University of Colorado - Boulder
Fall 2023
Syllabus ECON1088 - Math Tools for Economists II

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Office: ECON 14b   Zoom: https://cuboulder.zoom.us/my/ask.shawn
Office Hours: MWF 9:00 – 10 AM in ECON 14b ; T 8:30-10:00 AM via Zoom

Section	Class Time	Room	Final
1088-001	MWF 10:10 AM - 11:00 AM	ECON 119	Sunday, Dec 17th, 7:30 - 10:00 PM
1088-002	MWF 12:20 PM - 1:10 PM	ECON 117	Saturday, Dec 16th, 4:30 - 7:00 PM

Description

This class is the second of a two-course sequence. It is a continuation of ECON 1078 and builds upon the algebraic foundation developed in that course. We will cover important mathematical tools used in economics and their applications. These tools include derivatives, optimization, and integrals. They will be used extensively in your subsequent economics courses.

Prerequisites

Requires prerequisite course of ECON 1078 or MATH 1011 or MATH 1071 or MATH 1150 or MATH 1160 (minimum grade C-) or an ALEKS math exam taken in 2016 or earlier, or placement into pre-calculus based on your admission data and/or CU Boulder coursework. College level algebra skills are necessary for success in this course.

Required Textbook

Required Textbook: Knut Sydsaeter, Peter Hammond, Arne Strom and Andres Carvajal, *Essential Mathematics for Economic Analysis* , Pearson, 4th ed., 2016. (The use of other editions is fine.)

This textbook will serve as an excellent resource for you future Economics classes.

CU is launching a new program this fall called CU Book Access. Degree-seeking undergrads will be billed a flat rate ($279) per semester for all their required course materials.

If a student chooses to opt out of that charge, they'll be able to purchases materials on a material by material basis. The opt out deadline will be 09/13/2023.

Student questions should be directed to, assist@cubookstore.com or students may stop by the help stations in the CU Book Store during store hours, or live chat at cubookstore.com.

Attendance

Class attendance is necessary for success in this course and therefore mandatory. To give students an external commitment device, attendance will be taken indirectly through the use of

clicker questions and unannounced quizzes. If you will have an extended absence, please notify me as soon as possible. *If you anticipate an EXTENDED absence, please notify me prior to missing any classes, assignments, or exams. There is no need to advise me of short day-to-day absences.*

Canvas

I use Canvas extensively to keep this course organized and make announcements. Additionally, the problems sets and solutions will be available on Canvas as well. Grades will be posted on Canvas as soon as they are available.

Office Hours

Office hours are the best way to get extra help if needed. I would be happy to schedule a time outside of office hours if a scheduling conflict prevents you from coming during the assigned hours. Note that my MWF office hours are held in-person in my office, while I hold the Tuesday hours remotely off-campus.

Cheating

Don't do it. You will get caught, fail the course, and be reported to the Honor Code Council. This includes faking attendance on Clicker questions.

Electronic Device Policy

Please silence electronic devices during lectures. You are welcome to use electronic devices for note taking and accessing learning materials online. However, do not use electronic devices during class time for non-class activities (i.e. social media, etc), or you will be asked to turn it off and put it away.

Communication Policy

Email will be my primary form of communication with the class:

- I will use your CU email address for class communications, so check your CU mailbox frequently.
- I will answer you as soon as possible. Please allow 24 hours for a response.
- Please refer to the syllabus to answer questions, before contacting me.
- Questions on course material are often more easily and thoroughly answered in person. Please use my office hours as your primary means of obtaining help with course material.
- Under no circumstances can I provide grades through email due to Family Educational Rights and Privacy Act (FERPA) regulations, since emails are not considered secure. Grades will be available on Canvas.

Grading

It is important to note, there will be no makeup work or makeup exams in this class. In fairness to everyone, there are no exceptions. Note that late assignments will not be accepted, instead I will drop your lowest two homework assignments, lowest quiz score, and lowest two clicker scores. This

is to provide you with flexibility throughout the semester for things such as illness, bereavement, etc.

