



Faculty of Liberal Arts and Professional Studies
Department of Economics
Econ 4310: Game Theory in Economics
Fall 2026

Class Information:

- Time and location: Fall 2026, Thursday, 14:30-17:20, Classroom: CC 211
- Course Webpage: <https://eclass.yorku.ca/course>
- Prerequisites: AP/ECON 1530 3.00, AP/ECON 1540 3.00, AP/ECON 2300, and AP/ECON 2350 3.00 or equivalents
- Course credit exclusions: GL/ECON 4340 3.00 PRIOR TO FALL 2011: Course credit exclusion: GL/ECON 3340 3.00. PRIOR TO FALL 2025: Course credit exclusion: AP/ECON 4130 3.00

Course Description

Game theory is the study of strategic interactions, where economic agents (or “players” in a “game”) affect each other through their actions and make their decisions in light of what others are likely to choose. This course provides an introduction to game theory and strategic thinking at the undergraduate level. One fundamental puzzle is how players can cooperate when each of them faces an incentive to cheat the others. For example, why would a producer exert effort to produce a quality product if the consumer cannot verify the quality until after purchase? Why would people contribute time and effort to community projects when they could relax and let others do the work? Game theory provides a unified framework for addressing these questions. By formalizing the situations that players face, we can trace the logical implications of our assumptions on players’ preferences, beliefs, and methods of reasoning. Game theory is a core tool of modern economics, and also yields useful insights into business strategy, political science, computer science, sociology, biology, and other fields. In this advanced course, students should be comfortable with rigorous definitions, logical reasoning, probabilities, and optimization using calculus.

Instructor: Yishu Zeng

- E-mail address: zengyish@yorku.ca
- Office Hour: By appointment

Note: Please kindly indicate “Econ 4310” in the subject of your email. Also, please use your York email account for correspondence and remember to include your name in your messages.

Lectures

This course follows a lecture-based format enriched with active-learning components, and your questions, comments, and feedback are welcome at any time, both in and outside of class. Technology is integrated throughout the course—both in the classroom and through the course website on eClass—to deliver instruction and support interactive activities.

Please make it a habit to check the course website on eClass regularly for announcements, lecture handouts, and in-class exercises. While lecture notes will be provided on eClass in advance, they are not a comprehensive treatment of the material and are not a substitute for the textbook or class attendance. Attendance is expected of all students, and you are responsible for catching up on any material covered in class if you miss a lecture.

All course materials posted on eClass are proprietary. You do not have permission to duplicate, copy, or distribute any course materials outside of the class, as these actions may violate copyright laws and the Freedom of Information and Protection of Privacy Act.

Textbooks

The required textbook is: Joel Watson, *Strategy: An Introduction to Game Theory*, W.W. Norton, 3rd edition, 2013.

- Print text: ISBN10: 0393123871 | ISBN13: 978-0393123876

You are also encouraged to read other excellent textbooks such as “An Introduction to Game Theory” by Martin Osborne and “Game Theory for Applied Economists” by Robert Gibbons. Additional readings may be assigned or recommended during the course.

Homework Problems and In-Class Exercises

Homework Problems will be made available on eClass. They will not be graded but you are encouraged to work on the assigned problems to reinforce the course material and prepare for exams. I will select some of these problems for your exams.

Each class is built around **active learning**: rather than passively watching a lecture, you will be given opportunities to practice mathematics alongside me. In every session we introduce new material, work through examples together, and then immediately put those ideas into practice with in-class exercises. Tackling each concept while it is still fresh—and getting feedback on the spot—is what turns “I can follow along” into “I can do this myself.” The exercises are modeled closely on the examples from the lecture notes, so nothing will feel unfamiliar. They are deliberately low-stakes: fully open-book, and **the lowest 5 scores will be dropped** when computing your course grade, so you are free to experiment, make mistakes, and learn from them. In total, these in-class exercises account for **10%** of your grade.

Submission & Expectations: Each in-class exercise is to be completed independently. Please upload your work electronically in PDF format on eClass. I encourage you to familiarize yourself with the Turnitin function on eClass ahead of time.

Make sure that your submission is readable. Please give rigorous and complete answers. Explain all required steps of your argument, and do not leave out calculations even if the math in your opinion is trivial. This expectation also applies to your write-up solution for all the exams.

