

Brief Course Outline

Course Title: **Mathematical Economics I**

Course Number and Section

ECONOMIC

2210A 550

Instructor Name(s): Samira Hasanzadeh

Instructor Email(s): shasanz@uwo.ca

Disclaimer: Information in the brief course outline is subject to change. The syllabus posted on OWL Brightspace is the official and authoritative source of information for the course.

Course Description:

This course is designed to provide students with knowledge of the fundamental mathematical tools used in economic theory. The topics covered include multivariate calculus, with a focus on its applications in economics, as well as concavity and convexity, constrained optimization involving multiple choice variables, optimization with inequality constraints, and implicit functions with implicit differentiation. Illustrative examples are drawn from economics, but the primary purpose of the course is to teach mathematical methods rather than economic theory.

Learning Outcomes: one outcome per entry

By the end of the course, students are expected to be able to:

present several economic functions using graphs, including linear and non-linear functions, rational functions, exponential functions, logarithmic functions, and level curves.

solve simultaneous linear equation systems in economics using matrix inversion and Cramer's rule.

set up optimal timing problems and solve them using the appropriate techniques

understand the concepts related to the derivative of implicit functions, slopes of the level curves, homogeneous functions and Euler's theorem, concavity of functions of several variables, properties of Cobb-Douglas and CES functions including elasticity of substitution

formulate optimization problems in microeconomics, macroeconomics, and business economics.

formulate constrained optimization problems with equality constraint, inequality constraints, and several constraints.

interpret the second-order sufficient conditions for optimization techniques using the Hessian and Bordered-Hessian.

generate comparative statics from optimization problems using various techniques

Textbooks and Course Materials:

Mathematics for Economists, by C. P. Simon and L. E. Blume. W. W. Norton & Company, 1994.
Available at Western Bookstore

Methods of Evaluation: one assignment per entry

Assignment	Due Date mm/dd/yy	Weight - %
Midterm 1	10/21/2026	25%
Midterm 2	11/25/2026	25%
Final		50%

Thursday, August 13, 2026

Huron Brief Course Outline 2026/27

For Textbooks and Course Materials (below), you are required to include the cost of each textbook or other learning material.

Note whether there are any restrictions that would prevent a student from using a second-hand copy. Here is some suggested text:

- Required textbook: [author, title, edition, publisher, date]. Cost: [insert amount].
 - Or include the weblink of the textbook’s publisher site that includes the cost information.
- Students need to purchase this edition. Second-hand or older editions will not be sufficient.
- OR Students are welcome to purchase second-hand or earlier editions of this textbook.
- This course has an optional field trip that costs [insert amount].
- This course has a required field component that costs [insert amount].

In solidarity with the Anishinaabe, Haudenosaunee, Lūnaapéewak, and Chonnonton peoples on whose traditional treaty and unceded territories this course is shared.