Your total grade in this course will be determined as follows:

- Problem sets   15%
- Attendance (clickers and quizzes)   20%
- Midterms   45% (15% Each)
- Final   20%
- Extra Credit   Up to 3% added to your course grade

Problem Sets:
There will be 11 problem sets. Many of these problems will be solved in during class. It is strongly suggested you attempt additional problems. Problem sets will be submitted on Canvas. *Late work will not be accepted. Problem sets will typically be due Friday at 5:00 PM. At 5:30, detailed solutions will be released on Canvas.*

Exams:
There are 3 midterm exams, and while they are not explicitly cumulative, material does naturally build upon itself. The final exam will be *cumulative* and must be held per university policy. The University's final exam policy can be found [here.](#) Unsubstantiated or illegible answers will receive partial credit at most. Exams will be closed book, closed notes. Only basic scientific calculators will be permitted, no computers, cell phone, or graphing calculators. All exams will take place in the regular classroom unless otherwise noted. *There will be no makeup exams. If you provide appropriate documentation (e.g., illness, bereavement, university sanctioned event) PRIOR to missing the exam your other coursework will be appropriately reweighted, otherwise you will receive a zero for the exam.*

iClickers:
We will be using iClicker to enhance active learning and participation in this course. You can check a clicker remote out from the Norlin circulation desk for the semester, on a first-come, first-served basis. You will also need to have an iClicker student app account and register your clicker there. Student resources for iClicker can be found [here](#). *You will receive 1 point for answering a question and an additional point for answering correctly. Faking attendance will get you a 0 for Clicker scores for the semester.*

Unannounced in-class quizzes:
There will be 6-8 unannounced quizzes during the semester. You will be allowed to work in small groups of 2-4 students.

Extra credit:
There will be extra credit assignments found on Canvas that correspond to each problem set. The extra credit grade will be calculated by adding 3% times your extra credit percentage score to your overall grade. Since it is added to your final grade, any extra credit can only increase you grade. Note that extra credit will not be reflected in the grade on Canvas until the end of the semester. All extra credit will close at 11:59 the evening before reading day.

Letter Grades:
Grades may be curved at the instructor's discretion. Your (curved) final course grade will automatically be increased up to 0.5% to meet any grade cutoff. No further grade adjustments are available under any circumstances. Letter grades will be assigned as follows:

Percentage	Grade	Percentage	Grade
94-100	A	73-76	C
90-93	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	0-59	F

Course Resources and Recipe for Success

Because the class is inherently cumulative, it is essential to invest time early. This will make the rest of the semester much more manageable. Calculus is like lifting weights. I am your personal trainer. You can only repeat the benefits if you do enough reps. I can't do that for you.

Let me be clear, I want you to be successful in this course. I will do whatever I can to help you learn. Therefore, there are numerous resources for you to succeed.

Office Hours: This is an excellent opportunity to get additional clarification and get one-on-one instruction. I love working with students during office hours. It is among the most rewarding things I get to do as an instructor, so please take advantage. If a scheduling conflict prevents you from attending my office hours, I will be happy to schedule a time with you.

Econ Tutoring Lab: The Economics department provides a free tutoring lab. Information can be found on the department's website: https://www.colorado.edu/economics/undergraduate-program

Private Tutors: Private tutors are available for a fee. Information can be found on the department's website: https://www.colorado.edu/economics/undergraduate-program

There is a strong correlation between attendance and homework with a student's overall grade. The correlation coefficients are greater than 0.60. I would be remiss if I did not note that correlation does not imply causation. Nonetheless, imitating the approach of successful students is not a bad strategy. Take this course seriously. Use the available resources. Keep up with the course and do not fall behind.

Classroom Behavior

Students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote, or online. Failure 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 race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation, or political philosophy.

For more information, see the [classroom behavior policy](#), the [Student Code of Conduct](#), and the [Office of Institutional Equity and Compliance](#).

Requirements for Infectious Disease

Members of the CU Boulder community and visitors to campus must follow university, department, and building health and safety requirements and all public health orders to reduce the risk of spreading infectious diseases.

The CU Boulder campus is currently mask optional. However, if masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class. Students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct & Conflict Resolution. Students who require accommodation because a disability prevents them from fulfilling safety measures related to infectious disease will be asked to follow the steps in the "Accommodation for Disabilities" statement on this syllabus.

For those who feel ill and think you might have COVID-19 or if you have tested positive for COVID-19, please stay home and follow the. For those who have been in close contact with someone who has COVID-19 but do not have any symptoms and have not tested positive for COVID-19, you do not need to stay home.

