Syllabus
Math Tools for Economists I
ECON 1078-002
2015 Spring

Instructor: Sihong Xie
Class Meeting: MWF 2:00PM – 2:50PM, ECON 117
Office Location: Economics Building Room 12A
Office Hours: Mon & Weds 12:30pm – 2:00pm and by appointment
Class Website: Desire2Learn (D2L)
Email Address: sihong.xie@colorado.edu
This is the best way to contact me outside of my office hours.
Please allow me 24 hours to respond.

COURSE DESCRIPTON & OBJECTIVES

This course is the first of two courses designed to give you the mathematical background necessary for future courses in business and economics. Topics to be covered in this course include basic college-level algebra, simple linear and nonlinear equations, functions and their graphs, systems of equations, set theory, summation, logic and proofs.

Math is learned and mastered through practice. Anyone who practices math is capable of doing math well. To help you practice math, I will assign you homework every other week, eight take-home assignments all together, and ask you do in-class practice daily.

After taking this class, students should understand the following introduction topics on college algebra,

1. Basic "college" algebra: including real numbers, integer powers, basic algebraic identities and expressions, factoring, fractions, rational exponents, inequalities, intervals and absolute values.
2. Equations: including how to solve simple linear equations (with parameters), systems of two linear equations, quadratic equations and other non-linear equations.
3. Set Theory and an introduction to logic (including necessary and sufficient conditions).
4. Summation notation and working with summations (vital for Econ 3818).

and the following topics on functions.

1. The basics: Includes the definition of a function, notation, domain and range, and graphs of functions.
2. Linear functions: Includes slopes, the general equation for a straight line, slope-intercept form, graphing, linear inequalities, and linear models.
3. Quadratic functions and how they can apply to economic models (e.g. a simple monopoly model).
4. Polynomials: Includes factoring polynomials, division, and rational functions (these skills are often employed in Econ 3070).

5. Exponential and logarithmic functions used extensively in intermediate economics courses (e.g. when presenting positive, monotonic transformations).
6. Important function properties and techniques: Includes products and quotients, shifting functions, and composite functions.

EXPECTATIONS

Students can expect me to:

- be prepared for the day's work and do my best to assist them in their course work .
- treat them equally, be professional and respectful at all times.
- available in my office hours, ask thoughtful questions and give my full attention.

Students are expected to:

- regularly attend class, arrive and leave on time, and silence their phones.
- complete all assignments and turn in work on time.
- be respectful to others and cooperate with their cohorts.
- ask questions and take co-responsibility for creating a meaningful class.

REQUIRED TEXT

Essential Mathematics for Economic Analysis, 4th, by Kurt Sydsaeter, Peter Hammond, and Arne Strom. You will also use this book for Econ 1088, so I suggest buying one rather than renting it. Previous editions of the text are also acceptable to use, however the page numbers might be different.

CALCULATORS

Cell phone calculators will NOT be allowed during exams!!!

I want you to understand what you are doing and calculators are a major impediment to understanding, so you don't need a calculator in this course. However, if you choose to have one, please be sure to obtain a calculator without graphing to use in exams.

ATTENDANCE

Attendance is required for this course, and you will not do well in this course unless you attend every class. I will be taking attendance **randomly** six times throughout the semester. You are allowed to have three absences without consequence. For each additional absence (4 or more) I'll deduct 3% from your final grade in the course. For example, if you are absent five of the six times, your maximum possible grade is a 94%. Individuals that are present all six times get a 3% bonus on their final grade in the course.

NOTES

I do not distribute my lecture notes. I will ask you do small practice problems along with lectures during class, so it is a good idea to bring a **spiral note book and pens** to work with me in class. If you must miss lecture for any reason, please be sure to obtain the notes from a classmate. I

encourage you to come to my office hours to discuss any of the material from lecture, but please be sure to bring notes or obtain a copy from a classmate. Review the notes, and bring them with your specific questions to my office.

Office Hours

Office house are established to help you succeed. You should use them as a resource to get extra help on lecture material, problem sets, express concerns or difficulties in your study, and to explore ideas you are interested in. Coming to office house is a good indication that you care about your study enough to take extra steps.

As a way to better to know you, I ask each of you to individually meet me in my office during the first three weeks. I will bring a sign-up sheet during the first week so you can arrange a ten-minutes meeting with me.

EMAIL

I encourage you to email me with any questions and concerns. Please be polite and considerate in all email communications. I will do my best to respond within 24 hours. This response may come in the form of an email directly back to you or, if the answer would be beneficial to the entire class, a mass email communication to the class or an announcement during the lecture.

ASSESSMENT and GRADING

Evaluations will take the following forms: take-home problem sets, two midterm exams and final exams.

Take-home Problem Sets	40%
Midterm Exam 1	15%
Midterm Exam 2	15%
Final Exam	30%

All exams have two parts. For part one, you will have opportunity to work with a partner in the class. You do not have to inform me of your partner in advance, but you need find a partner before exams, not on the spot at the exam time.

For part two, you must work independently. Both parts of exams are graded individually.

All exams are closed-book exams. All you need bring to exams are pencils.

I reserve the rights to curve the grades for any individual exam or course overall.

