

Huron Brief Course Outlines

Fall/Winter 2023-2024

Course Title: Mathematical Economics I

Course Number and Section

ECONOMICS

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 is the official and authoritative source of information for the course.

Course Description:

This course is designed to provide students with knowledge of the basic mathematical tools used in economic theory. The covered topics include multivariate calculus, with a focus on the tools applicable 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 course's intent is to instruct in mathematical methods, rather than economic theory.

Learning Outcomes:

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:

Required Textbook:

_ Mathematics for Economists, by C. P. Simon and L. E. Blume. W. W. Norton & Company, 1994.

Supplementary Reference Textbook:

_ Mathematics for Economics, by M. Hoy, J. Livernois, C. McKenna, R. Rees, and T. Stengos. The MIT Press, 3rd edition, 2011.

_Essential Mathematics for Economic Analysis, by K. Sydsaeter and P. Hammond. FT Prentice Hall, 3rd edition, 2008.

_Fundamental Methods of Mathematical Economics, by A.C. Chiang and K. Wainwright. McGraw-Hill, 4th edition, 2004.

_Economist's Mathematical Manual, by K. Sydsaeter, P. Berck, and A. Strom. Springer, 4th edition, 2005.

Methods of Evaluation:

Assignment	Due Date mm/dd/yy	Weight - %
Assignment 1	10/05/2023	10
Assignment 2	10/26/2023	10
Assignment 3	11/30/2023	10
Midterm	11/09/2023	25
Final	Exam Period	45

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