

# Economics of Information and Uncertainty

ECON 447

Leonie Baumann

McGill University, Winter 2022

## 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, 4:05-5:25pm.

Until January 23, lectures will be delivered remotely and “live” via Zoom. “Zoom” lectures can be attended via the following link:

**<https://mcgill.zoom.us/j/83803968714>** . “Live” attendance of a Zoom lecture is not required but encouraged. Zoom lectures will be recorded and available on *mycourses* after the lecture.

After January 23, we plan to have in-person lectures. In-person lectures take place in Burnside Hall 1B36.

Due to the uncertainty of the Covid pandemic, there might be other switches between Zoom and in-person lectures. Switches will be announced via email through *mycourses*.

## Instructor

Leonie Baumann. Email: [leonie.baumann@mcgill.ca](mailto:leonie.baumann@mcgill.ca). Office: Leacock, room 507.

Office hours: Wednesdays 9:30 - 11:00am. First office hours on January 12. Please try to clarify any content-related questions first with the TA.

Until January 23, office hours will be held via Zoom. You can “come” to the Zoom office hours by clicking this link:

**<https://mcgill.zoom.us/j/88661882182>**. You may be placed in a queue in the virtual waiting room if I am just talking to another student. Admittance from the virtual waiting room to the office hours is on a first-come-first-serve basis. After January 23, office hours are planned to take place in-person in my office.

Again, there might be other switches between remote and in-person office hours, and any of those switches will be announced via email through *my-courses*.

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

Nan Ma. Email: nan.ma3@mail.mcgill.ca.

TA office hours: Fridays, time to be announced (tba).

Until January 23, TA office hours will be held via Zoom. You can “come” to any of the Zoom TA office hours by clicking this link: tba. After January 23, TA office hours are planned to take place in-person in room tba.

Again, there might be other switches between remote and in-person office hours, and any of those switches will be announced via email through *my-courses*.

For “regular” TA office hours (i.e., no conferences) that are held via Zoom, you may be placed in a queue in the virtual waiting room if the TA is just talking to another student. Admittance from the virtual waiting room to the office hours is on a first-come-first-serve basis.

Some TA office hours will take the form of a conference: namely, each session after the submission of a problem set to discuss the solution (dates tba), and sessions before the midterm exam and before the final exam as review sessions (dates tba).

Any Zoom TA office hours that are a conference will be delivered “live” and you also can attend them via the TA office hours link (see above). Such a Zoom conference will be recorded and available afterwards on *mycourses*.

If necessary (e.g. your time zone makes it impossible to come to office hours, 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 communicate announcements 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 20, Feb 3, Mar 17, Mar 31). 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 24. 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 2),

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."

## **Recordings**

By enrolling in this course, you accept that Zoom lectures and Zoom TA office hours that are conferences ("session") will be recorded. When attending a session "live", your image, voice, and your name (or preferred name) may be recorded, and your instructor/TA may call your name during the session. As such, this personal information will be disclosed to classmates, whether during the session or in viewing the recording. By attending a session "live", you consent to being recorded and you accept that personal information of this kind may be disclosed to others, whether during the session or when viewing the recording. If you are not comfortable being in a session that is recorded, you may decide to not attend "live". Students who do not attend the live session are able to watch the video recording of the session later on *mycourses*.

## **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/](http://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.