

---

**POL 344/520**  
**EP&E 295**  
**Game Theory and Political Science**  
**Yale University Department of Political Science**  
**Fall 2014**

---

Mondays and Wednesdays, 4:30-5:20  
WLH 208

Professor Deborah Beim  
deborah.beim@yale.edu  
Office Hours: Tuesdays, 10:00-12:00  
ISPS C124

### **Introduction**

This course provides an introduction to game theory and its applications to political science. We will use the structure of game theory to understand social interactions (like war, elections, policy making, and corruption)—that is, we will conceive of these interactions as games between self-interested agents. In doing so, we will gain deep, interesting, fun and subtle insights we might otherwise not have seen or understood.

The primary goal is to develop an understanding of incentives that will prove useful in thinking about a very large set of social interactions. Students are introduced to the concepts of Nash equilibrium, time-consistency, signaling, and reputation formation. Throughout the course, we apply these insights and tools to phenomena both inside and outside the realm of politics.

There are no prerequisites for this course, mathematical or otherwise (though students sometimes find the work technically challenging.) There is much less reading each week than in a typical political science course, but a substantial amount of time thinking through problems and puzzling through new concepts is required. The class meets twice weekly in a lecture format. Class participation is encouraged—game theory is inevitably cumulative, so please do not hesitate to ask questions. There are also weekly discussion sections, which will allow you to review the past week's lectures, discuss the problem sets, and delve further into topics you found particularly interesting or difficult.

The following book is required (denoted O in the schedule):  
Osborne. 2004. *An Introduction to Game Theory*, Oxford Press.

The following book is recommended as supplementary reading (MM in the schedule):  
McCarty and Meirowitz. 2006. *Political Game Theory*, Cambridge University Press.

Some students find it useful to read before class, while others prefer reading after class. I encourage you to try both and see what you prefer. The best (and most comprehensive) option is to skim the Osborne text before class, and read the MM text carefully after class. Throughout the course, you may also want to reference *Analyzing Politics: Rationality, Behavior, and Institutions* by Shepsle and Bonchek (Norton, 1997) and *Thinking Strategically: The Competitive Edge in Business, Politics, and Everyday Life* by Dixit and Nalebuff (Norton, 1991).

## Course Requirements

Your grade in this class will be based on the following:

- 25% Midterm Exam
- 25%: Problem Sets
- 40% Final Exam
- 10%: Participation

## Problem Sets

There will be 8-12 problem sets, with 3-4 questions apiece. You are encouraged to talk with your classmates about the problems, but you must write and turn in your own answers. If you turn in handwritten solutions, please photocopy or photograph your solutions before turning them in. Solution manuals for the problem sets will **not** be distributed.

## Schedule

*All dates are approximate*

### 1. 8/27: Introduction

Motivation and historical background, examples.

*Readings:* O: 1.1; MM: 1

### 2. 9/3: A working definition of *rationality*

Individual choice theory, preferences, utility functions, expected utility theory.

*Readings:* O: 1.2-1.3; MM: 2.1, 2.3, 2.5, 3

### 3. Strategic games of perfect information

9/8: Normal (strategic) form games

9/10: Nash Equilibrium

9/15: Mixed strategies

9/17: Equilibrium selection; collective action problems

*Readings:* O: 2,4; MM: 5.1, 5.2

### 4. Strategic games with uncertainty

9/22: Incomplete information; Bayesian Nash equilibrium

9/24: Candidate positioning

9/29: Bayes' rule

10/1: Condorcet Jury Theorem

*Readings:* O:9; MM: 6.1, 6.2, 6.3, 6.6

10/6: Midterm review

**10/8: MIDTERM**

**5. Dynamic games of perfect information**

10/13: Extensive form games

10/15: Subgame Perfect equilibria

10/20: Burning money

10/27: Agenda control (the Romer-Rosenthal model)

10/29: Credible threats

*Readings:* O:5,6; MM: 7, 10.2, 10.3

**6. Dynamic Games of imperfect information**

11/3: Perfect Bayesian equilibria

11/5: Signaling models

11/10: Challenger entry

*Readings:* O:10; MM: 8.1, 8.2, 8.3.

**7. Repeated Games**

11/12: Repeated games

11/17: Discounting; folk theorems

11/19: Bargaining over time (the Baron-Ferejohn model)

*Readings:* O:14, 15; MM 9.1-9.5

**8. 12/1: Collective choice and institutional design**

*Readings:* MM: 4, 11; Selections from Shepsle and Bonchek, *Analyzing Politics*

12/3: Final review

**FINAL EXAM**