PHIL408I Individual & Group Decision Making

Instructor:	Eric Pacuit
Semester:	Spring 2014
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Course Website:	Available on ELMS
Office:	Skinner 1103A
Office Hours:	Wednesdays, 2:00pm - 3:00pm
Class Times:	MW 10 - 10:50 AM
Class Location:	SKN 1112

Course Description

Much of our daily lives is spent taking part in various types of what we might call political procedures. Examples range from voting in a national election to deliberating with others in small committees. Many interesting philosophical and mathematical issues arise when we carefully examine our individual and group decision-making processes. Topics include philosophical issues in rational choice theory, voting methods (Plurality Rule, Majority Judgement, Approval Voting, Borda Count, The Hare System), voting paradoxes (Condorcet Paradox, Anscombe's Paradox, the No-Show Paradox), Arrow's Impossibility theorem and other results in social choice theory, strategic voting (the Gibbard-Satterthwaite Theorem), topics in Judgement Aggregation (the Discursive Dilemma), and fair division (cake cutting algorithms and the division of indivisible goods).

Literature

The course will be based on readings from various textbooks are journal articles. The reading for each week will be available on ELMS. A number of the readings will be drawn from the following texts:

- Steven Brams and Alan Taylor, *Fair Division: From Cake-Cutting to Dispute Resolution*, Cambridge University Press, 1996.
- G. Gaus, *On Philosophy, Politics and Economics*, Wadsworth Philosophical Topics, 2008.
- C. List, Social Choice Theory (plato.stanford.edu/archives/win2013/entries/social-choice/), The Stanford Encyclopedia of Philosophy (Winter 2013 Edition), Edward N. Zalta (ed.), 2013.
- Eric Pacuit, Voting Methods (plato.stanford.edu/entries/voting-methods/) Stanford Encyclopedia of Philosophy,Edward N. Zalta (ed.), 2011.
- M. Peterson, *An Introduction to Decision Theory*, Cambridge University Press, 2009.

- Kenneth A. Shepsle, *Analyzing Politics: Rationality, Behavior and Institutions*, 2nd Edition, W. W. Norton & Company, 2010.

The following texts are recommended for additional reading:

- L. Blume and D. Easley, *Rationality*, in the New Palgrave Dictionary of Economics, 2007.
- Steven Brams, *Mathematics and Democracy*, Princeton University Press, 2007.
- D. Kreps, *Notes on the Theory of Choice*, Westview Press, 1988.
- I. McClean and A. Urken, *Classics of Social Choice*, University of Michigan Press, 1995.
- J. Robertson and W. Web, *Cake-Cutting Algorithms: Be Fair If You Can*, A K Peters/CRC Press, 1998.
- Donald Saari, *Basic Geometry of Voting*, Springer, 2003.
- Alan D. Taylor, *Social Choice and the Mathematics of Manipulation*, Cambridge University Press, 2005.

Attendance and Online Component

This course is officially listed as a "hybrid course". This means that our in class meetings are shorter (50 minutes) and that there is an online component for this course. Since we have less time for in-class meetings, it is *very* important that you attend all the lectures. The online component will consist of lectures and quizzes that I prepared for the Coursera version of this course. Parts of the course will also be offered as a MOOC on coursera:

www.coursera.org/course/votingfairdiv

The video lectures and online quizzes prepared for the MOOC will be incorporated into this course. Note that *you may be tested on the material in the online lectures even if we do not discuss it in class.*

Grading Policy

The course requirements are: Participation & student presentation (time permitting) (10%), online quizzes (30%), 1-2 problem sets (30%), and a final exam (30%). The final will be cumulative and given as an in-class exam given during finals week. For the problem sets, you may discuss the problems with one another or with me as much as you want. *But you must always do the final write-up completely on you own.* A good strategy when working together is to use a blackboard and erase it completely before writing up your (separate) answers. Please write the name of your discussion partner(s) on the front page of your assignments.

Schedule

Below is a tentative schedule for the semester. A more detailed schedule, including links to the reading material, can be found on the course website (on Elms). Note that you must keep up-to-date with the online lectures.

Week 1: 1/27, 1/29 The Rational Choice Model

Readings

- Chapter 2 "Rationality: The Model of Choice" in *Analyzing Politics*, by K. Shepsle
- Chapter 3 "The relationship between preference and choice" in *Collective Preference and Choice* by S. Nitzan

Online Lectures

- Relations
- Preferences
- Choice Functions, Sen's α and β conditions

Week 2: 2/3, 2/5 Introduction to Decision Theory, I

Readings

- Chapter 2 "The Decision Matrix" in *An Introduction to Decision Theory*, by M. Peterson
- Chapter 2 "Utility Theory" in *On Philosophy, Politics and Economics* by G. Gaus

Week 3: 2/10, 2/12 Introduction to Decision Theory, II

Readings

- Chapter 4 "Decision Under Risk" in *An Introduction to Decision Theory*, by M. Peterson

Online Lectures

- Proof of The Von Neumann-Morgenstern Theorem

Week 4: 2/17, 2/19 The Voting Problem

Readings

- Sections 1 & 2 of Voting Methods (plato.stanford.edu/entries/voting-methods/) Stanford Encyclopedia of Philosophy, 2011

Online Lectures

- Functions
- All videos from Week 1 of the Coursera course

Week 5: 2/24, 2/26 Voting Paradoxes

Readings

- Chapter 3 "Review of Paradoxes Afflicting Procedures for Electing a Single Candidate" of *Electoral Systems: Paradoxes, Assumptions, and Procedures* edited by D. Felsentha and M. Machover
- Section 3 of Voting Methods (plato.stanford.edu/entries/voting-methods/) Stanford Encyclopedia of Philosophy, 2011

Online Lectures

- All videos from Week 2 of the Coursera Course

Week 6: 3/3, 3/6 Characterizing Voting Methods
The lectures are canceled for this week. I will be away at a conference in Amsterdam.

