

Math for Econ (Econ 3620 - 001)

Class Time: Monday and Wednesday 1:25 – 2:45 pm

Place: OSH 107

Instructor: Naphon Phumma

Email: naphon.phumma@economics.utah.edu or my personal email on WebCT

Office: OSH 378 during the office hours and OSH 213 for other times

Office Hours: Monday and Tuesday 10:30 – 11:30 am or by appointment

Overview

Nowadays, economists use mathematics as a main tool in their analyses, and, hence, many advanced mathematical techniques have been developed and applied in the makings of economics knowledge. Therefore, learning how mathematics is used in economics is as important as learning economics theories. This course is intended to introduce students to how mathematics is applied to economics theories and develop students' abilities to use mathematical techniques to solve problems in economics. In addition, students must be aware that the real use of mathematics in economics is far more advanced than what they see in the class, so this course is intended to be the 'first step' for those who are interested in mathematical economics.

Goal

Students can understand basic mathematical techniques often used in economics such as linear algebra, derivative, differential, optimization with and without constraints, and matrix algebra, and can use these techniques to solve economics problems.

Required Textbooks

Schaum's Outline Introduction to Mathematical Economics by Edward Thomas Dowling

Optional Textbooks

Fundamental Methods of Mathematical Economics, 4th ed., by Alpha C. Chiang and Kevin Wainwright.

Course Requirements:

Three Homework assignments 3 x 14% = 42% (2 for extra credits)

Three Exams 3 x 20% = 60%

Policy for late assignments

Turning in assignments as hard copies at the beginning of the class is preferable. If students cannot attend the class when the assignments are due, they must drop their work at my office by themselves before 5 pm of the due date. Or, if they do not come to the school, they must scan their work and send to my email before 5 pm of the due date. Late assignments will be accepted within one week after the due date, and they will be penalized for 20% from their full points. Please note that no work will be accepted after one week from the due date.

Schedule

Week 1

January 9 Nature of Mathematical Economics & Economic Models

January 11 Economic Model: Function

Week 2

January 16 Martin Luther King Jr. Day: No Class

January 18 Constructing a model: Single Commodity

Week 3

January 23 Constructing a model: General Market

January 25 Difference Quotient and Slope (**Assignment 1 Given**)

Week 4

January 30 Rules of Differentiation

February 1 Rules of Differentiation (**Due for Assignment 1**)

Week 5

February 6 Optimization: First Derivative Test

February 8 Optimization: Second and Higher Derivatives, and Second-Derivative Test

Week 6

February 13 Review for Exam 1

February 15 Exam 1

Week 7

February 20 President's Day Holiday: No Class

February 22 Partial Differentiation and Multivariable Calculus

Week 8

February 27 The Uses of Partial Differentiation in Economics

February 29 Total Derivatives

Week 9

March 5 Optimization: Second-Order Partial Derivatives

March 7 Optimization of Multivariable Functions (**Assignment 2 Given**)

Week 10

March 12 Spring Break

March 14 Spring Break

Week 11

March 19 Effects of a Constraint: Lagrange – Multiplier method

March 21 Effects of a Constraint: Lagrange – Multiplier method (**Due for Assignment 2**)

Week 12

March 26 Review for Exam 2

March 28 Exam 2

Week 13

April 2 Matrices and Matrix Operations

April 4 Determinants

Week 14

April 9 Matrix Inversion

April 11 Solving Linear Equations with Matrix Inversion (**Assignment 3 Given**)

Week 15

April 16 Solving Linear Equations with Matrix Inversion

April 18 Cramer's rule (**Due for Assignment 4**)

Week 16

April 23 Review for Exam 3

April 25 Exam 3 in the class time