Course Syllabus

Econ 4140, Decision Making under Uncertainty ("Economics of Decisions"), Spring 2024, January 18 – May 1

PROFESSOR: Dr. Gerelt Tserenjigmid

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Office hours: Thursday 3:00 pm – 4:00 pm (Location: PCPSE 531)

Class time: 10:15 am – 11:45 am (Location: Towne Building 313)

Class Overview: This course will examine how economic agents make decisions under various economic environments such as choice under risk and uncertainty. We carefully study some of the most standard models in economics such as utility maximization, expected utility theory, and discounted utility. We also briefly discuss evidence from the lab and field on how human behavior systematically departs from these models. We then apply these models to several important economic problems such as portfolio choice and consumption-saving problems. The course requires a substantial ability of abstract thinking as well as a working knowledge of calculus.

Textbook: 1. Ariel Rubinstein, *Lecture Notes in Microeconomic Theory*, 2023.

Other books: 2. David Kreps, *Notes on the theory of Choice*, 1988.
3. Itzhak Gilboa, *Theory of Decision under Uncertainty*, 2009.
4. Itzhak Gilboa, *Rational Choice*, 2012.

Course Structure: The course covers the following six important topics in economics:

- Utility maximization,

- Risky choice,

- Intertemporal choice,

- Time and Risk Preferences

- Ambiguity,

- Strategic interactions and game theory.

Exams: There will be two midterm exams and one final exam. Each midterm will count for 20% of your overall grade, whereas the final will count for 30%. There is no cumulative final (i.e., the final only covers the topics not covered by the midterms). The final will be a take-home exam and midterm exams will take place in the regular classroom; the tentative dates and times are as follows:

- Midterm 1: February 29

- Midterm 2: Mid-April (TBD)

- Final: May (TBD).

Homework: There will be 6 problem sets (one for each topic). The problem sets are all equally weighted and will count for 20% of your overall grade. The problem sets can, and should, be worked in groups, though each student must turn in their problem set.

Class Attendance and Participation: Class attendance is expected. There is no good textbook you can closely follow, and it is not easy to learn this material from the notes. I also strongly encourage class participation: questions, comments, and doubts. The remaining 10% of your overall grade is for class attendance and participation.

Tentative Weekly Schedule:

1. Introduction to Decision Theory (Week 1)

2. Utility maximization (Week 2-3) – Lecture notes

   - Preferences and utility maximization,
   - Consumer Theory
   - Behavioral Puzzles: decoy effect, compromise effect, choice overload, status quo bias, and endowment effect,
   - Reference-dependence,

3. Risky choice (Week 4-5)

   - Expected utility theory,
   - Risk aversion,
   - Insurance Demand,
   - Portfolio Choice,

- Behavioral Puzzles: certainty effect, Allais paradox, loss-aversion, Rabin's paradox, and time-varying risk aversion,

- Prospect theory,

4. Intertemporal Choice (Week 6-7)

   - Discounted utility,

   - Consumption-Saving Problem

   - Present Value

   - Behavioral Puzzles: present bias, decreasing impatience, procrastination, common difference effect, and magnitude effect,

   - Hyperbolic discounting,

5. Time and Risk Preferences (Week 8-9)

   - Discounted Expected Utility,

   - Consumption-Based Asset Pricing Model

   - Equity Premium Puzzle

   - Epstein-Zin Model

6. Ambiguity (Week 10-11)

   - Subjective Expected Utility

   - Ellsberg Paradox

   - Max-min expected utility

7. Strategic interactions and cognitive hierarchy (Week 12-13)

   - Normal Form Game

   - Iterated deletion of dominated strategies and Nash equilibrium,

   - Ten little treasures of game theory,

   - Quantal response equilibrium.

January 15, 2024.