracks” for completing the course, one for “math types” and one for “non-math types.”
- Math types: Math types must complete all assigned problems, to be turned in by December 12, 2007. Students may work together. After attempting a problem, students may check their work against the solutions manual on reserve at the Ford Library and revise their answer as appropriate (the solutions manual may not be photocopied in whole or part). Each student must write out all solutions in his or her own hand. Students not turning in the complete set of solutions will receive a grade of “incomplete” for the class.
- Non-math types: Instead of problems to work, non-math types will have reading assignments with one-page essays to write. These essays must be turned in on the dates assigned. I would like to be able to share some of the essays with the class, so please talk with me if you do not want your essay distributed to the class. Students may discuss the readings and essay assignments with one another, but must compose their essays individually.
- On both the midterm and final exams, certain questions will be designated only for math-track students and others only for non-math-track students.