PSC 408: POSITIVE POLITICAL THEORY

SPRING 2026
MW 10:00-11:30am
HARKNESS 329

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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.

The bulk of 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 in that course.

This course follows the College credit hour policy for four-credit courses. This course meets twice weekly for three academic hours per week. The course also includes recitation for one academic hour per week.

The University of Rochester respects and welcomes students of all backgrounds and abilities. In the event you encounter any barrier(s) to full participation

in this course due to the impact of disability, please contact the Office of Disability Resources. Visit http://www.rochester.edu/college/disability/ for more information.

Recitation: Shunsuke Yoshimura is the TA for this class and will be offering weekly recitation to answer questions and go over homework assignments. Tentatively, recitations are scheduled for Thursdays 1:30-2:30pm.

Course Work & Exams: Problem sets will be assigned roughly every or every other week. An in class midterm exam will be scheduled for sometime in March. The final exam will take place early in May.

Course Readings: In addition to the readings assigned in PSC 407 the books by

- Osborne, An Introduction to Game Theory, and

- Gibbons, Game Theory for Applied Economists,

will serve as a reference for the non-cooperative game theory component of the class. Any additional readings will be distributed during the semester.

Evaluation: Your final grade is based on class participation (10%), assignments (20%), midterm (25%), and final exam (45%).

Academic honesty: General University policies and guidelines regarding academic honesty apply with the following added clarification. With regard to assignments, you are expected and even encouraged to discuss and jointly work on assignment problems, *yet* you are individually responsible and must prepare and write up submitted answers on your own. Second, **course materials including lecture notes, assignments, and exams are proprietary and are not intended for sharing outside the classroom, certainly not for dissemination in the public domain through electronic media.** ***You may not make such materials available to any third person or entity within or outside the University without my explicit written consent.***

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 Constrained Optimization

Lagrange's method, first order necessary conditions, convex programming, comparative statics, Pareto optimality.

- Simon and Blume, chs. 17-19, 21.5.

Topic 2 Strategic form games

Weak and strong dominance, IEDS, pure strategy Nash equilibrium, mixed strategies, zero-sum games, continuous strategy spaces.

- Osborne, chs. 2-4,
- Gibbons, ch. 1.

Topic 3 Collective Action, Voting, and Participation

Collective action, Public Goods, Participation and Turnout.

- Osborne, chs. 4.8,

Topic 4 Electoral Competition

Convergence, Candidate Motivations and Uncertainty.

- Osborne, chs. 3.4.

Topic 5 Dynamic Programming

Dynamic programming. One-stage-deviation principle. Bellman equation.

- Class notes.

Topic 6 Extensive Form Games

Strategies in the extensive form, information sets, backward induction, subgame perfection, credible threats.

- Osborne, chs. 5-7.

- Gibbons, ch. 2.

TOPIC 7 VOTING AND BINARY AGENDAS

Sophisticated voting, Agenda Setting and Agenda Manipulation, Vote Buying.

- Osborne, secs. 6.1,6.3, 7.4.

TOPIC 8 BARGAINING

Sequential bargaining.

- Osborne, chs. 16.

TOPIC 9 REPEATED GAMES

Folk Theorems.

- Osborne, chs. 14-15.

- Gibbons, ch. 2.

TOPIC 10 STATIC GAMES OF INCOMPLETE INFORMATION

Bayesian games and Bayesian Nash equilibrium. Collective action revisited.

- Osborne, ch. 9.

- Gibbons, ch. 3.

TOPIC 11 DYNAMIC GAMES OF INCOMPLETE INFORMATION

Perfect Bayesian Nash equilibrium. Screening and Signaling.

- Osborne, ch. 10.

- Gibbons, ch. 4.