Econ 4170: The Economics of Risk, Uncertainty, and Information
Spring 2025
Marc Santugini

Course Description

The course covers the principal areas of the field of risk, uncertainty, and information. We begin with individual decision-making under risk. We introduce the theory of preferences among lotteries, including the expected utility framework as well as the concepts of riskiness and risk aversion. Applications include portfolio choice, the demand for insurance, precautionary savings, and production under risk. We then turn to market equilibrium under risk and define the concept of rational expectations. Two main applications are the behavior of the firm(s) facing risk under different market structures (e.g., perfect competition, oligopoly) and risk sharing under symmetric information. We finally consider situations of uncertainty (different from situations of risk) and information. We look at decision making and risk sharing under asymmetric information. We then study decision-making when agents are also Bayesian learners.

There is no required Textbook.

Microsoft Teams

The learning space *25Sp Econ 4170 (Santugini)* gives you access to all relevant documents, videos, and links. We use Gradescope for assignments.

Enrollment Information

You must be registered in the lecture section. There are no discussion sections, but you will have to attend several individual sessions.

Office Hours

I will be flexible with office hours. I can meet in-person (Room 149A in Elson Building) or online (via Teams or Zoom). You can make an appointment by:

- Sending an email to ms3ae@virginia.edu.
- Sending a direct message using the chat function in Teams. Feel free to use the Chat function in Teams to send me personalized messages (e.g., asking questions or showing me your work).

Lectures

Tue and Thu, 12:30-1:45pm in Gilmer Hall 301.

Discussion Sessions

The TAs will not hold formal discussion sessions, but will conduct individual sessions.

Attendance Policy

Attendance to lectures is strongly encouraged. Please arrive on time and make sure that you do not disrupt your classmates, or me. Attendance to individual sessions is required.

Electronic Device Usage

Electronic devices, including but not limited to phones, tablets, and personal computers, are permitted in class exclusively for the purpose of taking notes. Recognizing that many students rely on these tools for notetaking, this use is fully supported. The use of electronic devices to engage in activities unrelated to the class, such as watching movies, following sporting events, or playing video games, is strictly forbidden.

Course Grade

Your course grade will be comprised of the following components: three midterms and one final exam, with the lowest of these four scores dropped and each of the remaining exams contributing 20% to your grade. Additionally, lecture quizzes will account for 20%, and individual sessions for 20% of your final grade. Important points to note:

- There are four exams in total, including the final exam. The lowest score among these will be dropped in the overall grade calculation.
- Course grades will be determined based on a scale set at the end of the semester. As a result, individual tests will not be assigned letter grades during the semester.

Midterms and Final Exams

The schedule for the midterms and final exam is provided in the Tentative Schedule. Students are required to complete each exam independently, adhering to the Honor Code.

Midterm Exams: If you are unable to take a midterm exam due to intercollegiate competition, illness, or an emergency, you must submit adequate documentation to justify the absence. If your documentation is approved, the average score of your completed exams (midterms and final) will be used to replace the missed midterm grade. If your documentation is not approved or absent, you will receive a zero. You will still have to take the final exam.

Final Exam: The final exam can be skipped if you have taken all three midterms. In this situation, the final exam will automatically be considered as your lowest score and therefore dropped. If you have not completed all three midterms, you must take the final exam. If you miss two or three midterms, you will be given a three-hour comprehensive final exam, tailored to assess the material from the missed midterms. If you miss no more than one midterm, the final exam will be two hours long and cumulative, but with fewer questions.

In all cases of absence, except in extreme emergencies, advance notification and proper documentation must be provided for approval within one week of the missed exam(s).

Late Enrollment Implications

Please note that if you enroll in the course late, there will be no opportunities for makeup work for any missed assignments. It is crucial for all students, regardless of enrollment date, to stay up to date with lecture quizzes and individual sessions.

Lecture Quizzes

There is a quiz after every lecture. These lecture quizzes are graded based on serious completion, meaning that a genuine effort is expected in your responses. Each quiz will count equally towards the 20% of your course grade allocated for lecture quizzes.

Attendance Quizzes

In addition to the regular lecture quizzes, there will be a quiz at the end of every lecture. These attendance quizzes are designed to check your presence in lectures, unlike the lecture quizzes which are online only. It is important to note that these attendance quizzes will not impact your course grade. The scores from these quizzes will neither hurt nor benefit your grade calculation and will not enter into the calculation of your overall course grade.

Individual Sessions

We will conduct several individual sessions, each contributing equally to the 20% of your final grade allocated for these sessions.

Key Components:

- One-on-One Interaction: You will work individually with either the TAs or myself. In each session, a problem related to the course material will be presented to you.
- Task and Assessment: Your task is to walk through the solution process. Guidance will be provided as necessary, but the focus will be on your effort and your approach to the problem.

