

Rational Choice
Carnegie Mellon University
Fall 2011

*Reason is, and ought only to be slave to the passions, and
can never pretend to any other office than to serve and
obey them.*

~ David Hume ~

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We often criticize one another's decisions. People who spend their money at casinos are charged with being ignorant, people who save too much are regarded as miserly, people who chose unpleasant mates are fooling themselves, etc. Often times we criticize one another because we disagree with their values -- a greedy CEO is criticized because he cares too much about money. In this course, we will focus on a different sort of criticism, an internal criticism where we regard people as behaving inconsistently with their own ends. Implicitly judgments like this rely on a notion of "correct" decision making, which will be the topic of our course.

This theory, as it has been developed over many years, is now very detailed and complicated; it involves significant mathematics. The theory is not without its critics either, and we will review a few of those criticisms as well. Ultimately, learning about this theory will help to tune ones thinking about a variety of problems from gambling to investing to one's romantic life.

Required Texts:	David M. Kreps (1988) <i>Notes on the Theory of Choice</i> . Westview Press
Course Requirements:	7 Homeworks due throughout the semester (*) Attendance and participation in class discussion can positively influence your grade up to a full letter grade Graduate students will be given extra homework problems

(*) You are allowed to discuss the homework with one another in attempting to solve the problems, but each individual student must write up the answers independently. If you collaborated with another student in solving a particular problem **you must note who that student is and on which problems you collaborated**. Copying verbatim answers or failing to note collaboration constitutes academic dishonesty.

Reading Schedule

Aug 30	Introduction to measurement (Guest lecture: Prof. Seidenfeld)
Sept 1	Introduction to measurement (Guest lecture: Prof. Seidenfeld)
Sept 6	Hume, Kant, and axiomatic methods
Sept 8	Set theory and an introduction to preferences (online; Kreps chapter 2) First homework assigned
Sept 13	Preferences with a few objections (Kreps chapter 2; additional reading online)
Sept 15	Ordinal utility, normal form, and dominance (Kreps chapter 3) First homework due
Sept 20	Decision under ignorance – maximin, maximax, etc. (online)
Sept 22	Introduction to probability (online) Second homework assigned
Sept 27	Bayes theorem and belief revision (online)
Sept 29	Interpretations of probability (online) Second homework due
Oct 4	Soliciting probabilities with bets (online)
Oct 6	Why probability? Dutch books and distance measures (online) Third homework assigned
Oct 11	Introduction to Von Neumann/Morgenstern (Kreps chapter 5)
Oct 13	Von Neumann/Morgenstern continued (Kreps chapter 5) Third homework due
Oct 18	St. Petersburg and utility for money (Kreps chapter 6)
Oct 20	Allais' and Zeckhauser's paradox (online) Fourth homework assigned
Oct 25	Anscombe/Aumann (Kreps chapter 7)
Oct 27	Anscombe/Aumann continued (Kreps chapter 7) Fourth homework due
Nov 3	Soliciting probabilities without utilities (Kreps chapter 8)
Nov 8	Savage's axioms (Kreps chapter 9, through page 132) Fifth homework assigned
Nov 10	Savage's theory (remaining part of Kreps chapter 9)
Nov 15	Conditional Choice (Kreps chapter 10) Fifth homework due
Nov 17	Newcomb's problem and act-state dependence (online)
Nov 22	Causal decision theory (Guest Lecture: Prof. Schienens) Sixth homework assigned
Nov 29	Ellsberg's paradox and alternative probability representations (online)
Dec 1	Spillover/Social choice Sixth homework due
Dec 6	Spillover/Social choice
Dec 8	Spillover/Social choice Seventh homework assigned, due December 15