



PHI 424

Logic of Decision

Monday and Thursday, 10:55 AM-12:15 PM, HCK 209



Mr. Daniel Rubio

daniel.rubio@rutgers.edu

Gateway Transit Building, Room 303

Office Hours: TH 12:30-1:30 PM or by appointment

This syllabus may be modified to fit the needs of the course. Any such change will be announced.

Course Description: Analysis of rational preference and nondeductive inference with special emphasis on the examination of alternative concepts of utility and probability.

Credit Hours: 3

Text(s): James Joyce, *Foundations of Causal Decision Theory*.
Lara Buchak, *Risk and Rationality*

Course Objectives:

At the completion of this course, students will be able to:

1. Understand classical expected utility theory, its benefits and drawbacks
2. Understand and explain arguments for modifying classical expected utility theory stemming from risk attitudes
3. Understand and explain common problems for expected utility theory stemming from infinities, such as the St. Petersburg Problem and Pascal's Wager
4. Gain an introduction to the use of non-standard mathematics in modeling credence and utility
5. Produce a quality research paper on some topic in decision theory

Grade Distribution:

| | |
|---------------------|-----|
| Paper | 50% |
| Unit Summary Papers | 35% |
| Final Presentation | 15% |

Letter Grade Distribution:

| | | | |
|---------------|----|---------------|---|
| ≥ 93.00 | A | 70.00 - 79.99 | C |
| 90.00 - 92.99 | A- | 60.00 - 69.99 | D |
| 83.00 - 89.99 | B | ≤ 59.99 | F |
| 80.00 - 82.99 | B- | | |

Course Policies:

• Grades and Grading

- Grades in the **C** range represent performance that **meets expectations**; Grades in the **B** range represent performance that is **substantially better** than the expectations; Grades in the **A** range represent work that is **excellent**.
- The instructor will maintain a gradebook. Students may request progress reports at any time.
- Grading for this course will be blind. Students are required to use their RUID numbers in place of names on all assignments.

• Readings

- It is expected that students complete all reading assignments before the class they are to be discussed.
- Any readings not found in the required texts will be provided by the instructor.

• Unit Summary Assignment

- The course will be divided up into units, each focused on some problem for expected utility theory.
- At the conclusion of each unit, a short paper is due laying out the challenge to expected utility that the unit explored, canvassing some of the solutions we discussed, and giving a few considerations that incline the student toward adopting one solution or another
- These papers should be no longer than 1500 words in length
- It is expected that students format their papers according to the most recent *Chicago Manual of Style*.

• Paper

- A long (4000-6000 word) research paper will be required and will make up 50% of the course grade.
- It is expected that students will take up one of the unit summary assignments and expand it into a full research paper.
- It is expected that students will conduct research adequate to their thesis, including the use of not less than 10 sources, unless otherwise arranged with the instructor.
- It is expected that students write their papers using proper English spelling and grammar. Papers that fail in this regard will be returned ungraded.
- It is expected that students format their papers according to the most recent *Chicago Manual of Style*.

- **Presentation**

- Toward the end of the semester, each student will give a 15 minute presentation on their research paper
- The presentation should clearly explain the problem for classical decision theory that the student is going to explore in the paper
- The presentation should clearly explain what solution the student favors for that problem
- The presentation should contain of a 10 minute initial statement, followed by 5 minutes of question and answer
- The presentation should include an outline, turned in beforehand, and a handout or powerpoint slides

- **Attendance and Absences**

- Rutgers requires: “Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website <https://sims.rutgers.edu/ssra/> to indicate the date and reason for your absence. An email is automatically sent to me.”
- Attendance is expected and will be taken each class. You are allowed to miss **1** class during the semester without penalty. Any further unexcused absences will result in point and/or grade deductions, 5 points per absence.
- Excused absences will be at the discretion of the instructor. They will be granted sparingly. Things like medical problems, family emergencies, and religious observances are good reasons. Schedule conflicts and forgetfulness are not.
- Students are responsible for all missed work, regardless of the reason for absence. It is also the absentee’s responsibility to get all missing notes or materials. All assignments will be turned in in class. It is the absentee’s responsibility to make other arrangements for an excused absence. No arrangement will be made for unexcused absences.
- This policy will take effect at the end of add/drop.

Academic Honesty Policy Summary:

Introduction

In addition to skills and knowledge, Rutgers aims to teach students appropriate Ethical and Professional Standards of Conduct. The Academic Honesty Policy exists to inform students and Faculty of their obligations in upholding the highest standards of professional and ethical integrity. All student work is subject to the Academic Honesty Policy. Professional and Academic practice provides guidance about how to properly cite, reference, and attribute the intellectual property of others. Any attempt to deceive a faculty member or to help another student to do so will be considered a violation of this standard. It is important to keep in mind that if you use material from an on-line source (or any other source), you must acknowledge this and provide a reference to the source. Changing a few words in the material that you have borrowed does not exempt you from this requirement.

