

FACULTY OF LIBERAL ARTS & PROFESSIONAL STUDIES

DEPARTMENT OF ECONOMICS

INTRODUCTION TO GAME THEORY AND STRATEGIC THINKING ECON 3310 — Fall 2026

Tentative

Instructor	Selçuk Özyurt
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Class meetings	Mondays, 2:30–5:20 p.m.
Classroom	CC 106 — Calumet College
Office hours	Upon request
Teaching Assistant	None
Prerequisite	ECON 1000

Course Description and Philosophy

This is an introductory course on game theory and strategic thinking. The course develops the basic analytical tools of game theory while placing unusual emphasis on the art of modeling strategic situations. In many game theory courses, students are given a fully specified game and asked to solve it. In this course, we will often begin one step earlier: with a real-world strategic environment and a question we want to answer.

A central principle of the course is that a real-world environment does not uniquely determine a game. The appropriate model depends on the question being asked. Buying a house, participating in an auction, negotiating a labor contract, or using a platform such as Uber can each generate different games depending on which strategic problem we want to understand.

Students will repeatedly practice the following workflow: identify the question; understand the relevant institution; determine the players, actions, information, timing, and preferences; construct a model; analyze it formally; interpret the result; question the assumptions; and, toward the end of the course, consider how the rules or incentives could be redesigned.

The course is less technically intensive than an advanced game theory course, but it is not a course without formal analysis. Students will learn and apply core solution concepts, solve normal-form and extensive-form games, analyze bargaining and repeated interaction, study strategic problems involving private information and incentives, and use these tools to evaluate real institutions.

Learning Objectives

- Recognize strategic interaction and distinguish it from an individual decision problem.
- Translate a real-world strategic question into an appropriate game by specifying players, actions, information, timing, and preferences/payoffs.
- Use best responses, strict dominance, dominated strategies, mutual best responses, and Nash equilibrium to analyze normal-form games.
- Analyze sequential games using backward induction and evaluate credibility and commitment.
- Explain how private information changes strategic behavior, with auctions as a central application.

- Analyze bargaining, repeated interaction, signaling/screening, and principal-agent incentive problems using simple formal models.
- Compare alternative institutional rules by examining the strategic behavior they induce.
- Recognize that changing the question or a key assumption may require changing the model.
- Construct, analyze, critique, and redesign a strategic model of an unfamiliar real-world problem.

Course Materials

There is no required textbook. The primary course materials will be prepared specifically for ECON 3310 and posted on eClass:

- Classroom lecture slides.
- Student lecture notes, including formal definitions, worked examples, modeling discussions, and practice problems.
- Strategic Modeling Lab materials and practice problems.
- Short readings, cases, institutional sources, or other materials assigned for particular topics.

The student lecture notes are intended to provide the substantive written material needed to study the course; the classroom slides are designed primarily to support lectures, modeling activities, and discussion rather than to function as a textbook.

Optional supplementary readings may be suggested during the term. Accessible strategic-thinking readings may include works by Avinash Dixit and Barry Nalebuff, while more formal game-theory references will be identified only when useful. No purchase is required unless the syllabus is later amended in accordance with University policy.

Class Format

Classes combine lectures, formal game-theoretic analysis, structured group work, and discussion. Real-world environments will recur throughout the term. For example, auctions may first be studied from the bidder's perspective and later from the designer's perspective; labor markets may appear in bargaining, signaling, and incentive problems.

Group discussion is a learning method rather than a substitute for individual mastery. Students will frequently work in groups, but graded Strategic Modeling Lab submissions and both the Midterm and Final Assessments are individual.

Evaluation

Component	Weight
Strategic Modeling Labs	40%
Midterm Assessment	30%
Final Assessment	30%
TOTAL	100%

Strategic Modeling Labs — 40%

Eight Strategic Modeling Labs will be offered during the term. Only the five highest lab scores will count toward the final grade. Each of the five counted labs is worth 8% of the final course grade. The three remaining scores,

including zeros resulting from absence, will be dropped. Because three lab scores are automatically dropped, there are no make-up Modeling Labs.

During each Strategic Modeling Lab, students first work collaboratively on a structured strategic problem and then complete an individual handwritten submission on an answer sheet supplied by the instructor. The length, format, and raw point total may vary depending on the material covered. Lab scores will be normalized before the five highest scores are selected. Relevant pre-class preparation, when assigned, will be incorporated into the corresponding Modeling Lab rather than graded separately.

Generative AI is not permitted during either phase of a graded Strategic Modeling Lab. During the individual submission, electronic devices and communication with other students are not permitted. Permitted notes or reference materials, if any, will be announced for the specific lab.

The Purpose of the Modeling Labs

The Strategic Modeling Labs are designed to support learning and active participation, not to create a series of high-stakes weekly tests. Students will work through the problem collaboratively before completing the individual portion of each lab. Students who come to class prepared, participate seriously in the group work, and understand the main ideas developed during the lab should generally be well positioned to perform successfully on the individual submission.

