Carleton University Department of Economics
<u>Winter 2024</u>
ECON 3001
Mathematical Methods of Economics

<div style="border:2px solid black; background:red; color:white; text-align:center; font-weight:bold;">The Instructor</div>

Instructor: Minjoon Lee
Email Address: minjoon.lee@carleton.ca
(Please include "Econ 3001" in the subject line.)
Office Location: LA D892
Office Hours: M 1:05 – 2:25 (tentative)

<div style="border:2px solid black; background:red; color:white; text-align:center; font-weight:bold;">The Course</div>

Course Location/Delivery: In person
Course Day and Time: M/W 10:05 – 11:25

TA: TBD
Email Address: TBD
Tutorials: W 11:35 – 12:55
Office Location: TBD
Office Hours: TBD

Brightspace Course Page: https://brightspace.carleton.ca/d2l/home/221273

Course Description
This course covers mathematical tools for economic analysis. The materials covered in this course include some key mathematical concepts, matrix algebra for linear models, differentiation and integration, and optimization.

Learning Outcomes
Students are expected to learn how to set up mathematical economic models and solve them by the end of this course.

Prerequisites
ECON 1001 or ECON 1000 or FYSM 1003 with a grade of C- or higher; and ECON 1401 and ECON 1402 (or equivalent) with a grade of C- or higher in each and a combined grade point average in ECON 1401 and ECON 1402 of 6.50 or higher. Students who believe they have taken a similar background course or courses from another university must provide appropriate

documentation to the Department of Economics Undergraduate Administrator by emailing economics@carleton.ca.

A grade of C+ or higher from this course is required to qualify for ECON 4001, ECON 4020, ECON 4021, ECON 4025, ECON 4026 and a grade of C- or higher for ECON 4053. DEF(erred final grade) status at the end of this course precludes (continued) registration in any other course for which the former is a prerequisite.

Preclusions
Precludes additional credit for Econ 2400 (no longer offered).

Course Outline
1. Key concepts (Ch. 1-3)
2. Linear models and matrix algebra (Ch. 4-5)
3. Differentiation and comparative-static analysis (Ch. 6-8)
4. Exponential and logarithmic functions (Ch. 10)
5. Unconstrained optimization (Ch. 9, 11)
6. Constrained optimization (Ch. 12, 13)
7. Integration (Ch. 14)

Problem sets
There will be three problem sets. The problem sets are due at the beginning of the tutorial on the following days:
    • Problem set 1: January 24
    • Problem set 2: February 28
    • Problem set 3: April 3

The problem sets will be posted on Brightspace by several weeks before the due dates. Students are strongly encouraged to start working on questions from the chapters covered in the lectures as early as possible. Students should submit their work in hard copy at the beginning of the tutorial on the due date.

Exams
1) Midterm: There will be **two in-person midterm exams**. Midterm I will be held during class time on January 29 (Monday). Midterm II will be held during class time on March 4 (Monday).

2) Final: The in-person final exam will take place during the Winter term examination period at a time set by the University. For updates on the schedule, consult http://www.carleton.ca/ses. It is going to be a three-hour-long exam. The final exam is cumulative, though it will be weighted toward the materials after the second midterm.

Textbooks and Readings

Textbook

Title	Author(s)	ISBN
Fundamental Methods of Mathematical Economics	Alpha C. Chiang and Kevin Wainwright	9780070109100

Available from the bookstore and the library.

Evaluation

Evaluation

Assignment/Test	Date	Mode of Delivery	Percentage of Grade
Problem set 1	January 24	Submit in person	5%
Midterm 1	January 29	In-person	20%
Problem set 2	February 28	Submit in person	5%
Midterm 2	March 4	In-person	20%
Problem set 3	April 3	Submit in person	5%
Final	TBD by the University	In-person	45%
			Total: 100%

Information about Problem Sets
The grading of the problem sets is based on effort and completeness. In answering the questions, students are expected to show their work, i.e., write down key logical steps as well as final answers.

In this course, any use of generative AI tools (e.g., ChatGPT) to produce assessed content is considered a violation of academic integrity standards as per our statement on plagiarism.

Late Policies
Late submissions of problem sets will not be accepted unless arrangements are made in advance.

Midterm/Test Policies
- If you are absent for a midterm, email me as soon as possible to discuss how we will weigh your course evaluations differently. I reserve the right to request a Self-Declaration form or PMC letter of accommodation depending on the length of incapacitation.

Final Exam

The final exam will be in-person as scheduled by the University during the exam period. Students are not to make travel plans during the exam period as that is not a valid reason for missing a final exam.

Satisfactory Performance Criteria
Students must fulfill all of the course requirements, including the final exam, in order to achieve a passing grade (D- or higher).

Deferred Finals
Students who do not write the final examination because of illness or other circumstances beyond their control may apply for to write a deferred final examination by contacting the Registrar's Office no later than three working days after the original final examination was scheduled. In the event that a student writes a deferred examination, the deferred examination will carry the same weight as the final examination in determining the course grade. Any deferred examination will not be identical to the original final examination.

Deferred finals (which must be applied for at the RO) are only available if the student is in good standing in the course, so if there is a minimum standard a student must meet in order to be in good standing, and entitled to write a deferred final exam, this standard must be stipulated here.

Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

Plagiarism, Resources and Mental Health, Academic Accommodations

You are responsible for reading and knowing the information about plagiarism, Carleton University resources, and academic accommodations found HERE.