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

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