University of Colorado at Boulder
Math Tools for Economists I
ECON 1078-003

MEETING TIME: MWF 1:00-1:50 p.m.
ROOM: Duane G125

Instructor: Ross Knippenberg
Office: ECON 309A
E-mail: knippenb@colorado.edu
Course Website: https://learn.colorado.edu/
Office Hours: M 2:00 p.m. – 4:00 p.m. or by appointment

Textbook
Essential Mathematics for Economic Analysis, 4th, by Knut Sydsaeter, and Peter Hammond. You will also use this book for ECON1088. Since you can always refresh your knowledge of algebra and calculus by referring to this book, *please keep it as your reference book for later undergraduate courses*.

Resources
http://www.colorado.edu/economics/courses/ECON1078/1078home.html
This is the joint website for all Econ 1078 instructors. Here you can find homework and exams from previous semesters.

Course Description and Objectives
The goal of this course is to provide students the basic mathematical tools needed for business and economics. The material covered in this course includes: rules of algebra, solving linear and nonlinear equations, essentials of set theory, logical proofs and functions, and matrix algebra. For a complete list of topics, see the course schedule that follows.

Math is skill, so "learning by doing" is important in this class. There are a lot of practice questions in the textbook. Some of them will be selected as problem sets. From problem sets, you will learn how to apply formulas and properties in real questions and be prepared for exams. In addition, some examples not in the book but related to economics will be discussed during class time.

Attendance policies
Attendance is compulsory and regularly attending classes will definitely help your performance and grade. I will reward extra credit to those who actively participate in class discussions.

Handouts for each lecture will **ONLY** be distributed in class and will **NOT** be posted on the course website. These are outlines of class materials but are not a substitution of your textbook or handwritten notes. You are responsible for any material covered if you are absent. If you miss a lecture, please borrow notes from others and read the materials **BEFORE** going to my office hours.

Email Policy
For email correspondence, please allow up to 24 hours for a reply, and I generally only respond Monday-Friday 9:00am-6:00pm.

Grading
Your grade will be composed of the following:
10% - In-class Assignments
25% - Homework Sets
40% - Midterm Exams (Top 2 out of 3 scores)
25% - Final Exam

Randomly throughout the semester I will assign problems for you to work on in class, for which you should hand in the solutions before you leave. These problems are group projects intended to provide practice and will be similar to those you will see on quizzes and exams. There will be NO make-up for any in-class assignment without formal documentation, such as a doctor's note. Personal reasons like friends' wedding, family trip, and football games are not excuses for makeup. However, I will drop the lowest two scores from your in-class assignments.

A total of 4 problem sets will be posted on the course website during the semester. Please check the tentative schedule below for the due dates. I will grade it carefully on a scale from 0 to 5 points. Turning in a homework assignment late will result in a deduction of 2 points from the score you initially earn, even if the score is already zero.

The three midterms will be administered in class. The midterms are not cumulative and will cover only the material since the previous exam. **There will be NO MAKEUP midterm exams. If you miss two or more midterm exams for whatever reason, the weight of that exam will carry over to the final** (e.g. if you miss two exams, the weight of the final will be 45%, if you miss all three midterm exams, the weight of the final will be 65%).

The **final exam is cumulative**. It is scheduled on **Wednesday, May 8th** from **7:30 p.m. to 10:00 p.m.** in the same location as lecture, **Duane G125.** To qualify for rescheduling the final exam time, you must provide evidence that you have three or more exams on the same day and ECON 1078 is the **last** one of the day. You must provide this information to me before *Friday, March 22nd*! Otherwise, there will be **NO MAKEUP** final. I may curve the grades of midterms but will not curve your final. All scores are posted on the course website.

Grading Scale:

93% to 100% A	72% to 77% C
90% to 92% A-	70% to 71% C-
88% to 89% B+	68% to 69% D+
82% to 87% B	62% to 67% D
80% to 81% B-	60% to 61% D-
78% to 79% C+	59.5% or lower F

Tentative Course Schedule:

Please mark the important dates on your calendar!

