

# **Math Tools for Economists I**

## **ECON 1078-002, Fall 2013**

**Instructor** Kristina Sargent

**Class Meetings** MWF 2:00-2:50, BESC 185

**Email** kristina.sargent@colorado.edu

This is the best way to contact me. If you do not receive a reply within 24 hours, please assume I did not get your email and resend it.

**Office** ECON 309C

**Office Hours** Friday 11:30-1:30, and by appointment, via email

**Course Website** The course website is accessed through Desire2Learn where you will find all related course materials.

### **Course Description and Objectives**

Economics is an extremely mathematical discipline. This course and the following course (ECON 1088) are designed to get all students interested in Economics well acquainted with mathematical tools necessary for success in Economics courses. See tentative schedule for topics covered in this course.

### **Expectations**

You can expect me to do my best to help you succeed in this course. I will try my best to answer all questions, provide practice material, provide applications of the material and encourage active thought in the classroom. You may expect me to be respectful and professional at all times by arriving on time, silencing my phone, reserving personal conversation for before and after class, and being courteous with everyone.

I expect you to take the class seriously and to ask questions when something is unclear and actively participate to help us all understand the material better. I also expect you to be respectful and professional at all times by arriving on time, silencing your phone, reserving personal conversation for before and after class, and being courteous with everyone.

### **Cheating Policy**

I take cheating and academic integrity very seriously. I will not tolerate cheating of any kind in the course. This includes everything from bringing absent friends' clickers to copying answers on quizzes and exams. I will determine punish for cheating instances on an ad hoc basis, but I will not hesitate to give a failing grade for the instance in question,

or for the entire course. I will report all instances to the honor code, which will mete out their own punishment, in addition to the one I deem fit. **DON'T CHEAT!** It darkens the reputation of you and your school, and makes me sad.

### **Succeeding in a Math class**

Math is learned and mastered through practice. Anyone who practices math is capable to doing math well. I will assign homework daily. It is your responsibility to do all of the homework problems to make sure you are getting sufficient practice with the material. To encourage practice and completion of homework assignments, there will be several quizzes and tests in this course.

### **Textbook**

Essential Mathematics for Economic Analysis, 4<sup>th</sup> edition, by Knut Sydsater, and Peter Hammond with Arne Strom with MYECONLAB key is required. Economics 1088 uses the same textbook. This is a very good reference book, which you may use in the future to refresh your knowledge of algebra and calculus.

### **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, ex,  $n\sqrt{\phantom{x}}$  and  $x!$ ). Any basic scientific calculator will perform these functions. Although you may find using a graphing calculator useful in doing some of the homework problems, **NO GRAPHING CALCULATORS OR CELL PHONES WILL BE ALLOWED DURING EXAMS.**

### **Laptop Note**

Nothing works better than good, old fashioned paper and pencil for taking notes in a math class. In general, **NO OPEN LAPTOPS ALLOWED** during lecture. If you have a specific, valid reason for a laptop in class, please speak with me about your situation individually.

### **Grading**

Your grade will come from the following breakdown:

20% Class Participation/Attendance/Clickers

25% Quiz (Drop lowest quiz)

50% 2 Midterms

30% Final Exam (Cumulative)

NOTE that the grades add up to a total of 125%, but you get to drop the lowest of the two midterms or quiz grades giving a total of 100%.

### **Class Participation**

We will use clickers in this class. Your class participation grade will come from clicker participation. Each clicker question will be worth 2 points. You will earn 1 point for answering the question and 1 point answering the question correctly. You are encouraged to discuss the questions with your neighbors to come to an answer. I will not begin clickers until Friday (August 30). You will need to have your clicker and book by that date.

### **Quizzes**

There will be approximately 5 quizzes throughout the semester. These will not be long and you will be given 20–25 minutes to complete the quiz. I will announce quiz dates in advance during lectures. Although no homework is graded, quizzes provide a chance to prove you have done and understood the homework. Quizzes will be questions directly from homework or slight modifications of questions from homework. **THERE ARE NO MAKE UP QUIZZES.** If you miss a quiz, then it will simply be your lowest score and it will be dropped.

### **Exams**

We will take a total of three exams in this course: two midterms and the final exam. The midterm exams will be held during the normal class time.

