

**ECON 1078-001**  
**Mathematical Tools for Economists I**  
**Fall 2004**  
**Syllabus and Tentative Outline**

Instructor: Karuna Wiwattanakantang                      Lecture Time: MWF 12:00-12:50  
Office: Econ 401    Classroom: DUAN G125  
Office Hours: MW 1-2 p.m. and by appointment  
E-mail: [wiwattak@colorado.edu](mailto:wiwattak@colorado.edu) (the best way to get in touch with me)  
Class Website: <http://www.colorado.edu/Economics/courses/karuna/econ1078.html>  
(You should check the website regularly. Any new information will be posted.)  
Class time: August 23 – December 9, 2004

**Course description:**

This course provides an introduction to fundamental mathematics, which are essential to understanding economic theories. It is the first course in a two-course sequence. We will start with a review of some basic algebraic operations, functions and graphs. Then we will cover financial mathematics, systems of linear equations in two variables, and linear programming. Finally the calculus theory will be presented.

**Materials:**

Required: Essentials of College Mathematics, 3rd edition,  
by Raymond A. Barnett and Michael R. Ziegler.  
Optional: Student Solutions Manual for Essentials of College Mathematics, 3rd edition.  
A scientific calculator is required for this course. You should familiarize yourself with your calculator. It is your responsibility to bring your calculator to the test. Any failure to do so is not an excuse for adjusting grades.

**Grading:**

There will be take-home quizzes, in-class exercises, three midterm exams, and a mandatory **cumulative final exam**. Your course grades will be determined as follows:

Take-home quizzes	10 points
In-class exercises	5 points
Midterm Exam 1	25 points
Midterm Exam 2	25 points
Midterm Exam 3	25 points
Final	35 points

There will be approximately one take-home quiz per week, the schedule of which is listed below. After reviewing the materials, you may start practicing some suggested problem sets in the textbook. Doing exercises and take-home quizzes will help you learn how to use mathematical tools and familiarize yourself with problem solving techniques. You should come to see me as soon as possible if you find the problems too difficult to solve. Don't wait until the last minute before the exam. You are encouraged to work in a group but must turn in answer sheets individually. All quizzes can be downloaded from the class website and must be turned in at the **beginning** of the class. **Late submission is not accepted**. The solutions will be posted on the class website after the due date.

The final cannot be replaced with any other exam under any circumstances. Only two midterm exams will be counted toward your final grade; **the midterm exam with the lowest score will be dropped**. If you are satisfied with your grades of the first two midterm exams,

you are not required to take the third midterm exam. However, you still have to understand all the material because the final exam is cumulative.

You can find the practice exams and solutions on the class website. After each exam, you can check your grades on the website. It is your responsibility to verify your grades and inform me no later than one week after the day of posting if you find any errors. No changes will be made after that.

As a general rule, there will be **no make-up exam**. However, in case of an emergency, only following documents are acceptable in order to request a make-up exam:

1. Verified Doctor Note
2. Death certificate of the family member ( in case of attending the funeral of family member)

### Important Dates

Tentative schedule for midterm exams and final exam is following:

- Midterm1: September 22, 2004
- Midterm2: October 20, 2004
- Midterm3: November 22, 2004
- Final exam: December 14, 2004: 10:30 a.m.-1:00 p.m.

The schedule is subject to change. Any rescheduling will be announced in class and posted on the class website.

### Tentative time schedule and course outline

Materials covered in class will follow the following chapters in the textbook. (44 class meetings)

Week	Date	Topic	Quiz Due
<b>1</b>	08/23	Course Syllabus and Pre-test	
	08/25	1-1 Sets	
	08/27	1-2 Algebra and real numbers	
<b>2</b>	08/30	1-3 Basic operations on polynomials	<b>Quiz 1</b>
	09/01	1-4 Factoring polynomials	
	09/03	1-4 (continued)	
<b>3</b>	09/06	Labor Day (no class)	<b>Quiz 2</b>
	09/08	1-5 Basic operations on rational expressions	
	09/10	1-6 Integer exponents and square root radicals	
<b>4</b>	09/13	1-7 Rational exponents and radicals	<b>Quiz 3</b>
	09/15	1-7 (continued)	
	09/17	2-1 Linear equations and inequalities in one variables	
<b>5</b>	09/20	2-2 Quadratic equations	
	<b>09/22</b>	<b>Midterm1 ***</b>	
	09/24	2-3 Cartesian coordinate system and straight lines	
<b>6</b>	09/27	2-4 Functions	<b>Quiz 4</b>
	09/29	2-5 Linear and quadratic functions	
	10/01	Fall break (no class)	
<b>7</b>	10/04	2-5 (continued)	<b>Quiz 5</b>
	10/06	3-1 Exponential functions	
	10/08	3-2 The exponential function with base e	
<b>8</b>	10/11	3-3 Logarithmic function	<b>Quiz 6</b>
	10/13	3-3 (continued)	
	10/15	4-1 Simple interest	
<b>9</b>	10/18	4-2 Compound interest	

	<b>10/20</b> 10/22	<b>Midterm Exam2***</b> 4-3 Future value of an annuity : sinking funds	
<b>10</b>	10/25 10/27 10/29	4-4 Present value of an annuity: amortization 4-4 (continued) 5-1 Systems of linear equations in two variables	<b>Quiz 7</b>
<b>11</b>	<b>11/01</b> 11/03 11/05	6-1 Systems of linear inequalities in two variables 6-2 Linear programming in two dimensions 6-2 ( continued)	
<b>12</b>	11/08 11/10 11/12	9-1 Limits and Continuity – A Geometric Introduction 9-1 (continued) 9-2 Computation of Limits	<b>Quiz 8</b>
<b>13</b>	11/15 11/17 11/19	9-2 (continued) 9-3 The Derivative 9-3 (continued)	<b>Quiz 9</b>
<b>14</b>	<b>11/22</b> 11/25 11/27	<b>Midterm Exam 3 ***</b> 9-4 Derivatives of Constants, Power Forms, and Sums Thanksgiving ( No class)	
<b>15</b>	11/30 12/01 12/03	9-5 Derivatives of Products and Quotients 9-5 (continued) 9-6 Chain Rule: Power Form	<b>Quiz 10</b>
<b>16</b>	12/06 12/08	9-6 (continued) 9-7 marginal Analysis in Business and Economics	

### University Policies

The Economics Department will make reasonable accommodations for people with disabilities. For more information, see the web page of the Office of Disability Services, [www.colorado.edu/sacs/disabilityservices](http://www.colorado.edu/sacs/disabilityservices)

We will make reasonable accommodations for students who have conflicts between religious observance dates and course examinations or assignments. Please talk to me at the beginning of the semester, if you think you may require such accommodation. For university policies on this and on other things, see [www.colorado.edu/policies/index.html](http://www.colorado.edu/policies/index.html).

For university policies on cheating and plagiarism, and the university honor code, see [www.colorado.edu/academics/honorcode/](http://www.colorado.edu/academics/honorcode/)