Consequences

An instructor may impose a sanction on the student that varies depending upon the instructor’s evaluation of the nature and gravity of the offense. Possible sanctions include, but are not limited to, the following: (1) Require the student to redo the assignment; (2) Require the student to complete another assignment; (3) Assign a grade of zero to the assignment; (4) Assign a final grade of “F” for the course. Any violations of this policy will result in a referral to the Office of

Student Conduct for possible additional sanctions.

Student-Wellness Services:

Just In Case Web App

<http://codu.co/cee05e> Access helpful mental health information and resources for yourself or a friend in a mental health crisis on your smartphone or tablet and easily contact CAPS or RUPD.

Counseling, ADAP & Psychiatric Services (CAPS)

(848) 932-7884 / 17 Senior Street, New Brunswick, NJ 08901/ www.rhscaps.rutgers.edu/ CAPS is a University mental health support service that includes counseling, alcohol and other drug assistance, and psychiatric services staffed by a team of professional within Rutgers Health services to support students efforts to succeed at Rutgers University. CAPS offers a variety of services that include: individual therapy, group therapy and workshops, crisis intervention, referral to specialists in the community and consultation and collaboration with campus partners.

Violence Prevention & Victim Assistance (VPVA)

(848) 932-1181 / 3 Bartlett Street, New Brunswick, NJ 08901 / www.vpva.rutgers.edu/ The Office for Violence Prevention and Victim Assistance provides confidential crisis intervention, counseling and advocacy for victims of sexual and relationship violence and stalking to students, staff and faculty. To reach staff during office hours when the university is open or to reach an advocate after hours, call 848-932-1181.

Disability Services

(848) 445-6800 / Lucy Stone Hall, Suite A145, Livingston Campus, 54 Joyce Kilmer Avenue, Piscataway, NJ 08854 / <https://ods.rutgers.edu/> The Office of Disability Services works with students with a documented disability to determine the eligibility of reasonable accommodations, facilitates and coordinates those accommodations when applicable, and lastly engages with the Rutgers community at large to provide and connect students to appropriate resources.

Scarlet Listeners

(732) 247-5555 / <http://www.scarletlisteners.com/> Free and confidential peer counseling and referral hotline, providing a comforting and supportive safe space.

Tentative Course Outline:

The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

| Week | Content |
|---------|---|
| Week 1 | <ul style="list-style-type: none">• Classical Expected Utility Theory• Reading assignment: Joyce Chapter 1 |
| Week 2 | <ul style="list-style-type: none">• Classical Expected Utility Theory• Reading assignment: Joyce Chapter 2 |
| Week 3 | <ul style="list-style-type: none">• Classical Expected Utility Theory• Reading assignment: Joyce Chapter 3 |
| Week 4 | <ul style="list-style-type: none">• Risk Aversion• Reading assignment: Buchak Chapter 1 |
| Week 5 | <ul style="list-style-type: none">• Risk Aversion• Reading assignment: Buchak Chapter 2 |
| Week 6 | <ul style="list-style-type: none">• Risk Aversion• Reading assignment: Buchak Chapter 3 |
| Week 7 | <ul style="list-style-type: none">• Risk Aversion• Reading assignment: Buchak Chapter 4 |
| Week 8 | <ul style="list-style-type: none">• Risk Aversion• Reading Assignment: Buchak Chapter 5 |
| Week 9 | <ul style="list-style-type: none">• Risk Aversion• Reading assignment: Buchak Chapter 6• Assignment Due: Unit Summary 1 |
| Week 10 | <ul style="list-style-type: none">• Infinity• Reading Assignment: Sylvia Wennmackers, “Do Infinitesimal Probabilities Neutralize the Infinities in Pascal’s Wager?”, Eddy Chen and Daniel Rubio, “Surreal Decisions.” |
| Week 11 | <ul style="list-style-type: none">• Infinity• Alan Hájek and Harris Nover, “Vexing Expectations.”, Mark Colyvan “No Expectations” |
| Week 12 | <ul style="list-style-type: none">• Infinity• Reading assignment: Fine, “Evaluating the Pasadena, Altadena, and St. Petersburg Gambles”, Hájek and Colyvan, “Making Ado Without Expectations”• Assignment Due: Unit Summary 2 |
| Week 13 | <ul style="list-style-type: none">• Presentations |
| Week 14 | <ul style="list-style-type: none">• Presentations. Final Paper Due. |