Overview

The purpose of this course is to introduce positive political theory, i.e., the use of mathematical modeling in the study of politics. This approach is usually labeled as formal modeling or rational choice methodology in the political science discipline. There are two main toolboxes used: game theory and social choice theory. In general, the former provides models for interactions among strategic players whereas the latter provides a theoretical framework for the normative analysis of aggregating individual preferences. We will survey a broad range of models which are applicable to many aspects of political science ranging from voting, electoral systems, institutions and institutional change, collective action to the strategic role of international organizations and the situations of international crisis bargaining. One common theme will be the individual level determinants of macro level patterns we observe in the political landscape.

Mathematics is a language. In fact, it is the most precise language we have. Although it has traditionally been associated with the physical sciences, it also provides us a rich set of tools to pursue our investigations within the social sciences. In this course, I would like to illustrate how the powerful language of mathematical model can help us reducing the complexities of the social world and communicate our findings.

There are no formal technical prerequisites for the course but some familiarity with mathematical reasoning is certainly helpful.

Course Requirements

Grading is as follows:

Weekly Problem Sets: %30
Midterm Exam: %30
Final Exam: %40
Required Texts

- Analyzing Politics, by Ken Shepsle and Mark Bonchek
- Games of Strategy, by Avinash Dixit and Susan Skeath

All other readings will be available on the website.

Course Outline\(^1\)

Topic 0: Mathematical Models in Social Sciences

Topic 1: Rationality and Rational Choice
Shepsle & Bonchek, Chapter 1-2

Topic 2: Preference Aggregation and Arrow’s Theorem
Shepsle & Bonchek, Chapter 3-4

Topic 3: Majority Rule and May’s Theorem
Shepsle & Bonchek, Chapter 4


Topic 4: Positive Democratic Theory

Topic 5: Spatial Models of Voting
Shepsle & Bonchek, Chapter 5


Topic 6: Strategic Form Games: Theory
Dixit & Skeath, Chapters 4, 5, 7, 8

\(^1\)This schedule may change as the semester unfolds
Topic 7: Strategic Form Games: Applications

Topic 8: Extensive Form Games
Dixit & Skeath, Chapters 1-3

Topic 9: Bargaining

Topic 10: Repeated Games and Cooperation
Dixit & Skeath, Chapter 11
Shepsle & Bonchek, Chapter 8

Topic 11: Collective Action and Public Goods
Shepsle & Bonchek, Chapter 9, 10

Topic 12: Institutions and Institutional Change
Shepsle & Bonchek, Chapter 11

Topic 13: Delegation and Bureaucracy
Shepsle & Bonchek, Chapter 13

Topic 14: Models of Courts and Judge
Shepsle & Bonchek, Chapter 15
Topic 15: Games, Information and War

Dixit & Skeath, Chapter 9


Topic 16: Experimental Political Science