

Economics of Information and Uncertainty

ECON 447

Leonie Baumann

McGill University, Winter 2024

Course Content

This course is an upper-level undergraduate course on introduction to the microeconomic theory of uncertainty and information. The goal is to gain a deeper understanding of how uncertainty and information affect decisions and economic outcomes. We will learn, at a rigorous level, (i) how to model decision making under uncertainty and apply it to important economic problems, like insurance and financial markets; (ii) how agents interact when they have different information.

Tentative Outline of Topics

1. Economics of Uncertainty (Main Textbooks: Osborne and Rubinstein; van Zandt, see below)
 - (a) Expected Utility Theory
 - (b) Risk Aversion and Riskiness
 - (c) Demand for State-Contingent Contracts: Gambles, Portfolio Choice, Insurance
 - (d) Markets for State-Contingent Contracts: Risk-Sharing, Insurance Markets, Asset Markets
2. Economics of Information (Main Textbook: Macho-Stadler & Perez-Castrillo, see below)

- (a) Asymmetric Information
- (b) Moral Hazard
- (c) Adverse Selection
- (d) Signaling (time permitting)

Prerequisites

The course is most suitable for students who enjoy microeconomic theory and thinking in a deep and rigorous way. You should have taken Econ 230 or Econ 250. You also need knowledge of calculus I and II (Math 140, 141). Knowing probability theory (for example, Math 323) is helpful.

Time and Place

Lectures are on Thursdays and Tuesdays, 8:35-9:55pm, in BIRKS 205.

Instructor

Leonie Baumann. Email: leonie.baumann@mcgill.ca. Office: Leacock, room 507.

Office hours: Tuesdays, 10.30am-11.30am. Wednesdays, 11.30am-12.30pm.

Please try to clarify any content-related questions first with the TA.

If necessary (e.g. you have another lecture at the same time,...), meetings outside of the scheduled office hours can be arranged via email.

Teaching Assistant

Kaushil Patel. Email: kaushil.patel@mcgill.ca.

TA office hours: Thursdays, 10.05-11.25am, in EDUC 338.

Some TA office hours will take the form of a conference: namely, after the submission of a problem set to discuss the solution (dates tba), and before the midterm exam and before the final exam to review material (dates tba). If necessary (e.g. you have another lecture at the same time,...), meetings with the TA outside of the scheduled office hours can be arranged via email.

Communication

I will send announcements and communicate via emails through *mycourses*.

If you have a question,

- 1) check with your colleagues;
- 2) if 1) fails, contact the TA;
- 3) if 1) and 2) fail, contact me.

Try to keep your emails short and precise.

Course Materials

I will post the relevant lecture slides before each lecture on *mycourses*. I will also post problem sets, recordings and any other additional materials there. Copyright: All slides, video recordings, lecture notes, etc. remain the instructor's intellectual property. As such, you may use these only for your own learning (and research, with proper referencing/citation) ends. You are not permitted to disseminate or share any of the materials uploaded on *mycourses*; doing so may violate the instructor's intellectual property rights and could be cause for disciplinary action.

Textbooks

The main references for this course will be:

Macho-Stadler, I. and D. Perez-Castrillo (2005), *An Introduction to the Economics of Information*, Oxford University Press, 2nd edition.

Osborne, M.J. and A. Rubinstein (2020), *Models in Microeconomic Theory*, Cambridge, UK: Open Book Publishers,

<https://doi.org/10.11647/OBP.0211>.

Van Zandt, Timothy (2006), *Introduction to the Economics of Uncertainty and Information*, unpublished manuscript. Posted in the content section on mycourses.

The relevant sections will be specified in the lecture slides.

Assessment

Four homework **problem sets** are assigned as the term progresses (anticipated release dates: Jan 23, Feb 6, Mar 14, Mar 28). Each problem set will be released via the assignments section in *mycourses*, and you should upload your solution there in a single pdf-file. I will post suggested solutions online shortly after the due date so late submissions will not be accepted. For each problem set, you will have at least 1 week starting at the release date to submit your solution. Each problem set receives one of 5 grades: complete and (almost) no mistake (100%); complete and minor mistakes (85%); major mistakes, high effort (80%); major mistakes, low effort (75%); not submitted (0%).

A **midterm exam** (closed book) will take place in class during the lecture time on February 22. If you miss the midterm for a valid reason (you need to provide proof of that, e.g. a valid medical note, on or before March 1), its weight will be added to that of the final exam. There will be no makeup exam for the midterm.

A **final exam** (3 hours, in-person, closed book) will take place in the exam period (time and date tba, as determined by the university).

Your **final grade** will be determined by your problem set solutions (10% in total; each problem set takes an equal weight of 1/4 of the 10%), the midterm exam (30%), and the final exam (60%).

Please take note of the University Student Assessment Policy: "In the event of extraordinary circumstances beyond the University's control, the evaluation scheme in a Course is subject to change."

McGill Policy Statement

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/students/srr/honest/ for more information).

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

In the event of extraordinary circumstances beyond the University's control, the delivery, content and/or evaluation scheme in this course is subject to change.

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the Office for Students with Disabilities, 514-398-6009.

McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the

world now gather.