Math for Econ (Econ 3620 - 001)

Class Time: Monday and Wednesday 9:40 - 11:35 am
Place: BUC 107
Instructor: Naphon Phumma
Email: naphon.phumma@economics.utah.edu or my personal email on WebCT
Office: BUC#5 (it is the room # 5 in the basement of BUC)
Office Hours: Monday and Tuesday 2:00 – 3:00 pm 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 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 Textbook
Fundamental Methods of Mathematical Economics, 4th ed., by Alpha C. Chiang and Kevin Wainwright. The textbook is available in the university's bookstore.

Course Requirements:

Four Homework assignments	4 x 10% = 40%
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 22 Nature of Mathematical Economics & Economic Models **Chapter 1&2**
August 24 Economic Model: Function **Chapter 2**

Week 2
August 29 Constructing a model: Single Commodity **Chapter 3**
August 31 Constructing a model: General Market **Chapter 3 (Assignment 1 Given)**

Week 3
September 5 Labor Day: No Class
September 7 Difference Quotient and Slope **Chapter 6 (Due for Assignment 1)**

Week 4
September 12 Rules of Differentiation **Chapter 7**
September 14 Rules of Differentiation **Chapter 7 (Assignment 2 Given)**

Week 5
September 19 Optimization: First Derivative Test **Chapter 9**
September 21 Optimization: Second and Higher Derivatives, and Second-Derivative Test **Chapter 9 (Due for Assignment 2)**

Week 6
September 26 Review for Exam 1
September 28 Exam 1

Week 7
October 3 Partial Differentiation **Chapter 7**
October 5 The Uses of Partial Differentiation in Economics **Chapter 7**

Week 8
October 10 Fall Break
October 12 Fall Break

Week 9
October 17 Total Derivatives **Chapter 8**
October 19 Differentials **Chapter 8**

Week 10
October 24 Optimization: Second-Order Partial Derivatives **Chapter 9**
October 26 Optimization of Multivariable Functions **Chapter 9 (Assignment 3 Given)**

Week 11
October 31 Effects of a Constraint: Lagrange – Multiplier method **Chapter 12**
November 2 Effects of a Constraint: Lagrange – Multiplier method **Chapter 12 (Due for Assignment 3)**

Week 12
November 7 Review for Exam 2
November 9 Exam 2

Week 13
November 14 Matrices and Matrix Operations **Chapter 4**
November 16 Transpose and Determinant **Chapter 4**

Week 14
November 21 Matrix Inversion **Chapter 5 (Assignment 4 Given)**
November 23 Thank Giving Holiday: No Class

Week 15
November 28 Solving Linear Equations with Matrix Inversion **Chapter 5**
November 30 Cramer's rule **Chapter 5 (Due for Assignment 4)**

Week 16
December 5 Review for Exam 3
December 7 Exam 3 in the class time