

Economics of Information and Uncertainty

ECON 447

Leonie Baumann

McGill University, Winter 2021

Note: There are no in-person activities planned for this course. The course will be conducted remotely. All times in this syllabus refer to the Montreal time zone.

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

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.

Organization

Time and Place

Lectures are on Thursdays and Tuesdays, 8:35-9:55am. They will be delivered "online" and "live" via Zoom. Via the following link

<https://mcgill.zoom.us/j/82573819262>

you can "come" to each live lecture. "Live" attendance is not required but encouraged. Lectures will be recorded and available on *mycourses* after each lecture.

Instructor

Leonie Baumann. Email: leonie.baumann@mcgill.ca.

Virtual office hours: Wednesdays 8:30 - 10:00am.

Please try to clarify any content-related questions first with the TA. I will hold my office hours via Zoom. You can "come" to any office hours by clicking this link: **<https://mcgill.zoom.us/j/84987999755>**

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. If necessary (e.g. your time zone makes it impossible to come to office hours, 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.

Virtual office hours: Fridays, 8:30-10:00am. Exception: no office hours on Feb 19, instead there are office hours on Feb 22, 8:30-10:00am.

Virtual office hours will be held via Zoom. You can "come" to any of the TA office hours by clicking this link: **<https://mcgill.zoom.us/j/83903524616>** For "regular" TA office hours (no conferences), 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: each session after the submission of a problem set to discuss the solution (Jan 29, Feb 12, Mar 26, Apr 9); the sessions before the midterm exam and before the final exam as review sessions (Feb 22, Apr 16). Any TA office hours which are planned as a conference will be delivered "live" via Zoom, also accessible via the TA office hours link. Such a live 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 *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 these materials; 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,

<https://faculty.insead.edu/vanzandt/327files/EconInfo-Book.pdf>.

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 21, Feb 4, Mar 18, Apr 1). 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** will be made available through the assignments section in *mycourses* on February 24, 8:30am. You then have 48 hours to complete and upload your solution to *mycourses* (until February 26, 8:30am). There will be no lecture on February 25. The midterm exam is a take-home exam, which follows the open-book format. That means that during the exam you will be allowed to consult resources as specified by the instructor. You are not allowed to consult with any other person about the final exam. Students who consult will be subject to disciplinary action as per the Student Code of Conduct. Late submissions are not accepted and receive a fail grade. 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 3), its weight will be added to that of the final exam. There will be no makeup exam for the midterm.

A **final exam** will be made available through the assignments section in *mycourses* in the exam period (time and date tba, as determined by the university). After its release, you have 48 hours to complete and upload your solution to *mycourses*. The final exam is a take-home exam, which follows the open-book format. That means that during the exam you will be allowed to consult resources as specified by the instructor. You are not allowed to consult with any other person about the final exam. Students who consult will be subject to disciplinary action as per the Student Code of Conduct. Late submissions are not accepted and receive a fail grade.

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 lectures and the TA office hours that are planned as 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/ 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 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.