

Syllabus

Econ 1088 Math Tools for Economists II

Summer 2008

Instructor: Tianle Zhang

Class Hours: MTWRF 2:30 - 4:05pm

Class location: ECON 117

Office: Econ 307

Office Hours: Fridays: 1:30-2:30pm & 4:05-5:05pm and by appointment

Office Phone: 303-492-7617

E-mail: tianle@colorado.edu (preferred method of contact)

Course Website : <http://ucsu.colorado.edu/~tianle>

1088 Common Website: <http://www.colorado.edu/economics/courses/ECON1088/1088home.html>

Course Description: This class is a continuation of ECON 1078. The purpose is to help students to acquire the mathematical tools they need in advanced economic courses (e.g. Intermediate Microeconomics and Macroeconomics). By the end of the semester, students know what a derivative is and how to take derivatives as well as their economic applications. We will start with single-variable functions and move on functions of many variables. The class time will be mainly spent on lecturing and problem solving.

Prerequisite:

Econ 1078 or equivalent

Textbooks Required: Knut Sydsaeter and Peter Hammond, "Essential Mathematics for Economic Analysis", Second edition (You will be expected to have, and know, this book throughout your undergraduate career as an economics major.)

Quizzes and Exams:

Five quizzes will be given and four exams will be given. All tests are given in the classroom. Exact exam time will be announced at the first class.

Grading:

Your final grade will be determined by your *raw letter grade* and your *class performance indicator* according to the following formula:

$$\text{Final Grade} = \text{Raw Letter Grade (from Test Grade)} + \text{Class performance Indicator}$$

Test grade:

The quiz with the lowest score will be dropped. The remaining four quizzes will make up 20% of your test grades (5% each). Exams will make up 80% of your test grades. (20% each)

Raw Letter Grade:

Raw test grade will be converted to letter grade according to the following scales.

90-100 A

80-89 B

70-79 C

60-69 D

Below 60 F

Class performance indicator:

Your indicator will be “+”, “-” or “neutral”. The indicator measures your performance in class. I believe students who contribute to good class environment should be rewarded and who affect the others negatively should receive punishment. According to your behaviors in class (attendance, being on time to classroom, participation in class, take-home assignment, etc.), I will determine your indicator.

For example, Nick’s test grade is 88. Accordingly, his letter grade is B+. Moreover, his indicator is “+”. Hence, Nick’s final grade is :

$$\text{“B+”} + \text{“+”} = \text{“A-”}.$$

Another example: Bob’s test grade is 90. Accordingly, his letter grade is A-. Moreover, his indicator is “neutral”. Hence, Bob’s final grade is :

$$\text{“A-”} + \text{“neutral”} = \text{“A-”}.$$

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

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

General policies:

- 1) It is the students' responsibility to take control of their own education. If you are having problems, I am more than willing to help you. You just need to approach me at some point.
- 2) No make-ups will be given unless there is a proven emergency that prevents you from attending class on the scheduled exam date. You are required to submit proof of the emergency. If you miss an exam or a quiz, you will be given a zero. Moreover, if you need to take the final other than the scheduled time, I should be informed at least two weeks ahead.
- 3) According to the university policy, no grades are allowed to be released via email. In other words, I am prohibited to email any grade to you. However, you can always check your current grade from the course website by a random number assigned to you in the first quiz.
- 4) Attending most of the classes is one of the requirements to pass this course. You are responsible for any missing class.
- 5) Any concern or question about grading of a quiz or a midterm should be raised within a week after you get back the quiz or the midterm.

Even more general policies:

- 6) All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at <http://www.colorado.edu/policies/honor.html> and at <http://www.colorado.edu/academics/honorcode/>
Honor Code: "On my honor, as a University of Colorado at Boulder student, I have neither given nor received unauthorized assistance on this work."
- 7) If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, and www.Colorado.EDU/disabilityservices.
- 8) Campus policy regarding religious observances requires that faculty make every effort to reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Students can see full details at http://www.colorado.edu/policies/fac_relig.html
- 9) Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to behavioral standards may be subject to discipline. Faculty has the professional responsibility to treat students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which students express opinions. See policies at <http://www.colorado.edu/policies/classbehavior.html> and at <http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student>