Readings

- Section 4.2 of Voting Methods (plato.stanford.edu/entries/voting-methods/) Stanford Encyclopedia of Philosophy, 2011

Online Lectures

- Videos from Week 3 of the Coursera Course: 3-1, 3-2a, 3-2b, 3-3, 3-4a, 3-4b, and 3-5
- *All videos from the first three weeks should be completed by the end of this week, except the video on Arrow's Theorem (3-6, the Advanced Lecture: Proof of Arrow's Theorem, and 3-7)*

Week 7: 3/10, 3/12 Arrow's Theorem (Proof and Variants)

Readings

- M. Morreau, Arrow's Theorem, Stanford Encyclopedia of Philosophy, forthcoming

Online Lectures

- Videos form Week 3 of the Coursera Course: 3-6, the Advanced Lecture: Proof of Arrow's Theorem, and 3-7

Week 8: 3/17, 3/19 **No Class: Spring Break**

Week 9: 3/24, 3/26 Topics in Social Choice: Domain Restrictions

Readings

- Section 1.2 of *Behavioral Social Choice: Probabilistic Models, Statistical Inference, and Applications* by M. Regenwetter, B. Grofman, A. A. J. Marley, and I. Tsetlin, Cambridge University Press, 2006

Online Lectures

- Videos from Week 4 of the Coursera Course: 4-1, 4-2, 4-3

Week 10: 3/31, 4/2 Topics in Social Choice: Strategic Voting

Readings

- Chapter 2 and Section 3.1 of of A. Taylor, *Social Choice and the Mathematics of Manipulation*, Cambridge University Press, 2005.

Online Lectures

- Videos from Week 4 of the Coursera Course: 4-4, 4-5a, Advanced Lecture: Lifting a Preference Relation, and 4-6

Week 11: 4/7, 4/9 Topics in Social Choice: Sen's Liberal Paradox & other voting paradoxes

Readings

- A. Sen, Impossibility of the Paretian Liberal, Journal of Political Economy, 78:1, pgs. 152 - 157, 1970

Online Lectures

- Videos from Week 4 and 5 of the Coursera Course: 4-7, 5-1, 5-2, 5-3

Week 12: 4/14, 4/16 The Condorcet Jury Theorem

Readings

- H. P. Young. Optimal Voting Rules. The Journal of Economic Perspectives, 9:1, pgs. 51 - 64, 1995.
- Chapter 11 of S. Nitzan, *Collective Preference and Choice*, Cambridge University Press, 2010

Online Lectures

- Videos from Week 5 of the Coursera Course: 5-4

Week 13: 4/21, 4/23 Judgement Aggregation

Readings

- C. List and P. Pettit, Aggregating Sets of Judgments: An Impossibility Result, Economics and Philosophy 18: 89-110, 2002
- Section 5 of Social Choice (plato.stanford.edu/entries/social-choice/) by C. List, Stanford Encyclopedia of Philosophy, 2013.

Online Lectures

- Videos from Week 5 of the Coursera Course: 5-5, 5-6a, 5-6b, and 5-7

Week 14: 4/28, 4/30 The Fair Division Problem

Readings

- S. Brams, P. Edelman and P. Fishburn, Paradoxes of Fair Division, *The Journal of Philosophy*, 98:6, pp. 300-314, 2001.

Online Lectures

- Videos from Week 6 of the Coursera Course: 6-1, 6-2, 6-3 and 6-4

Week 15: 5/5, 5/7 The Fair Division Problem: Adjusted Winner and Cake-Cutting Algorithms

Readings

- Chapter 4 of S. Brams and A. Taylor, *Fair Division: From Cake Cutting to Dispute Resolution*, Cambridge University Press, 1996.
- Chapter 1 of J. Robertson and W. Web. *Cake-Cutting Algorithms: Be Fair If You Can.* A K Peters/CRC Press, 1998.

Online Lectures

- Videos from Week 6 & 7: 6-6a, 6-6b, Advanced Lecture: Proof that Adjusted Winner is Envy-Free and Pareto Efficient, and 7-1

Week 16: 5/12, 5/14 Cake Cutting Algorithms & Concluding Remarks

Readings

- Chapter 1 of J. Robertson and W. Web. *Cake-Cutting Algorithms: Be Fair If You Can.* A K Peters/CRC Press, 1998.
- A. Procaccia, Cake Cutting Algorithms, in *Handbook of Computational Social Choice*, 2013.

Online Lectures

- Videos from week 7: 7-2, 7-3, 7-4, 7-5, 7-6