

# Math Tools for Economists II

ECON 1088-002, Fall 2020

Monday, Wednesday, and Friday 12:40-1:30 PM, CASE E230

## 1 Course Information

**Instructor:** Evelyn Skoy

**Course Website:** [Canvas](#)

**Email:** [evelyn.skoy@colorado.edu](mailto:evelyn.skoy@colorado.edu)

**Office:** N/A for Fall 2020. Please use the Zoom link for scheduled appointments and office hours: <https://cuboulder.zoom.us/j/8309932614>

**Office Hours:**

Mondays	4:00 PM – 5:00 PM
Wednesdays	1:45 PM – 2:45 PM
Thursdays	9:00 AM – 10:00 AM

and by appointment.

### Required Textbook:

Essential Mathematics for Economic Analysis, CU Boulder Special Edition ISBN: 1323259236 Authors: Knut Sydsaeter and Peter Hammond (3rd or 4th edition are also acceptable!)

### Prerequisites:

ECON 1078 or equivalent

### Course Description and Objectives:

This class is the second of a two course sequence. It is a continuation of ECON 1078 which builds upon the basic foundation developed in that course. We will study derivatives, optimization, and integrals. These are Chapters 6, 7, 8, 9, and 11 in the textbook. These tools will help you better understand the mathematical framework on which economics models are based and help prepare you for more advanced economics.

## 2 Course Structure

This class will be “flipped,” which means you will be expected to watch a lecture video, read from your book, or perform research prior to attending class. More information on the flipped classroom can be found here: <https://cft.vanderbilt.edu/guides-sub-pages/flipping-the-classroom/>. All lecture materials will be online.

Due to Covid 19, only a portion of the class will be allowed to meet each class period. Because of this, the in-person meetings will be devoted to questions on the lecture materials, example problems, and practice worksheets. Meeting in person will be completely optional.

Please allow 24 hours for me to respond to your emails or 48 hours if it is on the weekend. Grades will not be discussed over email. Emails regarding grades will receive a reply of "Office hours."

### Expectations for lecture:

- Before each scheduled class meeting time, you will be expected to consume the lecture materials that were posted on line (usually a lecture video).
- For each lecture, there will be an accompanying participation quiz. You must take the quiz prior to the due date of that quiz. You may take participation quizzes as many times as you'd like.
- Note down any questions that you have regarding lecture materials. You may bring these questions into class on the day that your cohort attends the in-person class, or you can ask these questions during virtual office hours!
- I will not record attendance at in-person classes. If you are sick, please stay home. In addition, if you are a high-risk person and have concerns about your health, please make use of office hours as an alternative to meeting in-person.
- I will keep track of participation for the first two weeks of class. If you fail to take any participation quizzes, you will be administratively dropped from my class according to departmental procedure

### In-Person Meetings

- You will be assigned to a cohort. You may only attend in-person meetings on your cohort's days.
  - Your cohort assignment and class schedule will be posted on Canvas.
  - Be sure to mark your calendars so that you know the days that you are allowed to attend in person to class.
- In-person meetings will be completely voluntary. No attendance will be kept and it will not count towards participation points.

### Practice Problems:

- Each week I will post recommended practice problems from your book. These will not be collected or graded. However, I highly encourage you to use these problems to test your understanding.
- Practice problems may be used as examples for in-person classes.

### Technology Policy for In-Person Meetings:

- In general, it is difficult to take math notes on a standard computer (unless you are very practiced at typing math notation). As such, laptops are not necessary for in-person meetings.
- If you take notes on a tablet, you may use your tablet in the in-person class meetings
- There is no need for phone-use in our in-person meetings. If you do need to use your phone, please be respectful and step out of the classroom so that you do not distract your classmates.

### Technology Required for Online Class:

- You will need a tablet/laptop that can connect to the internet.

- A working video camera and microphone on your laptop/desktop may be required for exams.
- Internet that is fast enough to stream videos.

### 3 Grades

Your grade will be comprised of a pre-test, participation quizzes, homework, midterm exams, and a final exam.

Grade Item	Percentage
Pre-test	2
Participation	5
Homework	13
Midterm	50
Final	30

#### Pre-Test:

A pre-test will be given in the first week of class. The pre-test covers prerequisite material and will be graded only on completion. However, I strongly recommend that you take the test seriously. If you have difficulty with the material in the pre-test, reach out to me as soon as possible so that we can develop a plan for your success.

