

PSC 408 POSITIVE POLITICAL THEORY

Spring, 2017  
MW 10:00-11:50  
Harkness 112

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Hours: by appointment

This course is the second half of a two-course sequence consisting of PSC 407 and PSC 408. The goal of the sequence is to give a rigorous introduction to the main concepts and results in positive political theory. At the same time, we will teach you the mathematical tools necessary to understand these results, to use them, and (if it suits you) to surpass them in your own research in political science. The sequence emphasizes rigorous logical and deductive reasoning — this skill will prove valuable even to the student primarily interested in empirical analysis rather than modeling.

The sequence is designed to serve both as a rigorous foundation for students planning on taking further courses in the positive political theory field and as a self-contained overview for students who do not intend to do additional coursework in the field. In contrast to PSC 407, which was mainly concerned with social choice applications and the mathematics behind them, PSC 408 will focus on strategic interaction. Thus, the theoretical framework is game-theoretic, and the mathematical tools are drawn from optimization theory and fixed point theory (and build on the mathematical background from PSC 407).

Obviously, PSC 407 (or the equivalent background) is required for this course.

Homeworks, a midterm, and a final will be assigned. Students are allowed to collaborate on homework; but after discussion with others, each student is expected to write up her or his answers independently. The date and time of the final are set by the University Registrar and can be found on their website, which follows.

<http://www.rochester.edu/registrar/examschedule.html>

The final is **Wednesday, May 10, at 12:30**. This date is firm, so keep it in mind when making your travel plans for summer break.

For the first part of the course, my lectures will be based on notes that are available on my website. In addition, there are three textbooks for the course. Two,

- Simon and Blume (SB), *Mathematics for Economists*

- Ordeshook (Or), *Game Theory and Political Theory*,

are required for PSC 407, so you already have them. One,

- Osborne (Os), *An Introduction to Game Theory*,

is new and will be a good reference for the second part of the semester, on non-cooperative game theory.

An outline of the topics to be covered is as follows. Next to each, I list suggested (or at least relevant) readings from the texts. My presentation of the material will differ from these authors', but the readings will be quite valuable as references.

1. Optimization Theory [SB 17–19, 21.5; notes]
  - unconstrained and constrained optimization, equality and inequality constraints
2. Spatial Model of Politics [Or 2.3; notes]
  - unidimensional model and median voter theorem, quasi-linear model and value maximization, multidimensional model, Plott's instability theorem, McKelvey's chaos theorem
3. Choice under Uncertainty [Or 1.5–1.7; notes]
  - von Neumann-Morgenstern axioms, expected utility, risk aversion, paradox of voting, political agency
4. Strategic Form Games [Os 2, 4, 11, 12; Or 3, 4.1–4.3, 5; notes]
  - dominance, mixed strategy equilibria, Nash equilibrium, zero-sum games
5. Elections and Contests [Os 3.3; Or 4.4–4.9; notes]
  - Downsian model, median voter theorem, probabilistic voting, rent-seeking
6. Extensive Form Games [Os 1.3–1.4, 2.3, 4.7; notes]
  - perfect information and backward induction, imperfect information and subgame perfect equilibrium, folk theorem for repeated games
7. Political Bargaining [Os 16; notes]
  - setter model, Baron-Ferejohn bargaining, one-dimensional bargaining