The labs provide repeated opportunities to test understanding while learning, practice the course's modeling and analytical skills, and prepare for the Midterm and Final Assessments, where students will demonstrate those skills independently.

Students should aim to attend and participate in all eight labs, even though only the five highest scores count. The three dropped scores are intended to provide flexibility for occasional absences, difficult weeks, or a lab in which a student's understanding was weaker than usual; they are not intended to encourage students to skip three labs.

Midterm Assessment — 30%

The Midterm Assessment will be completed individually in class. It will combine formal game-theoretic analysis with a structured modeling problem. Students may be asked to construct and solve normal-form or extensive-form games, identify equilibrium behavior, interpret results in the original strategic environment, and examine how a change in an assumption or question affects the model.

Final Assessment — 30%

The Final Assessment will be completed individually during York University's formal Fall examination period. It will combine formal game-theoretic analysis with an integrated strategic-modeling and design problem. The assessment is cumulative in skills, although its formal content will emphasize material from the second part of the course.

Missed Assessments

Strategic Modeling Labs: There are no make-up labs. The three automatic drops are intended to accommodate occasional absences, illness, a difficult week, or a poor lab performance.

Midterm Assessment: A student who misses the Midterm Assessment because of illness must provide the instructor with the required medical documentation. If the absence is approved, there will be no make-up

Midterm Assessment; its 30% weight will be transferred to the Final Assessment. For that student, the Final Assessment will therefore be worth 60% of the final course grade.

Final Assessment: A student who misses the Final Assessment because of illness must follow the Department of Economics/York University deferred-standing procedure and provide the required medical documentation. An approved deferred Final Assessment will be scheduled during the Winter 2027 term; the date and details will be announced to eligible students. **Requests for a deferred ECON examination must be submitted through the Department of Economics deferred exam request form available here:** [Department of Economics — Deferred Standing / ECON Deferred Exam Request](#)

Generative AI and Academic Integrity

Generative AI may be used as a learning aid for non-assessed preparation and study. Students may use such tools to ask questions, seek explanations, generate examples, or explore ideas. When accurate institutional facts matter—for example, the actual rules of an auction or platform—students should verify those facts using an identifiable reliable source.

Generative AI is not permitted for graded Strategic Modeling Labs or the Midterm and Final Assessments unless the instructor explicitly states otherwise. Unauthorized use of AI or other prohibited assistance on graded work may constitute a breach of York University's Senate Policy on Academic Conduct.

Important Fall 2026 York Dates

- Fall Reading Week: October 10–16, 2026 (no classes).
- Thanksgiving: October 12, 2026 (University closed).
- Fall classes end: December 8, 2026.
- Fall study day: December 9, 2026.
- Formal Fall examination period: December 10–23, 2026.

Important Course Information

Academic integrity is a fundamental value of York University. Students are responsible for understanding and upholding York's Senate Policy on Academic Conduct and for following the specific instructions provided for each assessment.

Students who require academic accommodations should follow York University and Student Accessibility Services procedures.

Course Outline and Tentative Schedule

The same real-world environments will recur across the course. A house market, auction, labor market, firm, or platform is not itself a single game: different questions about the same environment may require different models.

Meeting / Date	Central Question	Formal Core	Assessment
1 — Sept. 14	Where is the game?	Strategic interaction; players, actions, information, timing, preferences; question → institution → model.	Diagnostic only
2 — Sept. 21	How do we analyze strategic interaction?	Strategies; best responses; strictly dominant strategies; dominated strategies; mutual best responses; Nash equilibrium.	Modeling Lab 1
3 — Sept. 28	How does timing change strategic behavior?	Extensive form; backward induction; credible threats; commitment.	Modeling Lab 2
4 — Oct. 5	What happens when players have private information?	Private values/types; beliefs and expected payoff; first- and second-price auctions; strategic bidding incentives.	Modeling Lab 3
Oct. 12	No class	Fall Reading Week / Thanksgiving.	—
5 — Oct. 19	Where does bargaining power come from?	Ultimatum and finite bargaining games; outside options; timing; backward induction.	Modeling Lab 4
6 — Oct. 26	Midterm Assessment	Individual in-class assessment covering the first part of the course.	Midterm — 30%
7 — Nov. 2	Can cooperation be sustained?	Prisoner's Dilemma; repeated interaction; punishment; patience/discounting.	Modeling Lab 5
8 — Nov. 9	Can private information be revealed?	Adverse selection; signaling; screening/self-selection.	Modeling Lab 6
9 — Nov. 16	How do we design incentives?	Principal-agent problems; hidden action; moral hazard; participation and incentive constraints.	Modeling Lab 7
10 — Nov. 23	How should we design the rules?	Mechanisms; allocation; incentive compatibility; truthful reporting; manipulation; efficiency; design workshop.	Modeling Lab 8
11 — Nov. 30	Integration and Final Assessment preparation	Synthesis, strategic-design practice, and integration of the course workflow.	No new graded test
Formal exam period	Final Assessment	Individual culminating assessment: formal analysis + integrated strategic-design case.	Final — 30%