Important Details:

- Frequency: Each student will participate in a session approximately every week or every two weeks.
- Duration: Each session will be 10-15 minutes long.
- Scheduling Process:
    - A link will be sent out for scheduling each individual session.
    - Promptly securing your time slot for the session is essential. Delay in booking or failure to book your slot in the designated week will result in a zero score for that session.
- Mandatory Participation: Active involvement and flexibility in scheduling are crucial for these sessions. If you are unable to meet these requirements, you must drop the class immediately.

SDAC Accommodations

To discuss accommodations as certified by the Student Disability Access Center, please contact me as early in the semester as possible. Accommodations will not be granted to students who do not submit the appropriate forms.

Legal Note

Students are prohibited from selling notes for this course to any person or commercial firm (or being paid to take notes) without the express, written permission of Marc Santugini. Recordings, course materials, and lecture notes may not be exchanged or distributed for commercial purposes, for compensation, or for any other purpose other than study by students enrolled in the current class. Public distribution of such materials may constitute copyright infringement in violation of federal or state law, or University policy. Violation of this policy may subject a student to disciplinary action under the University's Standards of Conduct.

Recording of Class Sessions and Distributions of Course Materials

Course materials made available in Teams (including videos) may not be reproduced, shared with those not enrolled in this class, or uploaded to other online environments. Students in a class are prohibited from recording of any kind unless authorization is obtained from the instructor. See https://uvapolicy.virginia.edu/policy/PROV-005.

Our Contract

This syllabus is an important document if you remain in this course. Continued enrollment in this course indicates agreement with all stipulations laid out in this document. All future discussions between you and me assume your agreement with this syllabus.

Exam dates

- Midterm 01: Thursday, February 13, during class time.
- Midterm 02: Thursday, March 27, during class time.
- Midterm 03: Tuesday, April 29, during class time.
- Final exam: Friday, May 02, 2:00pm – 5:00pm.

TENTATIVE SCHEDULE

WEEK 01

Tuesday, January 14.
Lecture 01: *What is the value of a gamble?*

Thursday, January 16
Lecture 02: *St-Petersburg Paradox (1)*

WEEK 02

Tuesday, January 21
Lecture 03: *St-Petersburg Paradox (2) and Diversification*

Thursday, January 23
Lecture 04: *Optimal Portfolio Problem (1)*

WEEK 03

Tuesday, January 28
Lecture 05: *Optimal Portfolio Problem (2)*

Thursday, January 30
Lecture 06: *Risk Aversion*

WEEK 04

Tuesday, February 04
Lecture 07: *Contingent Claims Environment*

Thursday, February 06
Lecture 08: *Graphical Analysis of the Optimal Portfolio Problem (1)*

WEEK 05

Tuesday, February 11
Lecture 09: *Graphical Analysis of the Optimal Portfolio Problem (2)*

Thursday, February 13
MIDTERM 01

WEEK 06

Tuesday, February 18
Lecture 10: *Comparative Risk Aversion (1)*

Thursday, February 20
Lecture 11: *Comparative Risk Aversion (2)*

WEEK 07

Tuesday, February 25
Lecture 12: *Wealth Effect in a Risky Environment (1)*

Thursday, February 27
Lecture 13: *Optimal Insurance Problem (1)*

WEEK 08

Tuesday, March 02.
Lecture 14: *Optimal Insurance Problem (2)*

Thursday, March 04.
Lecture 15: *Production under Risk (1)*

WEEK 09

Spring Recess

WEEK 10

Tuesday, March 18
Lecture 16: *Production under Risk (2)*

Thursday, March 20
Lecture 17: *Production under Risk and Insurance (1)*

WEEK 11

Tuesday, March 25
Lecture 18: *Production under Risk and Insurance (2)*

Thursday, March 27
MIDTERM 02

WEEK 12

Tuesday, April 01
Lecture 19: *Production under Risk and Futures*

Thursday, April 03
Lecture 20: *Consumer Problem under Risk (1)*

WEEK 13

Tuesday, April 08
Lecture 21: *Consumer Problem under Risk (2)*

Thursday, April 10
Lecture 22: *Uncertainty and Information (1)*

WEEK 14

Tuesday, April 15
Lecture 23: *Uncertainty and Information (2)*

Thursday, April 17
Lecture 24: *Uncertainty and Information (3)*

WEEK 15

Tuesday, April 22
Lecture 25: *Uncertainty and Information (4)*

Thursday, April 24
Lecture 26: *Uncertainty and Information (5)*

WEEK 16

Tuesday, April 29
Midterm 03

Friday, May 02
Final Exam