

Instructor: James Shaw
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Office Hours: Tuesday 10AM-12PM
Cathedral of Learning 1028C

DECISIONS, GAMES & RATIONAL CHOICE

COURSE DESCRIPTION

This course explores the foundations of Bayesian decision theory, game theory, and the theory of social choice from a philosophical perspective. We will familiarize ourselves with formal tools employed in these theories including the elements of probability theory, conditionalization, Bayes theorem, Nash-equilibrium, backwards induction, and various limitative results about social choice functions and voting systems. Along the way we will press various foundational questions for these theories (What is probability? What is utility? What does it mean for a choice to be instrumentally rational or irrational?), as well as more specific questions about the rationalizations of the formalisms (what presuppositions about rationality, e.g., go into a game theoretic solution concept such as Nash equilibrium?).

Prerequisites: Phil0050 or the permission of the instructor.

COURSE REQUIREMENTS AND GRADING

The requirements for the course are (roughly) weekly problem sets, an in-class midterm and a take-home final exam. Your grade is made up as follows.

40% Problem Sets
25% Midterm
35% Final Exam

You may work in groups on the problem sets but ***you must do your own individual write ups and you must always also write who you collaborated with.*** Failure to do your own write up or to write the names of your collaborators will be considered plagiarism.

TEXTS

Readings are drawn from various sources which can all be found on the course website. Ultimately, though, to pass the course you must grasp the material that's presented in *lecture* well enough to do the problem sets, midterm, and final exam. The readings serve as an entry-point to the topics we cover together in class. The course website can be found at:

www.jshaw.net/courses/games.html

You will need a password to access some of the documents. You can find this on the syllabus I handed out on the first day of class. If you lose this, you can find it again on Blackboard.

SCHEDULE OF TOPICS AND READINGS

The following is a *rough* outline of the pace of the course. We may slow down or speed up, depending on many different factors. I may also slightly adjust the readings as we proceed.

DT = Brian Weatherson's Decision Theory Notes

Mon., August 29 Varieties of Rationality

PART I: DECISION THEORY

Wed., August 31 Basic Choice Strategies
DT §§1.2, 2

Wed., September 7 Probability I: Uncertainty v. Risk & Axioms
No Readings

Mon., September 12 Probability II: Dutch Books & Conditionalization
Strevens, Bayesian Confirmation Theory (§§3.2–3.4)

Wed., September 14 Probability III: Bayes' Theorem
No Readings

Mon., September 19 Maximizing Expected Utility
DT §9

Wed., September 21 Philosophical Questions About Probability
DT §§11–12

Mon., September 26 Philosophical Questions About Utility
Parfit, "What Makes Someone's Life Go Best?"

Wed., September 28 Puzzles about Conditionalization, Maximizing Utility
No Readings

Mon., October 3 Puzzles (ct'd)
Elga, Self-Locating Belief & the Sleeping Beauty Problem

Wed., October 5 Evidential v. Causal Decision Theory
Resnik, Choices (§§4.5–6)

Tue., October 11 The Scope and Importance of Instrumental Rationality
No Readings

PART II: GAME THEORY

Wed., October 12 Games, Dominance, and Prisoner's Dilemma
Dixit & Nalebuf, Thinking Strategically §§3.1-3.2

Mon., October 17 Iterated Dominance, the Mean-Voter Theorem
Dixit & Nalebuf, Thinking Strategically §3.3

Wed., October 19 Midterm Review
No Readings

In-Class Midterm Mon, October 24

Wed., October 26	Best Responses & Nash Equilibrium <i>DT</i> §19.3
Mon., October 31	Mixed Strategies & the Significance of Equilibria <i>DT</i> §§20.1-20.2, 21.2–21.3
Wed., November 2	Many-Move Games <i>DT</i> §22
Mon., November 7	Backwards Induction, Coordination & Focal Points <i>DT</i> §23, <i>Schelling, Strategy of Conflict Ch. 3</i>
Wed., November 9	Strategic Moves, Signaling & Credibility <i>No Reading</i>

PART III: COLLECTIVE CHOICE

Mon., November 14	Group Decisions <i>DT</i> §24
Wed., November 16	*No Class*
Mon., November 21	Intransitive Preferences and Arrow's Theorem <i>DT</i> §25

Thanksgiving Break

Mon., November 28	Voting I <i>DT</i> §26
Wed., November 30	Voting II <i>DT</i> §27
Mon./Wed, December 5/7	Make-up day/Exam Review

*****Take-Home Final handed out on Dec 7 and due on Dec 15*****