DECISION THEORY
PHIL 371
Winter 2023

INSTRUCTOR

Angela Sun
asun@wlu.edu

LECTURE

Tuesdays and Thursdays 1:30pm-3:00pm, Washington Hall 115

OFFICE HOURS

Wednesdays 3:00pm-5:00pm

DESCRIPTION

In this course, students will explore ways that rational decision-making both by individuals and by groups has been modeled in philosophy, political science, economics, and other social sciences. In addition to learning about the formal foundations of decision theory, students will be introduced to contemporary debates among philosophers working in decision theory.

GOALS

By the end of this course, students will have developed the following knowledge and skills:
- An understanding of key concepts in decision theory and game theory.
- The ability to use formal methods to solve philosophical problems.
- The ability to defend a position with clear, rigorous argumentation.
- The ability to engage in philosophical discussion respectfully and productively.

TEXTS

Many readings are drawn from the following open-access textbooks. Other readings are either linked in the schedule below or available in the "Files" section of our Canvas site.
- Brian Weatherson, *Lecture Notes on Decision Theory*
- Jonathan Weisberg, *Odds & Ends: Introducing Probability and Decision with a Visual Emphasis*

REQUIREMENTS

The requirements for the course are as follows:
- *Problem sets* (5 x 8% = 40%): Over the course of the semester, submit 5 problem sets. Collaboration is encouraged! Make sure you note who you collaborated with on your problem set.
- *Take-home midterm* (18%): At the end of unit 1, complete a take-home midterm. The exam will be open-book, but collaboration is not allowed.
- *Final paper outline* (2%): Submit an outline of your final paper. Outlines will be graded on the basis of completion.
- *Final paper discussion* (2%): Lead a discussion about your final paper topic.
- *Paper* (20%): Submit a ∼1500-word paper.
- *Take-home final exam* (18%); Complete a cumulative take-home final exam. The exam will be open-book, but collaboration is not allowed.

Attendance We will cover a lot of material in lecture that is not in the readings. However, I will not take attendance and missing class will not itself affect your grade. You are responsible for catching up on material that you've missed.

Electronics Laptops and tablets ok; cellphones not ok; doing things unrelated to class on electronics not ok.

Accommodation I will work with every student interested in taking this course to ensure it's possible to. If you have a disability, are struggling with mental or physical health, or if there is anything else that might prevent you from fully participating in this course, let me know as soon as you can, and we will figure something out.

Schedule Unit 1: Expected Utility Theory

Jan. 10: Introduction
    No reading

Jan. 12: The belief/desire model of reasons
    Colin McGinn, "Beliefs, Desires, and Actions"
    Weisberg, chapter 11 ("Expected Value")
    Weisberg, chapter 5 ("Calculating Probabilities")
    Weisberg, chapter 16, ("Beliefs and Betting Rates")

Jan. 17: No class

Jan. 19: Expected utility theory
    Weisberg, chapter 12 ("Utility")

Jan. 24: Context independence, part 1
    No reading

Jan. 26: Context independence, part 2
    Problem set 1 due
    No reading

Jan. 31: The sure-thing principle
    Weatherson, chapter 10 ("Sure Thing Principle")

Feb. 2: Representation theorem, part 1
    No reading

Feb. 7 Representation theorem, part 2
    Proboem set 2 due
    No reading

Feb. 9: Dutch books
    Weisberg, chapter 17 ("Dutch Books")

Feb. 14: Evidential and causal decision theory
Weatherson, chapter 16 ("Newcomb's Problem")
Weatherson, chapter 17 ("Realistic Newcomb Problems")
Weatherson, chapter 18 ("Causal Decision Theory")

Feb. 16: No class
PROBLEM SET 3 DUE

Feb. 21 & 23: No class (Washington Break)

Feb. 28: Good's theorem and temporal discounting
I.J. Good, "On the Principle of Total Evidence

UNIT 2: TOPICS IN DECISION THEORY

Mar. 2: Far future decisions
Jennifer Morton, "Deliberating for our Far Future Selves" (Canvas files)

Mar. 7: Procrastination
Sergio Tenenbaum, "The Vice of Procrastination" (Canvas Files)

Mar. 9: Resolutions
TAKE-HOME MIDTERM DUE
Angela Sun, "The Normative Power of Resolutions" (Canvas files)

Mar. 14: Rationality under non-ideal conditions
Jennifer Morton, "Reasoning Under Scarcity" (Canvas files)

UNIT 3: GAME THEORY AND SOCIAL CHOICE THEORY

Mar. 16: Games in strategic form
Giacomo Bonanno, "Dynamic Games with Perfect Information" (Canvas files)

Mar. 21: Dynamic games
PAPER OUTLINE DUE
Giacomo Bonanno, "General Dynamic Games" (Canvas files)

Mar. 23: Group action
Margaret Gilbert, "Walking Together: A Paradigmatic Social Phenomenon" (Canvas files)

Mar. 28: Group knowledge
Jennifer Lackey, "Socially Extended Knowledge"

Mar. 30: Social choice theory
PROBLEM SET 4 DUE

Weatherson, chapter 24 ("Group Decisions")
Weatherson, chapter 26 ("Voting Systems")
Weatherson, chapter 27 ("More Voting Systems")

Apr. 6: Arrow's impossibility theorem
PAPER DUE
PROBLEM SET 5 DUE
Weatherson, chapter 25, "Arrow's Theorem")

Apr. 12: TAKE-HOME FINAL DUE