Week	Date	Topics	Course Materials	Assignments
1	Jan 14	1.1	Real Numbers	
	Jan 16	1.2	Integer Powers	
	Jan 18	1.3	Rules of Algebra	
2	Jan 21	*No class*	*Martin Luther King, Jr. holiday*	
	Jan 23	1.4	Fractions	
	Jan 25	1.5	Fractional Powers	
3	Jan 28	1.6	Inequalities	
	Jan 30	1.7	Intervals, Absolute Value	
	Feb 1	2.1	Simple Equations	HW1 DUE
4	Feb 4	2.2	Equations with Parameters	
	Feb 6	2.3	Quadratic Equations	
	Feb 8	2.4	Linear Equations in Two Unknowns	
5	Feb 11	2.5	Non-linear Equations	
	Feb 13	Review	Chapter 1 & 2	
	Feb 15	*Midterm 1*		HW2 DUE
6	Feb 18	4.2	Basic Definitions	
	Feb 20	4.3	Graphs of Functions	
	Feb 22	4.4	Linear Functions	
7	Feb 25	4.5	Linear Models	
	Feb 27	4.6	Quadratic Functions	
	Mar 1	4.6		
8	Mar 4	4.7	Polynomials	
	Mar 6	4.8	Power Functions	
	Mar 8	4.9	Exponential Functions	

9	Mar 11	4.10	Logarithmic Functions	
	Mar 13	Review	Chapter 4	
	Mar 15	*Midterm 2*		HW3 DUE
10	Mar 18	3.1	Summation	
	Mar 20	3.6	Set Theory	
	Mar 22	3.6		
11	Mar 25-29	*No class*	Spring Break	
12	Apr 1	5.1	Shifting Graphs	
	Apr 3	5.2	New Functions From Old	
	Apr 5	5.3	Inverse Functions	
13	Apr 8	5.4	Graphs of Functions	
	Apr 10	15.1	Systems of Linear Equations	
	Apr 12	15.2	Matrices	
14	Apr 15	15.3	Matrix Multiplication	
	Apr 17	15.4	Rules	
	Apr 18	15.5	Transpose	
15	Apr 22	Review	Chapter 3, 5 & 15	
	Apr 24	Review		
	Apr 26	*Midterm 3*		HW4 Due
16	Apr 29	15.6	Gaussian Elimination	
	May 1	15.6		
	May 3	Review		

Final Exam (Cumulative): Wednesday May 8, 7:30 p.m. – 10:00 p.m.

Calculator Note

As this is a course designed to teach mathematical techniques you will need a calculator that can do basic mathematical functions. These include exponentials, logarithms, radicals, and factorials (log, ln, e^x, $\sqrt[n]{}$ and x!). Any basic scientific calculator will perform these functions. While a graphing calculator may be useful in doing some of the homework problems, **you cannot use a graphing calculator on the exam**. This is the policy for all economic courses. If you don't have a basic scientific calculator, you should purchase one.

Students with Disabilities

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 be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Center for Community N200, and http://www.Colorado.EDU/disabilityservices.

If you have a temporary medical condition or injury, see guidelines at http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html.

Disability Services' letters for students with disabilities indicate legally mandated reasonable accommodations. The syllabus statements and answers to Frequently Asked Questions can be found at http://www.colorado.edu/disabilityservices.

Religious Observance Policy

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class if you have a conflict, please contact me at the beginning of the term so that we can make proper arrangements. See full details at http://www.colorado.edu/policies/fac_relig.html.

Classroom Behavior Policy

Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veteran's status, sexual orientation, gender, gender identity, and gender expression, age, disability, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See policies at http://www.colorado.edu/policies/classbehavior.html and at http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code.

Discrimination and Harassment Policy

The University of Colorado at Boulder Discrimination and Harassment Policy and Procedures, the University of Colorado Sexual Harassment Policy and Procedures, and the University of Colorado Conflict of Interest in Cases of Amorous Relationships Policy apply to all students, staff, and faculty. Any student, staff, or faculty member who believes s/he has been the subject of sexual harassment or discrimination or harassment based upon race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127, or the Office of Student Conduct (OSC) at 303-492-5550. Information about the ODH, the above referenced policies, and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh.

Honor Code

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; 303-735-2273). 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/.