

## SYLLABUS FOR POSITIVE POLITICAL THEORY, PS 507

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### Course description

This course will provide you with a fairly rigorous introduction to the field of positive political theory. The field is loosely divided into two families (which are not always clearly distinct from each other): social choice theory and game theory. This course will focus solely on the former; Professor Patty's course focuses on the latter. We will also discuss the intersection of the two families, from which some interesting research is currently being produced.

Social choice theory takes a collection of individuals with well-defined and heterogeneous preferences as an input; it then examines the different ways in which we can construct a collective, or social, preference relation from these heterogeneous inputs. The construction is achieved through the use of a *preference aggregation rule* which could be equivalent to a voting rule, such as majority rule or unanimity rule, or something else entirely. The goal of social choice theory is to examine the properties of different types of these rules, and to characterize the rules that yield desirable outcomes. More generally speaking, the collection of "individual preferences" taken as an input can represent any collection of ways of ordering the set of alternatives under consideration. In this sense, the main theorems we will study speak not only to the difficulties in aggregating the preferences of individuals, but also to the difficulties in combining *any* collection of factors that we deem important to making a final decision.

Social choice theory has provided us with a rigorous way of analyzing what our voting systems are and aren't capable of doing in a perfect world. I hope to convey to you the importance of this; the elegance and power of many social choice-theoretic results such as Arrow's impossibility theorem, the McKelvey-Schofield chaos theorems, the Gibbard-Satterthwaite theorem, and the Plott conditions have changed the way that all political scientists think about politics (regardless of what some skeptics of "rational choice theory" claim). These results also distinguish formal political theory from economic theory, which often takes a "representative voter" as a given.

Social choice theory has fallen far behind game theory as a tool currently being used in economic and political science modeling, although there has been a resurgence in the field in recent years. I hope to give you an understanding of why this happened, and what the field is and isn't capable of providing us with, as modelers. I also hope you will leave the class feeling excited about the material we've covered and interested in furthering the field.

## Structure of the course and grading

The course material will be drawn primarily from the first four chapters of “Positive Political Theory I” and the first three chapters of “Positive Political Theory II” by Austen-Smith and Banks. Several lectures will focus on articles that I will distribute. You may find the book “Decisions and Elections” by Donald Saari to be an interesting complement to our material. It is an undergraduate textbook that covers some of our material and some new material, and is filled with real-world applications. Additionally, the book “Social Choice and the Mathematics of Manipulation” by Alan Taylor provides a thorough review of the Gibbard-Satterthwaite theorem and its many extensions, and uses very straightforward and simple notation. You may wish to augment the second volume of Austen-Smith and Banks with this book.

You’ll be graded on class participation, regular problem sets, a midterm and a final exam. You may also be called upon to present your solutions to the problem sets to the class. The homework problems listed each week are due the *following* week, in class.

WEEK 1 (SEPT 1): NO LECTURE (APSA CONFERENCE).

- Uzair will distribute syllabus, answer questions, lecture briefly.
- Homework: At Uzair’s discretion.

WEEK 2 (SEPT 8): RATIONALIZABLE CHOICE

- Reading: Ch. 1 of AS&B I
- Homework: Problems 1.1, 1.2, 1.3, 1.7 of AS&B I.

WEEK 3 (SEPT 15): PREFERENCE AGGREGATION AND ARROW

- Reading: Ch. 2.1 & 2.2 of AS&B I
- Homework: Problems 2.3, 2.4 of AS&B I.

WEEK 4 (SEPT 22): EXTENSIONS OF ARROW: CARDINALITY; WEAKENING TRANSITIVITY

- Reading: Ch. 2.3 & 2.4 of AS&B I; Sen, *Collective Choice and Social Welfare*, Ch. 8.
- Homework: Problem 2.5 of AS&B I.

WEEK 5 (SEPT 29): SIMPLE RULES AND THE NAKAMURA NUMBER

- Reading: Ch. 3.1, 3.2, 3.3 of AS&B I
- Homework: Problems 3.2, 3.5 of AS&B I.

WEEK 6 (OCT 6): VOTING & COUNTING RULES, POWER INDICES AND MAY'S THEOREM

- Reading: Ch. 3.4, 3.5, 3.6 of AS&B I
- Homework: Problems 3.7, 3.9 of AS&B I.

WEEK 7 (OCT 13): MIDTERM

- In-class; administered by Uzair.
- Maggie is out of town.

WEEK 8 (OCT 20): DOMAIN RESTRICTIONS AND A "SINGLE-PROFILE" VERSION OF ARROW

- Reading: Ch. 4.1, 4.2, 4.3, 4.4 of AS&B I; Ballester & Haeringer, "A Characterization of the Single-Peaked Domain"; Feldman & Serrano, "Arrow's Impossibility Theorem: Preference Diversity in a Single-Profile World;" Ch. 2.4 of AS&B II
- Homework: Problems 4.1, 4.4, 4.5 of AS&B I.

WEEK 9 (OCT 27): STRATEGY-PROOFNESS

- Reading: Ch. 2.1, 2.2, 2.3 of AS&B II
- Homework: Problems 2.1, 3.2, 3.3 of AS& B II.

WEEK 10 (NOV 3): GIBBARD-SATTERTHWAITE AND ARROW ON SINGLE-PEAKED DOMAINS

- Reading: Gailmard, Patty & Penn, "Arrow's Theorem on Single-Peaked Domains"; Penn, Gailmard & Patty, "Manipulation and Single-Peakedness: A General Result"; Ubeda, "Neutrality in Arrow and Other Impossibility Theorems."
- Homework: Read the readings for next week and turn in a brief summary of each reading along with a list of five comments or questions to discuss with the class.

WEEK 11 (NOV 10): SOCIAL CHOICE IN POLITICAL THEORY

- Reading: Selections from *Democracy Defended* by Gerry Mackie and *Rationalizing Capitalist Democracy: The Cold War Origins of Rational Choice Liberalism* by Sonja Amadae (to be distributed).
- Homework: Prove that if the range of a collective choice function contains at least 3 alternatives, and if the collective choice function is manipulable by a coalition, then it is manipulable by an individual. Also, Problem 3.2 of AS&B II.

WEEK 12 (NOV 17): THE REVELATION PRINCIPLE AND NASH IMPLEMENTATION

- Reading: Ch. 3.1, 3.2, 3.3 of AS&B II
- Homework: Problem 3.1(a) of AS&B II. (Note: Maskin  $\Rightarrow$  Strong is easy; Strong  $\Rightarrow$  Maskin is hard.)

WEEK 13 (NOV 24): NO CLASS (THANKSGIVING)

WEEK 14 (DEC 1): TOURNAMENT SOLUTION CONCEPTS AND LUCE'S CHOICE AXIOM

- Reading: Shepsle & Weingast, "Uncovered Sets and Sophisticated Voting Outcomes with Implications for Agenda Institutions"; Banks, "Sophisticated Voting Outcomes and Agenda Control"; Miller, "A new solution set for tournaments and majority voting: Further graph-theoretic approaches to the theory of voting"; Schnakenberg & Penn, "Choosing from Contests;" Tversky, "Elimination by Aspects: A Theory of Choice;" Luce, "Individual Choice Behavior: A Theoretical Analysis."
- No homework.

WEEK 15 (DEC 8): JUDGMENT AGGREGATION; REVIEW OF MATERIAL

- Reading: List & Puppe, "Judgment Aggregation: A Survey."
- No homework.
- Determination of final exam date.

WEEK 16 (DEC 12-16): FINAL EXAM

- Final exam administered on the day we have all decided upon.
- Pick up exam from Maggie or Uzair; return 3 hours later.