#### Participation:

A participation quiz will accompany each lecture video/material. You will have unlimited attempts on the participation quiz, and I will keep the highest score. However, you must take the participation quizzes by the due dates indicated in Canvas if you would like credit. No make-up quizzes will be given. I will drop your three lowest participation quiz scores.

#### Homework:

I will post a homework assignment prior to each exam. You must turn in the homework as specified in the instructions by the time and date that it is due to receive credit. No credit will be given for late homework, so please plan accordingly. Leave yourself enough time to submit the homework in the manner specified in the instructions.

I will randomly select 2-3 homework questions to grade. The remainder of your homework score will be based on completion.

NO MAKE-UP homework assignments will be given. I will drop your lowest homework score.

#### Midterm Exams:

There will be 3 midterm exams throughout the semester. All midterms will be online. I will send out information on the structure and expectations of the exam prior.

If you have documented accommodations, you must notify me with documentation of your accommodation at least one week before the first exam in order for it to apply.

#### Final Exam:

The final exam is cumulative. The final exam will be given during the university assigned date and time. This date is non-negotiable. The only exception to this standard is if you have 3 final exams scheduled on the same day; in this circumstance, you must notify me before the 11th week of the semester.

#### Distribution:

Letter Grade Cutoffs: Let your grade be "x"

Grade	Percentage	Grade	Percentage
A	$93 \leq x$	C	$73 \leq x < 77$
A-	$90 \leq x < 93$	C-	$70 \leq x < 73$
B+	$87 \leq x < 90$	D+	$67 \leq x < 70$
B	$83 \leq x < 87$	D	$63 \leq x < 67$
B-	$80 \leq x < 83$	D-	$60 \leq x < 63$
C+	$77 \leq x < 80$	F	$x < 60$

Grades will be uploaded regularly throughout the semester to Canvas. You are responsible for monitoring your grades. If you are worried about your grade, come to me early to make a plan for your success.

#### Curving:

- Exams may be curved individually, and a curve may be applied to the overall course grade to conform to departmental standards.
- After final class-wide curving has been applied, I will automatically increase final course grades that are less than 0.5% below any grade cutoff. After these steps are taken, no further increases to grades will occur. **Individual requests for bumps or extra credit assignments will be denied.**

#### Cheating:

If you are caught cheating in any fashion (on exams or homework) you will be given an F for the semester and your case will be reported to the Honor Code Council for review.

## 4 Tentative Schedule

Tentative Course Outline: The weekly coverage might change as it depends on the progress of the class. The sections listed below denote the topics to be covered and their associated textbook sections;

however, I may assign a video or alternate readings instead of the text section. Any material to be studied before class will be announced in class and on D2L.

Week	Lecture
1: Aug 24 – Aug 28	<ul style="list-style-type: none"> <li>• Topics: Administration, Introducing Derivatives</li> <li>• Sections: 6.1, 6.2 , 6.5</li> </ul>
2: Aug 31 – Sep 4	<ul style="list-style-type: none"> <li>• Topics: Uses of Derivatives</li> <li>• Sections: 6.3, 6.4, 6.6, 6.7; <b>Pre-test due Aug 31 at noon</b></li> </ul>
3: Sep 7 – Sep 11	<ul style="list-style-type: none"> <li>• Topics: Rules of Derivatives</li> <li>• Sections: 6.7, 6.8</li> </ul>
4: Sep 14 – Sep 18	<ul style="list-style-type: none"> <li>• Topics: More Rules of Derivatives</li> <li>• Sections: 6.9, 6.10, 6.11</li> </ul>
5: Sep 21 – Sep 25	<ul style="list-style-type: none"> <li>• Topics: Review, Using Derivatives; <b>Midterm 1: Sep. 23</b></li> <li>• Sections: Ch 6 review, 7.1; <b>Homework 1 due: Sep. 21 at noon</b></li> </ul>
6: Sep 28 – Oct 2	<ul style="list-style-type: none"> <li>• Topics: Using Derivatives</li> <li>• Sections: 7.2, 7.7, 7.8</li> </ul>
7: Oct 5 – Oct 9	<ul style="list-style-type: none"> <li>• Topics: Introduction to Optimization</li> <li>• Sections: 8.1, 8.2, 8.3</li> </ul>
8: Oct 12 – Oct 16	<ul style="list-style-type: none"> <li>• Topics: Tools for Optimization in Economics</li> <li>• Sections: 8.6, 8.7</li> </ul>
9: Oct 19 – Oct 23	<ul style="list-style-type: none"> <li>• Topics: Review, Multivariable Functions; <b>Midterm 2: Oct. 21</b></li> <li>• Sections: Ch. 7/8 review 11.1, 11.5; <b>Homework 2 due: Oct. 19 at noon</b></li> </ul>
10: Oct 26 – Oct 30	<ul style="list-style-type: none"> <li>• Topics: Partial Derivatives</li> <li>• Sections: 11.2, 11.6, 11.7</li> </ul>
11: Nov 2 – Nov 6	<ul style="list-style-type: none"> <li>• Topics: Using Multivariable Derivatives, Practice</li> <li>• Sections: 11.8, 14.1</li> </ul>
12: Nov 9 – Nov 13	<ul style="list-style-type: none"> <li>• Topics: Review, Introduction to Integrals; <b>Midterm 3: Nov. 11</b></li> <li>• Sections: Ch. 11 review, 9.1; <b>Homework 3 due: Nov. 9 at noon</b></li> </ul>
13: Nov 16 – Nov 20	<ul style="list-style-type: none"> <li>• Topics: Anti-derivatives and Their Interpretations</li> <li>• Sections: 9.1, 9.2, 9.4</li> </ul>
Nov 23 – Nov 27	<ul style="list-style-type: none"> <li>• Topics: Definite Integrals</li> <li>• Sections: 9.3; Thanksgiving break (No Class Thurs. – Fri.)</li> </ul>
14: Nov 30 – Dec 4	<ul style="list-style-type: none"> <li>• Topics: Definite Integrals &amp; Review</li> <li>• Sections: 9.3, 9.5 (time permitting), semester review</li> </ul>
15: Dec 7 – Dec 11	<ul style="list-style-type: none"> <li>• <i>No Class Dec 11;</i></li> <li>• Sections: Ch. 9, semester review; <b>Homework 4 due: Dec. 7 at noon</b></li> </ul>

