ECO316H1S: Applied Game Theory

Department of Economics

University of Toronto

Winter 2025

Instructor: Yi (Lily) Li

Email: lilyyi.li@utoronto.ca (please use this email address instead of the Quercus messaging platform, which I do not check regularly)

Teaching Assistant: TBD

Lectures: Monday 2-4p, Sidney Smith Hall, Room 1071

Tutorials: Monday 4-5p, Sidney Smith Hall, Room 1071 (from Week 2)

Instructor office hours: Wednesday 2-3p, Max Gluskin House, Room 228

TA office hours: TBA

1. Course Materials

- **Required:** Moblab: https://www.moblab.com The cost is $25 for the semester. See Quercus for registration instructions.
- **Optional:** *An Introduction to Game Theory* by Martin J. Osborne (Oxford University Press, New York, 2003), ISBN-13: 978-0195128956

2. Course Overview and Learning Outcomes and Restrictions

Focuses on the core ideas and concepts of game theory and on applications of them in economics and other social sciences. Topics include:

- Two-player games and strategic games
- Pure strategy Nash equilibrium
- Cournot's model and Bertrand's model of duopoly
- Mixed strategy Nash equilibrium
- Iterated deletion of dominated strategies
- Repeated games
- Extensive form games with perfect information
- Games with incomplete information
- Cooperative Games and Shapley Value

Prerequisites: ECO200Y1/ECO204Y1/ECO206Y1
Corequisites: None
Exclusions: ECO326H1, ECO326H5
Note: This course cannot be taken as a substitute in programs that require ECO326H1.

3. Evaluation

Your final grade will depend on **Problem Sets** (10%), **Class Participation (**10%), a **Midterm Exam** (25%) and a **Final Exam** (55%).

The **Problem Sets** (of which there are 10) are each worth 1% of your final course grade. Of these 10 assessments, the lowest grade will be dropped and replaced by the highest. The purpose of dropping the lowest grades is to accommodate situations where a student is unable to complete a problem set for reasons beyond their control. As a result, no make-ups or extensions will be offered for problem sets.

The problem sets will be graded on a completion basis (0/1 = incomplete, 0.5/1 = attempted some problems, 1/1 = attempted all problems). They will be posted on Quercus and must be submitted via Quercus by **Noon** on the day they are due, after which solutions will be posted. Given that the problem sets are graded on a completion basis, and that the lowest two problem sets are dropped, late problem sets will not be accepted. If you are unable to fully complete a problem set prior to the deadline, submitting a partially-complete problem set will earn you at least partial points. You may collaborate with classmates on the problem sets, but you must submit them individually.

Class Participation will come in the form of participating in classroom experiments. The percentage of classroom experiments that you participate in is your grade. You are allowed to miss two classroom experiments without affecting your class participation grade.

The **Midterm Exam** will take place on **2pm Feb. 10th (class meeting time) about 1.5-2 hours**. All material from the first five weeks is eligible to be covered on the midterm.

The **Final Exam** will take place during the final exam period scheduled by the university. It will be a 3-hour cumulative and comprehensive final exam that covers the material from the whole semester.

4. Missed Term Work

- **Midterm:** The accommodation for missing the midterm is that the weight of the midterm will be shifted to the final exam. However, to qualify for this re-weighting, you must:
    - **(i)** Record your absence through the online absence declaration tool on
    - **(ii)** Email the course instructor no later than the start of the test and include your absence declaration as a receipt

- **Final exam:** If you miss the final exam, you can submit a petition to defer it. See more information on how to do so here: https://www.artsci.utoronto.ca/current/faculty-registrar/petitions/deferred-exams .

5. Regrading Policy

If you believe there has been an error in the grading of your exam, you may request a regrade. A regrade request form will open several days after grades have been returned and will close several days later. Regrade requests must be submitted prior to the form closing; late requests will not be accepted. Your request must include a detailed rationale for why more marks are merited, and while your request may be specific to a given question, the entire exam may be regraded and your grade can go up or down.

6. Religious Accommodation

As a student at the University of Toronto, you are part of a diverse community that welcomes and includes students and faculty from a wide range of backgrounds, cultural traditions, and spiritual beliefs. For my part, I will make every reasonable effort to avoid scheduling tests, examinations, or other compulsory activities on religious holy days not captured by statutory holidays. Further to University Policy, if you anticipate being absent from class or missing a major course activity (like a test, or in-class assignment) due to a religious observance, please let me know as early in the course as possible, and with sufficient notice (at least two to three weeks), so that we can work together to make alternate arrangements.

7. Learning Disability Accommodation Requirement

Students with diverse learning styles and needs are welcome in this course. If you have an acute or ongoing disability issue or accommodation need, you should register with Accessibility Services (AS) (accessibility.utoronto.ca) at the beginning of the academic year. Without registration, you will not be able to verify your situation with your instructors, and instructors will not be advised about your accommodation needs. AS will assess your medical situation, develop an accommodation plan with you, and support you in requesting accommodation for your course work. Remember that the process of accommodation is private: AS will not share details of your condition with any instructor, and your instructors will not reveal that you are registered with AS.

8. Academic Integrity

All students, faculty and staff are expected to follow the University's guidelines and policies on academic integrity. For students, this means following the standards of academic honesty when writing assignments, collaborating with fellow students, and writing tests and exams. Ensure that the work you submit for grading represents your own honest efforts. Plagiarism–representing someone else's work as your own or submitting work that you have previously submitted for marks in another class or program–is a serious offence that can result in sanctions. Speak to me or your TA for advice on anything that you find unclear. To learn more about how to cite and use source material appropriately and for other writing support, see the U of T writing support website at www.writing.utoronto.ca/. Consult the Code of

Behavior on Academic Matters for a complete outline of the University's policy and expectations. For more information, please see http://www.artsci.utoronto.ca/osai and http://academicintegrity.utoronto.ca/

We are committed in providing the best learning experience possible and accommodate the needs of this difficult time, but at the same time we want to guarantee fairness in the evaluation. Therefore we will pursue at the full extent of UofT policies any case of infringement of the academic integrity guidelines.

9. Use of Generative AI in Assignments

Students may use artificial intelligence tools, including generative AI, in this course as learning aids or to help produce assignments. However, students are ultimately accountable for the work they submit. Note: Some AI are not reliable in terms of solving problems in Economics.