Northwestern University   Marciano Siniscalchi
Fall 2018

Econ 331: The Economics of Risk and Uncertainty
Course Presentation and Outline

This course explores how economists translate intuitions about decision making under risk and uncertainty into rigorous, tractable models. It illustrates how these models help us understand important aspects of economic phenomena such as investment in financial assets, insurance, information acquisition, intertemporal allocation of resources, etc. We shall also point out some shortcomings of 'standard' models of choice under risk and uncertainty, and briefly examine proposed extensions that overcome them.

Prerequisites. Economics 310-1 and 310-2. (Microeconomics); Econ 281-0.

Logistics. Class: Mon and Wed 9:30am - 10:50pm in University Hall 101. TA sections: Fri, same time and place; your TA extraordinaire will be Gabriel Ziegler. My office hours: Tuesday 11am–12pm in Kellogg (KGH) 3217, or by appointment. Email: marciano@northwestern.edu.

There will be a Canvas page for this course. You should check it periodically for announcements, handouts, etc.

Assignments and Grading. There will be homeworks (20% of final grade), a midterm (30%) and, of course, a final exam (50%). There will be **NO** make-up midterm.

You **can** work in groups of up to **three** people on your assignment. You **can** turn in a single write-up for the entire group, but please make sure to clearly indicate the names of all group members! Typing your homework is greatly by appreciated, though not required.

When computing your average grade for homeworks, I will discard your lowest score. This means that failing to turn in one problem set does not affect your average homework grade. On the other hand, under **NO** circumstances will I ever grade late homeworks; please either turn them in on time, or not at all.

Readings. There is no official, required textbook for this course; instead, I will upload lecture notes for each class on Canvas. The handouts will sometimes list additional readings (optional). Furthermore, you may *optionally* consult the book "Economic and Financial Decisions under Risk," by Louis Eeckhoudt, Christian Gollier, and Harris Schlesinger; Princeton University Press, 2005.

Note: This course is mathematically intensive. I expect you to have (or be willing to develop!) an appreciation for careful formal arguments. You also need to be familiar with basic probability and statistics, as well as calculus.

Tentative Course Outline

1. **Subjective probability**. Betting preferences and coherent forecasts

2. **Bayesian Inference**. Bayes' Rule is all you need! Plus, Exchangeability and De Finetti's Theorem

3. **Expected Utility**. Preferences over lotteries. The St. Petersburg paradox. Utility.

4. **Risk Aversion**: definition and characterization.

5. **Comparative risk aversion** and Portfolio Choice

6. The **Arrow-Pratt measures** of risk aversion

7. **Stochastic Dominance**. Relationship to EU maximization.

8. **Mean-Variance Analysis** and mutual-fund theorems.

9. Value of **Information**; EU foundations

10. **Blackwell informativeness**

11. **Decision Trees**

12. **Learning** and Experimentation; **search**.

13. **Foundations** of EU

14. **Violations** of EU

Exam dates

- **MIDTERM: Wednesday, October 31** (drop date: Friday November 2)

- WCAS Reading period: Monday, December 3 – Sunday, December 9

- **FINAL EXAM: Thursday, December 13, 3pm-5pm**