**Midterms**    Midterm 1    Wednesday, October 9th  
                  Midterm 2    Wednesday, November 6th

**Final**            Monday, December 16th 7:30 – 10:00 p.m.

The final exam will be cumulative and cannot be dropped for any reason.

**THE EXAM DATES ARE FIXED. THERE ARE NO MAKEUP EXAMS** (see exception for the final below). If you miss a midterm, then it will be the dropped grade from the three grades of midterm 1, midterm 2 and quizzes. Flexible drops are designed to ensure that I will not need to provide a make up. **NO EXCEPTIONS TO THIS POLICY!**

If you have three or more final exams scheduled on the same day, you are entitled to arrange an alternative exam time for the last exam or exams scheduled on that day. To qualify for rescheduling final exam times, you must provide evidence that you have three or more exams on the same day, and arrangements must be made with me no later than the end of the sixth week of the semester (**Friday, October 4, 2013**).

### **Homework**

For each chapter, I will suggest a list of problems from the book that will be good practice for the exams and quizzes. Homework is NOT graded,

but note that doing the homework will most definitely improve your quiz grade and your overall grade. We will also use the MYECONLAB included with your text. I will suggest problems, but not count things toward your grade. It will be used mainly as a study tool and way for you to get immediate feedback at your convenience.

### **Additional Notes:**

#### **Students with Disabilities**

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services at least two weeks before exams 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. If you have a conflict, please contact me the first week of class so that we can make proper arrangements. See full details at [http://www.colorado.edu/policies/fac\\_relig.html](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.

See policies at <http://www.colorado.edu/policies/classbehavior.html> and at

[http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student\\_code](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](mailto: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/>.

### **FERPA**

In accordance with the law, I am not allowed to ever email your grades to you or to distribute them in any way that is identifiable. As such, I will post grades only on D2L, or you may come to office hours to get your grades. Never ask me to email them or bring them to class; I will not do either.

### **Tentative Schedule**

| Week of               | Course Material | Topics  | Notes   |
|-----------------------|-----------------|---|---------|
| Aug 26 <sup>th</sup>  | 1.1, 1.2, 1.3   | Numbers, Powers, Rules of Algebra                           | Pretest |
| Sept 2 <sup>nd</sup>  | 1.4, 1.5        | No School Labor Day, Fractions                              |         |
| Sept 9 <sup>th</sup>  | 1.6, 1.7, 2.1   | Inequalities, Intervals & Absolute Values, Simple Equations |         |
| Sept 16 <sup>th</sup> | 2.2, 2.3, 2.4   | Equations Continued   |         |
| Sept 23 <sup>rd</sup> | 2.5, 3.1, 3.2   | Nonlinear Equations, Summation Notation, Rules for Sums     |         |

|                       |                     |   |                  |
|-----------------------|---------------------|---|------------------|
| Sept 30 <sup>th</sup> | 3.3, 3.4, 3.5       | Logic, Proofs, Set Theory   |                  |
| Oct 7 <sup>th</sup>   | Exam, 4.1           | Review, Exam, Functions   | Midterm 1– Oct 9 |
| Oct 14 <sup>th</sup>  | 4.2, 4.3, 4.4       | Functions, Graphs, Linear Functions                                 |                  |
| Oct 21 <sup>st</sup>  | 4.5, 4.6, 4.7       | Linear Models, Quadratic Functions, Polynomials                     |                  |
| Oct 28 <sup>th</sup>  | 4.8, 4.9, 4.10      | Power Functions, Exponential Functions, Log Functions               |                  |
| Nov 4 <sup>th</sup>   | Exam, 5.1           | Review, Exam, Shifting Graphs                                       | Midterm 2– Nov 6 |
| Nov 11 <sup>th</sup>  | 5.2, 5.3, 5.4       | New Functions From Old, Inverse Functions, Graphs of Equations      |                  |
| Nov 18 <sup>th</sup>  | 5.6, 1.2, 4.9, 10.1 | General Functions, Compound Interest                                |                  |
| Nov 25 <sup>th</sup>  | ----->              | Fall Break, Thanksgiving Break, No Class                            | <-----           |
| Dec 2 <sup>nd</sup>   | 6.1, 15.1, 15.2     | Slopes, Systems of Linear Equations, Matrices and Matrix Operations |                  |
| Dec 9 <sup>th</sup>   | Review              | Review for Final  |                  |

Final Exam on Monday, December 16th 7:30 – 10:00 p.m.