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.

There are two books for this course, denoted MM and O in the schedule below.


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, drawn mostly from the two textbooks. You are encouraged to talk with your classmates about the problems, but you must write and turn in your own answers.

**Class Schedule**

1. **Introduction (Week 1)**
   Motivation and historical background, examples.
   *Readings:* O: 1.1; MM: 1

2. **A working definition of rationality (Week 2)**
   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 (Weeks 3 and 4)**
   Normal (strategic) form games
   Nash Equilibrium
   Mixed strategies
   *Readings:* O: 2,4; MM: 5.1, 5.2

4. **Strategic games with uncertainty (Weeks 5 and 6)**
   Bayesian games
   *Readings:* O: 9; MM: 6.1, 6.2, 6.3, 6.6

**MIDTERM**

5. **Dynamic games of perfect information (Weeks 7 and 8)**
   Extensive form games
   Subgame Perfect equilibria
   *Readings:* O: 5,6; MM: 7, 10.2, 10.3

6. **Dynamic Games of imperfect information (Weeks 9 and 10)**
   Extensive form games with information sets
Bayes’ rule
Perfect Bayesian equilibria
Readings: O:10; MM: 8.1, 8.2, 8.3.

7. Repeated Games (Weeks 11 and 12)
Folk Theorems
Readings: O:14; MM 9.1-9.5

8. Collective choice and institutional design (Weeks 13 and 14)
Readings: MM: 4, 11; Selections from Shepsle and Bonchek, Analyzing Politics

FINAL EXAM