Microeconomic Theory
Department of Economics
ECON 4420 - Fall 2026/2027

Instructor: Prof. Mutlu Yuksel**,** Dalhousie University, Department of Economics
Lectures: Studley LSC-COMMON AREA C214
Time: Tuesday and Thursday, 13:05-14:25
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Course Delivery: This course will be delivered in-person, supplemented sources posted on Brightspace if needed.

Course Description: This course provides a rigorous, calculus-based treatment of microeconomic theory at the advanced undergraduate level. Students will develop analytical skills to formalize and solve economic problems using mathematical optimization techniques. The course covers consumer theory (preferences, utility maximization, and duality), producer theory (technology, cost and profit functions, and supply), market structures under both perfect and imperfect competition (including monopoly and oligopoly), strategic interaction through game theory, general equilibrium and welfare economics, and decision-making under uncertainty. Emphasis is placed on deriving theoretical results, understanding the mathematical structure of economic models, and applying analytical tools to evaluate market outcomes and economic efficiency.

Learning Outcomes:

By the end of this course, students will be able to:

1. **Formalize and solve consumer optimization problems** using utility maximization and expenditure minimization, derive Marshallian and Hicksian demand functions, apply duality theory (Roy's identity), and decompose price effects using the Slutsky equation.
2. **Analyze producer behavior** through profit maximization and cost minimization problems, derive supply and factor demand functions, and apply duality principles including Shephard's and Hotelling's lemmas.
3. **Compare market structures and strategic behavior** by analyzing firm decisions and market outcomes under perfect competition, monopoly, and monopolistic competition.
4. **Employ advanced calculus-based techniques** including constrained optimization, comparative statics, and envelope theorems to derive theoretical results and interpret economic relationships.

Course Materials: The primary source of material for this course is the instructor's own lecture notes, which will be distributed to students. The textbooks below are supplementary; they are not required for purchase but are provided for students who would like an additional reference or extra practice problems.

Supplementary Economics Texts:

- Varian, H. R. *Intermediate Microeconomics with Calculus*, 1st edition, New York: W.W. Norton and Company, 2014. [V-jr]
- Walter Nicholson, and Christopher M. Snyder, 10th edition, *Microeconomic Theory: Basic Principles and Extensions*, South-Western College Pub, 2007. [NS]
- Mas-Colell, A,M. Whinston and J.Green, *Microeconomic Theory*, Oxford: Oxford University Press [M-CWG]
- Varian, H. R. *Microeconomic Analysis*, 3rd edition, New York: W.W. Norton and Company, 1992. [V]
- Jehle and Reny, *Advanced Microeconomic Theory*, *Third Edition,* Pearson (2011). [JR]

Supplementary Math Texts:

- Simon and Blume, *Mathematics for Economists,* W. W. Norton and Co. (1994).
- Chiang and Wainwright, *Fundamental Methods of Mathematical Economics*, Mc-Graw Hill.

***Class Participation*:** (1) Students are expected to attend every lecture, complete the readings in advance of the lecture, and participate in classroom discussion; (2) when you miss a lecture, you cannot get the handout for that missed lecture from me; (3) I will not give any information over the phone or in response to emails that you would have known had you attended class or read BLS/syllabus information.

Course Assessment

Your final grade will be determined by the following components:

- **Assignments:** 12% (4 assignments × 3% each)
- **Midterm Exam:** 38% (October 13th)
- **Final Exam:** 50% (Date TBA; University final exam period Dec 11–20, 2026)

Minimum Performance Requirement: To pass this course, you must earn an overall grade of at least 50% AND a minimum of 50% on the final exam.

Assignments

You may complete assignments individually or in groups of two or three students. **Groups may not exceed three members.**

Group Submission Guidelines:

- Each group submits a single copy of the assignment
- The first page must clearly list the name and student ID of every group member
- All group members will receive the same grade
- Submitting an assignment with more than three group members will result in a grade of zero for all members

Examinations

Midterm Exam will be held on October 13th.

Final Exam will be comprehensive, covering all course material. Exams are closed-book and consist of analytical problems, not multiple-choice questions. The date will be announced by the Registrar within the University's Fall final exam period, December 11–20, 2026.

Missed Assessments Policy

No make-ups or extensions will be granted for the midterm exam or assignments except with prior approval from the instructor or in cases of documented emergencies.

If you miss the midterm for any reason, its weight (38%) will be automatically transferred to the final exam.

If you miss the final exam due to a valid medical reason, you must notify the instructor immediately and provide appropriate medical documentation. Arrangements for a deferred exam will be made as soon as your health permits, in accordance with university policy.

