

## **PSC 506: Advanced Topics in Methods**

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Spring 2009

Lecture: 3:25-6:05, Tuesday, Harkness 112

Course website: <http://mail.rochester.edu/~mperess/atm2009.html>

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Harkness 326

OH: M 3:30-5:00

Overview: This course is designed for graduate students intending to pursue political methodology as a major field. It covers advanced statistical methods that are not yet standard fare in political methodology courses: e.g., semiparametric methods, nonparametric regression, time-series econometrics, Bayesian methods, and ideal point estimation. Course content will vary year to year, and this semester will focus more heavily on Bayesian methods, simulation-based estimation, and ideal point estimation. As a research workshop, this course also allows students to pursue areas of individual interest in more depth, and therefore course content is determined based on the interests of both the professor and the students. Prerequisites: PSC 404, PSC 405, and PSC 505.

Grading: Grading will be based on a ~4 take-home assignments (65%) and ~3 in class presentations (35%).

Syllabus: I plan on covering the following topics throughout the semester. The list may be contracted or expanded based on how long things are taking (we may not have time to cover the last two or three topics on the syllabus). A more accurate schedule will be

posted on the course website and updated throughout the semester. Relevant readings and data can be found on the course website.

### **Time Series Models**

- ARMA Processes
- Unit Roots
- The Linear Model

### **Simulation Based Estimation**

- Simulated Maximum Likelihood
- Simulated Method of Moments
- Smooth Simulation
- Applications

### **Bayesian Methods**

- Overview
- Applications

### **Ideal Point Estimation**

- Overview
- Dynamic Ideal Point Estimation and Common Space Techniques
- Random Effects Models
- Many Applications

## **Nonparametric Estimation**

- Overview
- Kernel Methods
- Histogram Methods
- k-Nearest Neighbor Methods and Matching

## **Hypothesis Testing**

- The Bootstrap and the Jackknife

## **Panel Data**

- Overview
- Applications