

Social Choice Theory (Econ 211)
Spring 2016
Monday and Wednesday 2-3:30pm.
Instructor: SangMok Lee

This course is intended to introduce you to various topics in social choice theory, which is a formal analysis of general preference aggregation and voting rules. The course also covers modern analysis on voting by using game theory, mechanism design, empirical analysis, and laboratory experiments.

Course Logistics

Office hours: Tuesday 1:30-3:30pm (Until Feb 9)/ Tuesday 1-3pm (From Feb 16).
Office: McNeil 462
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Teaching Assistants: Weilong Zhang(weilongz@sas.upenn.edu)
TA Office Hours: Friday 12-2pm (312 McNeil)

We will use Canvas for announcements, handouts, notes, homework assignments etc.

Course Description

Prerequisites: This class is Math intensive. You are expected to have a solid background of Mathematical reasoning, analysis, and statistics. The minimum course prerequisites include Econ 101 (Intermediate Micro Theory), Econ 103 (statistics), Math 104, and either Math 114 or Math 115 (Calculus Part I and II). Econ 212 (Game Theory) and Econ 104 (Econometrics) are highly recommended.

Textbooks: There is no textbook for this class. The following textbooks are only recommended. You will not be tested on material that is not covered in class.

Social Choice Theory: An Introduction, by Jerry S. Kelly, Springer-Verlag, 1988

* Out of print. Most parts of the book will be scanned and available on Canvas.

Liberalism against Populism, by William H. Riker, Waveland Press, 1982.

* Available at Penn bookstore. Good source of real applications and exercises.

Fair Division and Collective Welfare. The MIT Press, 2004, by Hervé Moulin.

* We will closely follow this book for Topic II-3 (some possibility results).

Requirement and Grading Policy

1. Grades

		<u>Due/Exam dates</u>
Two midterm exams	2 x 30%	March 2, April 11 (class time)
Final exam	1 x 20%	May 5 (Thursday), 9-11am
Term paper	1 x 20%	Submit with the final exam

2. **Exercises** will be assigned from time to time during class. It is in your interest to complete the exercises, even though they will not be collected or graded. You can discuss your answers during office hours. Also, there will be TA sessions about a week before each exam.

3. **Examinations** will be *in-class* and *closed-book*. Collaboration on the examinations is prohibited. If you miss one mid-term exam, with a compelling and verifiable reason, the final exam and the term paper will make up 40 and 30 percent of your total grade. A request for a re-grade of an exam must be submitted to me in writing with the original bluebook, in which case I will reevaluate your complete homework set or exam.

4. **Term paper** finds and studies any cases on collective choices. The paper should not exceed 10 pages with 1.5 spacing. The originality of the idea and logically tight arguments are much more valued than the length of the paper. Two progress reports will be required to submit along with mid-term exams.

One option is to evaluate a choice rule currently used in an organization. If the rule suffers from drawbacks, you may propose an alternative choice rule and justify the new rule by discussing potential outcomes. Another option is to propose new ideas for choice rules in a situation where a formal choice rule has not yet been implemented. We will discuss a few term-paper ideas during class. I encourage you to search for a topic from your personal experiences, rather than, e.g., presidential elections.

Topics and Optional Readings

The journal articles cited below are difficult, so do not get discouraged if you find them so.

I. Elements of Social Choice Theory

1. Intro: Course Introduction. Motivating examples. Some mathematical background.
2. A Special Case with Two Alternatives: Simple majority. May's theorem, Condorcet winner. Condorcet paradox.: Kelly(Chapter 1 and 2), Riker (Chapter 3, Chapter 4.B)

II. General Social Choice Theory

1. General difficulties of preference aggregation: Binary relations. Preferences. Preference aggregation rule. Arrow's Impossibility Theorem with a sketchy proof: Kelly (Chapter 6, 7), Riker (Chapter 3, Chapter 4.A, 5. A-B)
2. Voting rules: Majoritarian methods (Sequential majority. Copeland voting rule). Positional methods (Plurality. Approval voting. Borda score voting rule). Evaluating voting rules. Gibbard-Satterthwaite Impossibility Theorem: Kelly (Chapter 5, 10), Riker (Chapter 4, 6)

Dasgupta, P., & Maskin, E. (2008). On the robustness of majority rule. *Journal of the European Economic Association*, 6(5), 949-973.

3. Possibility Results: Decision under restricted domains (single peaked preferences, voting over resource allocation, and intermediate preferences), Approval voting: Kelly (Chapter 2, Chapter 3, Chapter 12), Riker (Chapter 4.E, Chapter 5.B-C), Moulin (Chapter 4).

III. Strategic Voting

1. Background: Game Theory. Nash Equilibrium.
* Most undergraduate game theory textbooks cover Nash Equilibrium in first few chapters.
2. Strategic Voting: Illustration with examples. Case studies. Theoretical and Empirical Analysis.

Myerson Roger, and Robert Weber. 1993. A Theory of Voting Equilibria. *American Political Science Review* 87:102-14.

Kawai, Kei, and Yasutora Watanabe. 2013. "Inferring Strategic Voting." *American Economic Review*, 103(2): 624-62.

IV. Voting and Information Aggregation

1. Background: Bayes Rule. Bayesian Game. Bayesian Nash Equilibrium.
2. Condorcet Jury Theorem and Strategic Voting.

Austen-Smith and Banks (1996): Information Aggregation, Rationality, and the Condorcet Jury Theorem; *American Political Science Review* Vol. 90(1)

3. Comparing voting rules: Theory. Laboratory experiment. Extension to Voting with Deliberation.

Feddersen, T., and W. Pesendorfer (1998): Convicting the Innocent: The Inferiority of Unanimous Jury Verdicts under Strategic Voting, *The American Political Science Review*, 92(1)

Guarnaschelli, S., R. D. McKelvey, and T. R. Palfrey (2000): An Experimental Study of Jury Decision Rules, *The American Political Science Review*, 94(2)

Gerardi, Dino, and Leeat Yariv. "Deliberative voting." *Journal of Economic Theory* 134.1 (2007): 317-338.

Goeree, Jacob K., and Leeat Yariv. "An experimental study of collective deliberation." *Econometrica* 79.3 (2011): 893-921.

V. Voting Market:

Alessandra Casella, Aniol Llorente-Saguer & Thomas R. Palfrey, 2012. "Competitive Equilibrium in Markets for Votes," *Journal of Political Economy*, University of Chicago Press, vol. 120(4), pages 593 - 658.

Eso, P., Stephen Hansen, and Lucy White. "A Theory of Vote-trading and Information Aggregation." *University of Oxford* (2014).