

University of Rochester Political Science

PSC 408
Positive Political Theory

Prof. Mark Fey
Spring 2011

Syllabus

This course is part of a rigorous introduction to the main concepts and results in positive political theory. It is the second half of a two course sequence consisting of PSC 407 and PSC 408. The sequence concentrates on the theoretical models used in contemporary political science, and provides the mathematical background necessary to fully understand them.

The year-long sequence of PSC 407 and PSC 408 is designed to be both a rigorous foundation for students planning on taking further courses in the positive political theory field and a self-contained overview of the field for students who do not intend to do additional coursework in the field. This course will focus on the basics of game theory, which analyzes individual behavior in strategic situations. It will also cover the mathematical tools required to express the theory. Examples and applications will be drawn from several different areas in political science, including the American Congress, voting, international relations, political economy, and law.

Naturally, PSC 407 is the prerequisite for this course. Students should have a good working knowledge of the mathematical topics covered there.

Course Meetings: Lectures for the course will be Mondays from 12:30–2:00 in Harkness 329 and Thursdays from 2:00–3:30 in Harkness 112.

Course Work: To learn this material, there is no substitute for solving problems. Therefore, problem sets will be assigned roughly every other week. There will also be a midterm and final exam.

Course Readings: The main reference for the course is a working draft of *Analytical Methods for Political Scientists*, Volume 2, by John Duggan and myself. Chapters from this book will be distributed in class. I will make use of two of the books that were used in PSC 407:

- Simon and Blume, *Mathematics for Economists*
- Ordeshook, *Game Theory and Political Theory*

I will also use one additional book:

- Osborne, *An Introduction to Game Theory*

Schedule: Below is the list of topics and the scheduled readings for the course. Naturally, this schedule may change as the semester unfolds.

Topic 0 Overview and logistics of the course

Topic 1 MANIPULABILITY

misrepresentation of preferences, Gibbard-Satterthwaite theorem, agenda control

- Ordeshook, sec. 2.4

Topic 2 CONSTRAINED OPTIMIZATION

local and global, first and second order necessary conditions, sufficient conditions, constrained optimization and Lagrange's method, comparative statics

- Simon and Blume, chs. 17–19, 21.5

Topic 3 EXPECTED UTILITY

lotteries, expected utility, risk aversion, paradoxes, turnout

- Ordeshook, sec. 1.5–1.7
- Simon and Blume, appendix A5

Topic 4 STRATEGIC FORM GAMES

weak and strong dominance, IEWDS, pure strategy Nash equilibrium, mixed strategies, zero-sum games, applications, continuous strategy spaces

- Osborne, chs. 2–4
- Ordeshook, sec. 3.5, 3.6, 3.8, 4.1–4.5

Topic 5 EXTENSIVE FORM GAMES

strategies in the extensive form, information sets, backward induction, subgame perfection, credible threats, sophisticated voting in agendas

- Osborne, chs. 5–7
- Ordeshook, secs. 3.1–3.3, 3.7, 3.9, 6.4

Topic 6 APPLICATIONS

Coordination Collective action, public goods, and cooperation

- Osborne, chs. 14–16
- Ordeshook, ch. 5

Topic 7 VOTING MODELS

strategic voting, issue-by-issue, setter model

- Ordeshook, secs. 6.1–6.3

Topic 8 BARGAINING

alternating offers, Nash bargaining

- Ariel Rubinstein, “Perfect Equilibrium in a Bargaining Model,” *Econometrica*, 50:1 (1982) 97–110. (JSTOR)
- David Baron and John Ferejohn, “Bargaining in Legislatures,” *American Political Science Review*, 83 (1987) (JSTOR)
- John Nash, “The Bargaining Problem,” *Econometrica* 18:2 (1950) 155–162. (JSTOR)

Topic 9 REPEATED GAMES