Exams and Grades

As mentioned, **10%** of the final grade will be allocated to the in-class exercises. There will also be a midterm exam and a final exam, which will contribute **20%** and **65%** to your final grade, respectively. The final exam will be scheduled by the registrar's office during the official exam period, **December 10-23**. The final exam will cover the material from the whole course. **5%** of the final grade will be allocated to completing questionnaires and surveys, as well as to class participation. Class participation is defined specifically as actively asking questions, answering questions, or offering insightful comments in response to others' questions, and should not be conflated with mere attendance.

The total grade will be determined based on the weighted average score (P%) of each component you achieve in the course.

***Concerns about apparent grading errors will be considered during the term, but requests for “extra credit” or other special considerations in assigning grades will be ignored.**

Grading

The grading scheme for the course conforms to the 9-point grading system used in undergraduate programs at York (e.g., A+ = 9, A = 8, B+ = 7, C+ = 5, etc.). Assignments and tests will bear a number grade that you can convert into a letter grade using the standard York University conversion table (e.g., A+ = 90 to 100, A = 80 to 90, B+ = 75 to 79, etc.). For a full description of York grading system see the [York University Undergraduate Grading Schemes](#).

Missed Exams and Deadlines

In-Class Exercises: There will be no extensions to the in-class exercise deadlines for any reason. The lowest 5 grades will be dropped to account for any unexpected circumstances.

Midterm: There will be no make-up midterm exams for any reason. In the event that you must miss the midterm, the weight will automatically be transferred to the final exam. The final exam is generally expected to be more challenging than the midterm. By requesting the transfer, you implicitly acknowledge and understand this associated risk.

Final: For students who miss the final, the Department of Economics Guidelines on Deferred Standing apply.

Tentative Course Outline

We will cover all of Parts I–III, and part of Part IV (“Games with Incomplete Information”) if time permits. Textbook readings for each point are shown in parentheses.

Week (“Wk”)	Topic
Part I	Representing Games
Wk of Sep. 9	Extensive form (chs. 1-2) & Normal form (ch. 3)
Wk of Sep. 16	Tools (ch. 4, “the concept of efficiency” from ch. 6)
Part II	Static Settings
Wk of Sep. 23	Dominance (“rationality” from ch. 5, “dominance” from ch. 6) Rationalizability (“common knowledge” from ch. 5, chs. 7–8)
Wk of Sep. 30	Cognitive hierarchies (“best response” from ch. 6) ¹ Nash equilibrium (chs. 9–10) ²
Wk of Oct. 7	Mixed strategy Nash equilibrium (ch. 11)
Wk of Oct. 14	Reading week, no classes
Wk of Oct. 21	Midterm Exam: Oct. 22 during the class time
Wk of Oct. 28	Applications of Nash equilibrium (chs. 12–13)
Part III	Dynamic Settings
Wk of Nov. 4	Subgame perfection (chs. 14–15, review ch. 2)
Wk of Nov. 11	Applications of subgame perfection (chs. 16–17)
Wk of Nov. 18	Bargaining (chs. 18–19)
Wk of Nov 25	Negotiation equilibrium (chs. 20–21)
Wk of Dec. 2	Repeated games (chs. 22–23)
	Course Review

Note: The above list of topics is tentative and subject to change. Exam dates are firm.

Important Course Information for Students

All students are expected to familiarize themselves with the following information, available on the University Secretariat webpage - <http://secretariat-policies.info.yorku.ca>.

- Senate Policy on Academic Honesty and the Academic Integrity Website <http://calendars.registrar.yorku.ca/2015-2016/policies/honesty/index.htm>
- Accommodation for students with disabilities, including physical, medical, systemic, learning and psychiatric disabilities
- Student Conduct Standards
- Religious Observance Accommodation

*For more dates and information, see: <https://registrar.yorku.ca/enrol/dates/2026-2027/fall-winter>

Course ADD/Drop Deadlines*	Fall 2026
Last date to add a course (also see Financial Deadlines)	Sep. 22
Last date to drop a course without receiving a grade (also see Financial Deadlines)	Nov. 10
Course Withdrawal Period (withdraw from a course and receive a grade of “W” on transcript – see note below)	Nov. 10–Dec. 8

Academic Honesty and Integrity

It is our joint responsibility to strive to maintain academic integrity to the highest extent possible. Academic integrity is the pillar of higher education. Breaches of academic integrity such as cheating on exams affect all of us adversely, including the cheaters - your degree is as valuable as the reputation for academic honesty of our institution.

Familiarize yourself with the meaning of academic integrity by completing SPARK’s Academic Integrity module at the beginning of the course. All instances of academic dishonesty in this course will be reported to the appropriate university authorities, and can be punishable according to the Senate Policy on Academic Honesty.