

## **Introduction to Game Theory**

Tuesday 9:30-12:30

Batts First Floor

Professor: Terry Chapman

Office: Batts 3.104

Office hours: Wed. 2-3:30, Th 9:30-11:00

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### **Texts:**

Nolan McCarty and Adam Meirowitz. *Political Game Theory: An Introduction*. Cambridge University Press.

Note: M&M has several errors in examples and problem sets; erratum can be found here: <http://www.princeton.edu/~ameirowi/>

(Optional) Jeff Gill. *Essential Mathematics for Political and Social Sciences*. Cambridge University Press.

### **Grading:**

Homework 30%

Midterm 25%

Final Exam 25%

Paper 20%

**Homework:** Weekly problem sets, due at the beginning of class the following week. Make your work clear and concise.

**Paper:** 10 page paper due the last day of class. The paper must introduce a political science topic, explain how existing work leaves a theoretical question or set of questions about that topic unexplored, and set up a formal theoretical model designed to help answer that question. The model should be introduced by describing the relevant players, their preferences and utility functions, and a sequence of moves. You are not required to solve the game, merely specify it fully. Papers will be graded on the basis of whether the writing demonstrates a clear understanding of the topics introduced in this class as well as the degree to which the proposed model would further theoretical understanding in the relevant area.

**Exams:** two take-home exams, one at midterm, and one at the end of the course.

## **Course Outline**

### **Topic 1: Introduction and Formal Theory Building**

S.M. Amadae and Bruce Bueno de Mesquita. 1999. "The Rochester School: The Origins of Positive Political Theory." *Annual Reviews of Political Science* 2: 269-295

Daniel Diemeir. 1995. "Rational Choice and the Role of Theory in Political Science." *Critical Review* 9: 59-70.

Gary Cox. 1999. "The Empirical Content of Rational Choice Theory." *Journal of Theoretical Politics*.

### **Topic 2: Choice and Utility**

Chapters 1-2 in M&M

### **Topic 3: Choice Under Uncertainty**

Chapter 3 in M&M

### **Topic 4: Normal Form Games, Nash Equilibrium**

Chapter 5 in M&M

### **Topic 5: Extensive Form Games, Subgame Perfect Equilibrium**

Chapter 7 in M&M

David Austen-Smith and Jeff Banks. 1988. "Elections, Coalitions, and Legislative Outcomes." *American Political Science Review* 82(2): 405-422. (useful example of backward induction)

### **Topic 6: Repeated Games**

Chapter 9 in M&M

David Baron and John Ferejohn. 1989. "Bargaining in Legislatures." *American Political Science Review* 83(4): 1181-1206.

James Fearon and David Laitin. 1996. "Explaining Interethnic Cooperation." *American Political Science Review* 90(4): 715-735. (overlapping generations)

### **Topic 7: Bayesian Games, Belief Updating, Bayesian Equilibrium**

Chapter 6 in M&M

**Topic 8: Signaling and Perfect Bayesian Equilibrium**

Chapter 8 in M&M

**Topic 9: Comparative Statics and Model Testing**

**Topic 10: Extensions**