Accommodation for Disabilities, Temporary Medical Conditions, and Medical Isolation

[Disability Services](#) determines accommodations based on documented disabilities in the academic environment. If you qualify for accommodations because of a disability, submit your accommodation letter from Disability Services to your faculty member in a timely manner so your needs can be addressed. Contact Disability Services at 303-492-8671 or [dsinfo@colorado.edu](#) for further assistance. *You must provide me with your disability letter and contact me to make suitable arrangements at least TWO WEEKS prior to any exam.*

If you have a temporary medical condition or required medical isolation for which you require accommodation, please notify me as soon as possible prior to missing any classes, assignments, or exams. There is no need to advise me of short day-to-day absences. Also see [Temporary Medical Conditions](#) on the Disability Services website.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [Honor Code](#). Violations of the Honor Code may include but are not limited to: plagiarism (including use of paper writing services or technology [such as essay bots]), cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty.

All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution: honor@colorado.edu, 303-492-5550. Students found responsible for violating the Honor Code will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Visit Honor Code for more information on the academic integrity policy.

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits protected-class discrimination and harassment, sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, reporting options, and support resources can be found on the OIEC website.
Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of incidents related to these policies regardless of when or where something occurred. This is to ensure that individuals impacted receive an outreach from OIEC about their options for addressing a concern and the support resources available. To learn more about reporting and support resources for a variety of issues, visit Don't Ignore It.

Religious Holidays

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, please notify me two weeks prior to missing any lectures, coursework, or exams.
See the campus policy regarding religious observances for full details.

Mental Health and Wellness

The University of Colorado Boulder is committed to the well-being of all students. If you are struggling with personal stressors, mental health or substance use concerns that are impacting academic or daily life, please contact Counseling and Psychiatric Services (CAPS) located in C4C or call (303) 492-2277, 24/7.

Free and unlimited telehealth is also available through Academic Live Care. The Academic Live Care site also provides information about additional wellness services on campus that are available to students.

Tentative Course Schedule

Week	Topics	Due
Week 1 (8/28-9/1)	• Administration • Section 6.1 - Slopes of Curves • Section 6.2 - Tangents and Derivatives • Section 6.5 - A Dash of Limits	
Week 2 (9/4-9/8)	• **Labor Day (No Class 9/4)** • Section 6.2 - Tangents and Derivatives (cont.) • Section 6.6 - Simple Rule for Differentiation	PS1
Week 3 (9/11-9/15)	• Section 6.3 - Increasing and Decreasing Functions • Section 6.4 - Rates of Change • Section 6.7 - Sums, Products, and Quotients	PS2
Week 4 (9/18-9/22)	• Section 6.8 - Chain Rule • Section 6.9 - Higher-Order Derivatives • Section 6.10 - Exponential Functions	PS3
Week 5 (9/25-9/29)	• Section 6.11 - Logarithmic Functions • Section 7.1 - Implicit Differentiation • Section 7.2 - Economic Examples	PS4
Week 6 (10/2-10/6)	• Chapter 6 Review • **Midterm 1 on Chapter 6 (10/4)** • Section 7.7 – Elasticities	
Week 7 (10/9-10/13)	• Section 7.8 – Continuity • Section 8.1 - Optimization Introduction • Section 8.2 - Simple Tests for Extreme Points	PS5
Week 8 (10/16-10/20)	• Section 8.3 - Economic Examples • Section 8.6 - Local Extreme Points • Section 8.7 - Inflection Points	PS6
Week 9 (10/23-10/27)	• Section 11.1 - Functions of Two Variables • Section 11.5 - Functions of More Variables • Section 11.2 - Partial Derivatives with Two Variables • Section 11.3 - Geometric Representation	PS7
Week 10 (10/30-11/3)	• Chapters 7 and 8 Review • **Midterm 2 on Chapters 7 and 8 (11/1)** • Section 11.6 - Partial Derivatives with More Variables	
Week 11 (11/6-11/10)	• Section 11.7 - Economic Applications • Section 11.8 - Partial Elasticities • Section 14.1 - The Lagrange Multiplier Method	PS8
Week 12 (11/13-11/17)	• Section 14.1 - The Lagrange Multiplier Method • Section 9.1 - Indefinite Integrals	PS9
Week 13 (11/20-11/24)	• **Fall Break (No classes 11/20-11/24)** • **Woot! Woot!**	
Week 14 (11/27-12/1)	• Chapters 11 and 14 Review • **Midterm 3 on Chapters 11 and 14 (11/29)** • Section 9.2 - Area and Definite Integrals	
Week 15 (12/4-12/8)	• Section 9.3 - Properties of Definite Integrals • Section 9.4 - Economic Applications • Semester review	PS10
Week 16 (12/11-12/15)	• Semester review • **Reading Day (No class 12/15)**	PS11* EC1-11*

All assignments are due Friday 5:00 PM unless otherwise announced.
*Note, week 16 assignments are due Thursday 5:00 PM due to reading day.