Please review the in-person attendance schedule posted in Canvas for the specifics on when you may attend class in person. The “In-Person Class Attendance Schedule” can be found under the “Course Information” module.

## 5 University Policies

### Classroom Behavior

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. 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 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 policies on [classroom behavior](#) and the [Student Code of Conduct](#).

### Requirements for COVID-19

As a matter of public health and safety due to the pandemic, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements, and public health orders in place to reduce the risk of spreading infectious disease. Required safety measures at CU Boulder relevant to the classroom setting include:

- maintain 6-foot distancing when possible,
- wear a face covering in public indoor spaces and outdoors while on campus consistent with state and county health orders,
- clean local work area,
- practice hand hygiene,
- follow public health orders, and
- if sick and you live off campus, do not come onto campus (unless instructed by a CU Healthcare professional), or if you live on-campus, please alert [CU Boulder Medical Services](#).

Students who fail to adhere to these requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to [Student Conduct and Conflict Resolution](#). For more information, see the policies on [COVID-19 Health and Safety](#) and [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please see the “Accommodation for Disabilities” statement on this syllabus.

Before returning to campus, all students must complete the [COVID-19 Student Health and Expectations Course](#). Before coming on to campus each day, all students are required to complete a [Daily Health Form](#).

Students who have tested positive for COVID-19, have symptoms of COVID-19, or have had close contact with someone who has tested positive for or had symptoms of COVID-19 must stay home and complete the [Health Questionnaire and Illness Reporting Form](#) remotely. In this class, if you are sick or quarantined, continue with the online lecture material. For extra practice and questions, attend virtual office hours.

## Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or [dsinfo@colorado.edu](mailto:dsinfo@colorado.edu) for further assistance. If you have a temporary medical condition, 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 policy may include: plagiarism, 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 the Honor Code ([honor@colorado.edu](mailto:honor@colorado.edu)); 303-492-5550). Students found responsible for violating the academic integrity policy will be subject to nonacademic sanctions from the Honor Code as well as academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found at the [Honor Code Office website](#).

## Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering an inclusive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, or protected-class discrimination or harassment by members of our community. Individuals who believe they have been subject to misconduct or retaliatory actions for reporting a concern should contact the Office of Institutional Equity and Compliance (OIEC) at 303-492-2127 or [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about the OIEC, university policies, [anonymous reporting](#), and the campus resources can be found on the [OIEC website](#).

Please know that faculty and instructors have a responsibility to inform OIEC when made aware of incidents of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

## 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, since all lecture material is online, you need not alert me to an absence. Feel free to attend office hours with any questions you may have on the material.

See the [campus policy regarding religious observances](#) for full details.