Math for Econ (Econ 3620 - 001)

Class Time: Monday and Wednesday 8:05 – 9:25 am  
Place: BUC 106  
Instructor: Naphon Phumma  
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Office: OSH 213  
Office Hours: Monday and Tuesday 10:30 – 11:30 am or by appointment

Overview  
Nowadays, economists use mathematics as a major 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 express simple economic problems in mathematics. Also, they 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 economic problems.

Required Textbook  
*Schaum’s Outline Introduction to Mathematical Economics* by Edward Thomas Dowling

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 they 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  
August 20 Nature of Mathematical Economics & Economic Models  
August 22 Economic Model: Function
Week 2
August 27 Constructing a model: Single Commodity
August 29 Constructing a model: General Market

Week 3
September 3 Labor Day: No Class
September 5 Difference Quotient and Slope (Assignment 1 Given)

Week 4
September 10 Rules of Differentiation
September 12 Rules of Differentiation (Due for Assignment 1)

Week 5
September 17 Optimization: First Derivative
September 19 Optimization: Second and Higher Derivatives, and Second-Derivative Test

Week 6
September 24 Review for Exam 1
September 26 Exam 1

Week 7
October 1 Partial Differentiation and Multivariable Calculus
October 3 The Uses of Partial Differentiation in Economics

Week 8
October 8 Fall Break
October 10 Fall Break

Week 9
October 15 Total Derivatives
October 17 Differentials

Week 10
October 22 Optimization: Second-Order Partial Derivatives
October 24 Optimization of Multivariable Functions (Assignment 2 Given)

Week 11
October 29 Effects of a Constraint: Lagrange – Multiplier method
October 31 Effects of a Constraint: Lagrange – Multiplier method (Due for Assignment 2)

Week 12
November 5 Review for Exam 2
November 7 Exam 2

Week 13
November 12 Matrices and Matrix Operations
November 14 Determinants
Week 14
November 19 Matrix Inversion (Assignment 3 Given)
November 21 Thank Giving Holiday: No Class

Week 15
November 26 Solving Linear Equations with Matrix Inversion
November 28 Cramer’s rule (Due for Assignment 3)

Week 16
December 3 Review for Exam 3
December 5 Exam 3 in the class time