Grades

GRADES ARE NOT NEGOTIABLE. Do not contact me after the final semester grades have been posted asking me to change your grade for any reason. [Of course, if you believe your grade was posted erroneously by all means DO contact me.] Grades will be determined according to the following Dalhousie common grade scale:

A+ (90-100)	B+ (77-79)	C+ (65-69)	D	(50-54)
A (85-89)	B (73-76)	C (60-64)	F	(0-49)
A- (80-84)	B- (70-72)	C- (55-59)		

Fall Term Course Schedule

Wk	Date	Topic / Focus
1	Sep 8 & 10	**Part I: Consumer Theory** Lecture 1 – Demand, Supply, and Market Equilibrium: individual and market demand; elasticity; supply; equilibrium existence/uniqueness/stability; comparative statics; taxes, incidence, and deadweight loss
2	Sep 15 & 17	Lecture 2 – Preferences, Utility, and the Structure of Choice: preference axioms; utility representation; indifference curves and MRS; CES and the standard preference classes; homothetic and quasilinear preferences; revealed preference
3	Sep 22 & 24	Lecture 3 – Budget Sets, Utility Maximization, and Marshallian Demand: budget sets; the utility maximization problem; Marshallian demand functions; comparative statics of the optimum **Homework 1 due Sep 24**
4	Sep 29 & Oct 1	Lecture 3 (cont'd) – indirect utility function and Roy's identity; Lecture 4 – Expenditure Minimization, Hicksian Demand, and Duality: the expenditure minimization problem; the expenditure function; Shephard's lemma
5	Oct 6 & 8	Lecture 4 (cont'd) – duality; the Slutsky equation; Hicksian vs. Marshallian demand; applications (true cost-of-living index; compensated policy); midterm review **Homework 2 due Oct 8**
6	Oct 13 & 15	**Oct 13: MIDTERM EXAM (covers Consumer Theory only)** Oct 15: Part II: Producer Theory and Perfect Competition – production and cost foundations: technology, cost-minimizing input demand, and cost functions
7	Oct 20 & 22	The firm's profit maximization problem; deriving the short-run supply curve (Part 1: the MC-is-supply logic and the derivation)
8	Oct 27 & 29	Short-run supply curve (Part 2: diminishing returns and why it's upward sloping; how technology affects supply responsiveness); the shutdown decision **Homework 3 due Oct 29**
9	Nov 3 & 5	Short-run market equilibrium (from individual to market supply; market clearing); moving to the long run: the zero-profit condition and entry/exit
—	Nov 10–15	Fall Break — no classes
10	Nov 17 & 19	**Part III: Market Structures and Equilibrium** Monopoly: the monopolist's problem; marginal revenue; price elasticity and the markup (Lerner) formula; deadweight loss
11	Nov 24 & 26	Monopoly (cont'd): price discrimination (first-, second-, and third-degree); bundling and tying; natural monopoly, regulation, and antitrust
12	Dec 1 & 3	Monopolistic Competition: the Chamberlin model (short- and long-run equilibrium); government intervention **Homework 4 due Dec 3**

Assignment Due Dates

Assignment	Topics Covered	Due Date
Homework 1	Preferences and indifference curves; revealed preference (WARP); demand theory and market applications	Th, Sep 24
Homework 2	Utility functions, MRS and preferences; utility maximization and Walrasian demand; properties of demand and duality theory	Th, Oct 8
Homework 3	Production functions; cost functions and duality; profit maximization; short-run vs. long-run	Th, Oct 29
Homework 4	Short-run supply and shutdown decisions; long-run equilibrium; monopoly pricing and deadweight loss; price discrimination; two-part tariffs	Th, Dec 3

Course Policies related to Academic Integrity and Artificial Intelligence

Assignments may be completed individually or in groups of up to three (see Assignments above); the midterm and final exam must be completed entirely individually, with no collaboration or outside assistance.

Dalhousie does not currently subscribe to plagiarism-detection software, and no unsanctioned AI-detection tools will be used to investigate suspected academic integrity concerns.

Generative AI (e.g., Microsoft 365 Copilot Chat) may be used to help you understand concepts, check your own derivations, or study — not to generate solutions that you submit as your own work. No disclosure statement, citation, or submission of prompts/transcripts is required for this permitted use. Using AI beyond this (e.g., to produce answers submitted for grading) is an academic integrity offence.

Course Accessibility

You may be eligible for accommodations based on protected characteristics such as religion, disability, or other grounds under Dalhousie's Student Accommodation Policy. If you have religious, cultural, or community observances that conflict with course requirements, contact me and we will collaboratively find alternative arrangements. To request a formal academic accommodation, contact the Student Accessibility Centre.

Email Policy: I will do my best to respond to e-mail within 24 hours on a weekday, 48 hours on a weekend, according to the following policy:

a. I will only respond to e-mails posing questions that can be answered in a sentence or two. For detailed questions, please see me in office hours.
b. I will not reply to e-mails that request information that can be found on BLS or the syllabus, so you should check those places first.
c. I will not reply to e-mails regarding the results of graded material– for that, please see me in office hours.
I will not respond to email sent to my other accounts

Other general notes:

- If you have a known conflict with an exam date, tell me in advance so we can try to arrange something; you must not have an unresolved conflict with any exam to remain enrolled in this course.
- **Sharp EL-243SB (**or similar basic models) is the only calculator permitted on the midterm and final exam (available at the University bookstore); no advanced model may be used.
- Only original medical documentation, per university guidelines, will be considered for an exemption. Late assignments are not accepted except with prior approval or in documented emergencies.

Syllabus Appendix *(Formerly University Policies and Statements)* Here is the link to the new "Syllabus Appendix" to guide students towards supports, university policies, and guidelines.
Syllabus Appendix: Student Supports & University Statements, Policies, and Guidelines