

# ECONOMICS 171: DECISIONS UNDER UNCERTAINTY

Spring 2010

Lectures: M, W, F 2:00 – 2:50 pm

Solis 107

Prof: Herb Newhouse

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Office Hours: Tuesdays 10 – 11:30 am

Office: Econ 108

Course webpage: <https://webctweb.ucsd.edu/webct/logon/3358392323001>

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This course examines how economic agents make decisions under conditions of uncertainty. It examines the various ways in which economists represent the phenomenon of uncertainty, the fundamental principles of choice under uncertainty, the concepts and measurement of “risk” and “risk aversion,” and the analysis of how these features influence economic behavior. In the process of presenting this material, we will examine laboratory methods for eliciting and testing hypotheses about attitudes toward risk, the representation and elicitation of uncertain beliefs, intertemporal choice under uncertainty, psychological evidence and other “paradoxes” that attack the standard economic approach, and current research in light of this evidence.

Prerequisites:

ECON 100A or 170A; and ECON 120A or ECE 109 or Math. 180A or Math. 183 or Math. 186

Lectures and Problem Sessions:

You are responsible for all the material in the lectures. Partial notes will be available on the class webpage before each lecture. I recommend that you print these out before hand and fill in the missing information. I'll do my best to avoid typos but you're responsible for the correct material. I want you to understand the material instead of simply memorizing it. If you miss a lecture, borrow someone's notes. Problem Sessions are optional but recommended.

Exams:

Your grade will be determined on the basis of two Midterm Exams (25% each) and the Final Exam (50%). Alternatively your lower midterm will count for 15%; your higher midterm will count for 25% and your final will count for 60%. If you miss a midterm for a documented, university approved reason (ie., illness, official university trip) the weight for that exam will be placed on the final. If you miss a midterm for another reason (ie., oversleep) you will receive a zero for that exam. No one will be allowed to start an exam after the first person leaves it.

Midterm 1 will be held in class on Wednesday, April 21st. Midterm 2 will be held in class on Wednesday, May 12th. The final exam will be held on Friday, June 11th from 3:00 – 6:00 pm. If you know in advance that you cannot make an exam, please let me know as soon as possible.

You are only permitted to use pens and pencils, a calculator, a straight edge and one note card during each exam. The note card can be any size up to 8” by 5” for the midterms and up to 8.5” by 11” for the final. It may **only** have handwritten notes on both sides. Typed or mechanically reproduced notes are not permitted. Do **not** attach anything to your note card.

Academic dishonesty:

I take academic dishonesty seriously. Any student found guilty of academic dishonesty will earn a failing grade for the course. In addition to this sanction, the Council of Deans of Student Affairs will also impose a disciplinary penalty. For a review of UCSD policy, please see <http://www-senate.ucsd.edu/manual/appendices/app2.htm>.

Regrade requests:

Regrade requests must be made through a written statement **before** the start of class one week after the exam was first passed back. Extensions will only be permitted if you have a documented, university approved reason for missing the entire week after the exam was first passed back. If you request a regrade I may regrade your entire exam and your score could go up, down or stay the same.

Text:

There is a packet of notes written by Mark Machina available at soft reserves. Additional references will be given during the course. These additional references may be beneficial but are not required.

Practice Questions:

Practice questions will be available online. We will go over these questions in office hours and in the problem sessions. Your best practice for the exams is to try these questions yourself first.

Preliminary Course Outline:

1. Introduction: Aspects of Decision Making Under Uncertainty
  - a. Positive decision theory vs. normative decision theory.
  - b. The representation of uncertainty.
  - c. Criteria for choice under uncertainty
2. Preliminary Concepts in Probability Theory
  - a. Probability distributions and cumulative distribution functions.
  - b. Expected value, variance and skewness.
  - c. Concave functions, convex functions.
  - d. Conditional probability and Bayes' Law.
  - e. Compound lotteries and probability mixtures.
3. Expected Utility Risk Preferences
  - a. Expected utility preferences over lotteries.
  - b. The axioms of expected utility theory.
  - c. The expected utility representation theorem.
4. Risk and Risk Aversion
  - a. Certainty equivalents, risk premiums and attitudes toward risk.
  - b. The Arrow-Pratt characterization of comparative risk aversion.
  - c. Comparative risk and the theory of stochastic dominance.
  - d. Comparative statics of risk and risk aversion.
5. Techniques for Assessing Risk Preferences and Beliefs
  - a. Methodological issues and basic techniques.
  - b. Assessing von Neumann-Morgenstern utility functions.
6. Prospect Theory
7. Updating Beliefs
  - a. Perfect Information
  - b. Experimental (Imperfect) Information
  - c. Sampling
8. Subjective Uncertainty (time permitting)