# UNIVERSITY OF COLORADO AT BOULDER
## Department of Economics

## Course Syllabus

## ECON 1088-001 Math Tools for Economists II

## Spring 2008

**Instructor:** Watcharapong Ratisukpimol

**Class Meetings:** MWF 2:00-2:50 PM

**Class Location:** BESC 185 (Benson Earth Sciences)

**Office:** ECON 401 (3$^{rd}$ floor of ECON building)

**Office Phone:** (303)-492-7116

**Office Hours:** MWF 11:00 AM - 12:00 PM or by appointment

**Webpage:**
http://ucsu.colorado.edu/~ratisukp
     The webpage is the most important resource for this class. All notes, quizzes, exams and answer keys are going to be posted on this site. It is your responsibility to check any updated information from the class webpage.

http://www.colorado.edu/economics/courses/ECON1088/1088home.html
     This is a joint webpage of ECON 1088 instructors. It is provided as a supplement to the course materials for ECON 1088. We, all ECON 1088 instructors, maintain the page to provide questions, quizzes, and handouts so that students can access to the materials of other instructors.) Moreover, you can find homework and exams from previous semesters here.

**E-mail:** watcharapong.ratisukpimol@colorado.edu (preferred method of contact and please include "ECON 1088" in subject of the e-mail.)

**Class Time:** January 14$^{th}$ – May 2$^{nd}$, 2008

**Course Description:**
     This course provides an introduction to fundamental mathematics, which are essential to analyze economic problems. It is the second course in a two-course sequence. This course is a continuation of ECON 1078. The goal of this class is to provide students with the mathematical tools for future courses in economics. Basically, it consists of derivatives and optimization. These tools will help you to better understand the mathematical framework on which economic models are based. We will start with a review of ECON 1078, limits and derivative, the rules of differentiation, optimization in the case of single variables and many variables. Economic applications will also be introduced. For the complete list of topics, see the

Final grade will be assigned based on a following scale but I reserve the right to curve the grades.

| | | | |
|---|---|---|---|
| 100-93% | A | 73-76% | C |
| 90-92% | A- | 70-72% | C- |
| 87-89% | B+ | 67-69% | D+ |
| 83-86% | B | 63-66% | D |
| 80-82% | B- | 60-62% | D- |
| 77-79% | C+ | 0-59% | F |

**Tentative Course Outline**

*Chapter 6 Differentiation:*
6-1 Slopes of Curves
6-2 The derivative. Tangents
6-3 Increasing and Decreasing Functions
6-4 Rates of Change
6-5 A Dash of Limits
6-6 Simple Rules for Differentiation
6-7 Sums, Products, and Quotients
6-8 Chain Rule
6-9 Higher Order Derivatives
6-10 Exponential Functions
6-11 Logarithmic Functions

*Chapter 7 Derivatives in Use:*
7-1 Implicit Differentiation
7-2 Economic Examples
7-7 Why Economists Use Elasticities

*Chapter 8 Single-Variable Optimization:*
8-1 Introduction
8-2 Simple Tests for Extreme Points
8-3 Economic Examples
8-4 The Extreme-Value Theorem
8-5 Further Economic Examples
8-6 Local Extreme Points
8-7 Inflection Points

*Chapter 11 Functions of Many Variables:*
11-1 Functions of Two Variables
11-2 Partial Derivatives with Two Variables
11-5 Functions of More Variables
11-6 Partial Derivatives with More Variables
11-7 Economic Application
11-8 Partial Elasticities

*Chapter 13 Multivariable Optimization:*
We will cover this in detail commensurate with available time

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