Take-home Problem Sets:	I will create eight take-home assignments. You will be able to use your lecture notes, your text, and your classmates to help you work out the problems. The due dates are listed in course schedule below. No assignments will be accepted late. I will grade each problem set on a scale of 0-5. For each assignment, I will choose a few questions to grade in detail. 3 points are for completeness of an assignment, 2 points are for correctness on selected questions.
Midterm Exam 1:	The first midterm exam will take place on **Friday, February 13, 2015** during the regularly scheduled class time. It will cover topics from chapters 1 and 2: algebra, simple linear and nonlinear equations. There will be no makeup exam given.
Midterm Exam 2:	The second midterm exam will take place on **Friday, March 13, 2015** during the regularly scheduled class time. It will cover topics from chapter 4: Functions, Graphs, Exponential and Logarithms. There will be no makeup exam given.
Final Exam:	The final exam will take place on **Thursday, May 7, 2015** from 1:30PM to 4:00PM (2.5 hours). Fifty percent (50%) of the questions will be material covered in lectures and class materials before the midterm exam 2, and fifty percent (50%) of questions will be material covered in lectures and class materials after the midterm exam 2. There will be no makeup exam given. If you have three or more final exams (including mine) scheduled for the same day, you can reschedule my final exam if you would like. If so, you are required to let me know by **Friday, March20th, 2015.**

Grades will be determined as follows:

Your Score	Grade	Your Score	Grade
94.00 – 100	A	73.00 – 76.99	C
90.00 – 93.99	A-	70.00 – 72.99	C-
87.00 – 89.99	B+	67.00 – 69.99	D+
83.00 – 86.99	B	63.00 – 66.99	D
80.00 – 82.99	B-	60.00 – 62.99	D-
77.00 – 79.99	C+	59.99 and below	F

Late Assignments/ Missed Examinations Policy

I will not accept late assignments. You will not be allowed to make up missed work unless you provide documentation of a medical or family emergency. In such a case, you need email me immediately and schedule a meeting with me at my office.

If you miss the midterm or the final exam, you will receive no credit. If a family emergency or health emergency arises, immediately contact me. Then schedule a meeting with me and bring a documented medical or family emergency notification. Missed exam will be given no weight in the

calculation of the final grade and other exams will be reweighted accordingly. There will be **no make-up exams.**

If you are a student athlete, and your game schedules conflicts with exam schedule, please inform me in a written note before **Friday, March 20th, 2015**, so I can arrange your exam proctored by an athletic administrator.

ADDITIONAL INFORMATION

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 reasonably and fairly deal with all students who, because of religious obligations, have conflicts with scheduled exams, assignments, or required attendance. If you have a conflict, please contact me at the beginning of the term so we can make proper arrangements.

Classroom Behavior Policy
Students and faculty each have responsibility for maintaining an appropriate learning environment. Students who fail to adhere to such behavioral standards may be subject to discipline. Faculty has the professional responsibility to treat all students with understanding, dignity and respect, to guide classroom discussion and to set reasonable limits on the manner in which they and their students express opinions.
Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender variance, 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_cod

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; 303-725-2273).

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 honorcode.colorado.edu or http://www.colorado.edu/policies/honor.html.

Discrimination & 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.

Tentative Course Schedule

Date	Course Material	Topics	Assignments
1/12-1/16	1.1, 1.2, 1.3	Numbers, Powers, Rules of Alg.	
1/19-1/23	Holiday, 1.4, 1.5	Fractions, Fractional Powers	
1/26-1/30	1.6, 1.7, 2.1	Inequalities, Intervals & Abs. Value, Simple Equations	PS1 due Mon 1/26
2/2-2/6	2.2, 2.3, 2.4	Equations	PS2 due Mon 2/2
2/9-2/13	2.5, Review, Exam1	Nonlinear Equations	PS3due Mon 2/9
		Exam 1, Friday 2/13	
2/16-2/20	4.1, 4.2, 4.3	Functions, Graphing	
2/23-2/27	4.4, 4.5, 4.6	Linear Functions, Quadratic Functions	PS4 due Mon 2/23
3/2-3/6	4.7, 4.8, 4.9	Polynomials, Power & Exponential Functions	
3/9-3/13	4.10, Review, Exam2	Logarithms	PS5 due Mon 3/9
		Exam 2, Friday 3/13	
3/16-3/20	5.1, 5.2, 5.3	Shifting Graphs, New Functions from Old, Inverse Functions	
3/23-3/27	Spring Break		
3/30-4/3	5.4, 5.5, 5.6	Graphing equations, Distance in the Plane, General Functions	PS6 due Mon 3/30
4/6-4/10	3.1, 3.2, 3.3	Summation Notation, Rules Of Sums, Double Sums	
4/13-4/17	3.4, 3.5, 3.6	Logic, Proofs, Set Theory	PS7 due Mon 4/13
4/20-4/24	3.7, 15.1, 15.2	Induction, Systems of Linear Equations, Matrices and Matrix Operations	
4/27-5/1	Review	Catch up and Review	PS8 due Mon 4/27

Final Exam, Thursday 5/7, 1:30 pm - 4:00 pm