

# MATH TOOLS FOR ECONOMISTS II

ECON 1088-002, SPRING 2022

MONDAY, WEDNESDAY, AND FRIDAY 12:20-1:10, HLMS 211

## 1 COURSE INFORMATION

Instructor: Jaekyeong Shin

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Office: Economics 309C

Office Hours: Mondays 1:20 PM – 2:50 PM

Wednesdays 1:20 PM – 2:50 PM

and by appointment.

Required Textbook:

Essential Mathematics for Economic Analysis, 5<sup>th</sup> 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 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 POLICIES

### General

- Class periods will be devoted to lecture and practice, which means that participation is important and will be a decent component of your grade. Your attendance will be checked

randomly throughout the semester. If you do not attend the first three class meetings and do not contact me, I will administratively drop you according to departmental procedure.

- 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 by the university policy.

- No makeup assignments will be given.

## Grades

- Distribution:

Grade Item	Percentage
Pre-test	5
Midterm I	20
Midterm II	20
Final	30
Homework	15
Attendance	10

- Reporting: Grades will be uploaded into Canvas as assignments are graded.

- Curving: Midterms may be curved individually, and a curve may be applied to the overall course grade to conform to departmental standards.

- 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	$x < 60$

- Adjustment: You will be responsible for monitoring your own grades. If you are worried about your grade, come to me early to make a plan for your success. I will automatically increase final course grades that are 0.5% below any grade cutoff after any final grading curve has been

applied. After these steps are taken, no further increases to grades will occur. Individual requests for bumps or extra credit assignments will be denied.

### Practice Problems and Assigned Homework

- A pre-test assignment due in the first week of class will check your ability to use prerequisite material. This assignment is graded only for completion.
- Recommended practice problems from your textbook will be posted on Canvas each Friday. Detailed solutions will be either covered in class or posted on Canvas on the following Wednesday. These problems will not be graded, but they will benefit your exam preparation.
- Three homework assignments will be due before each midterm and final. The problems will mirror the types of questions that will be on the exams. Working in groups is encouraged, however each student must turn in an individual assignment with the names of groups members written at the top of the page. Each group may have up to three members.

### Exams

- Midterms: Two midterms will be given during lecture time on the fixed dates in the schedule given in this syllabus. The lowest exam score will be dropped, and therefore no makeup or separate time exams will be given (except for students with 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 exam will be held at the university assigned place 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 (Mar 21) of the semester.
- 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.

### 3 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. Any material to be studied before class will be announced in class and on Canvas.

Week	Schedule
Jan 10 – Jan 14	<ul style="list-style-type: none"><li>• Topics: Administration, Introducing Derivatives</li><li>• Sections: 6.1, 6.2; Pre-test due Jan. 14</li></ul>
Jan 17 (MLK day) – Jan 21	<ul style="list-style-type: none"><li>• Topics: Uses of Derivatives</li><li>• Sections: 6.5, 6.3, 6.4, 6.6</li></ul>
Jan 24 – Jan 28	<ul style="list-style-type: none"><li>• Topics: Rules of Derivatives</li><li>• Sections: 6.7, 6.8</li></ul>
Jan 31 – Feb 4	<ul style="list-style-type: none"><li>• Topics: More Rules of Derivatives</li><li>• Sections: 6.9, 6.10, 6.11</li></ul>
Feb 7 – Feb 11	<ul style="list-style-type: none"><li>• Topics: Using Derivatives</li><li>• Sections: 7.1, 7.2, 7.7;</li></ul>
Feb 14 – Feb 18	<ul style="list-style-type: none"><li>• Topics: Using Derivatives; Midterm 1: Feb 18</li><li>• Sections: 7.8; Homework 1 due: Feb. 14</li></ul>
Feb 21 – Feb 25	<ul style="list-style-type: none"><li>• Topics: Introduction to Optimization</li><li>• Sections: 8.1, 8.2, 8.3</li></ul>
Feb 28 – Mar 4	<ul style="list-style-type: none"><li>• Topics: Tools for Optimization in Economics</li><li>• Sections: 8.6, 8.7</li></ul>
Mar 7 – Mar 11	<ul style="list-style-type: none"><li>• Topics: Multivariable Functions</li><li>• Sections: 11.1, 11.5</li></ul>
Mar 14 – Mar 18	<ul style="list-style-type: none"><li>• Topics: Partial Derivatives</li><li>• Sections: 11.2, 11.6, 11.7</li></ul>
Mar 21 – Mar 25	<ul style="list-style-type: none"><li>• Topics: Using Multivariable Derivatives; Midterm 2: Mar. 25</li><li>• Sections: 11.8, 14.1; Homework 2 due: Mar 21</li></ul>
Mar 28 – Apr 1	Spring Break
Apr 4 – Apr 8	<ul style="list-style-type: none"><li>• Topics: Introduction to Integrals</li><li>• Sections: 9.1</li></ul>
Apr 11 – Apr 15	<ul style="list-style-type: none"><li>• Topics: Anti-derivatives and Their Interpretations</li><li>• Sections: 9.2, 9.4</li></ul>
Apr 18 – Apr 22	<ul style="list-style-type: none"><li>• Topics: Definite Integrals</li><li>• Sections: 9.3, 9.6</li></ul>
Apr 25 – Apr 27 (Last day of the class)	<ul style="list-style-type: none"><li>• No Class Apr 29</li><li>• Sections: Ch. 9; Homework 3 due: Apr 25</li></ul>
Apr 30 – May 4	Final Exam Week (date and time TBA)

## 4 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 Conduct & Conflict Resolution policies](#).

### REQUIREMENTS FOR COVID-19

As a matter of public health and safety, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements and all public health orders in place to reduce the risk of spreading infectious disease. 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 policy on [classroom behavior](#) and the [Student Code of Conduct](#). If you require accommodation because a disability prevents you from fulfilling these safety measures, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus.

CU Boulder currently requires masks in classrooms and laboratories regardless of vaccination status. This requirement is a precaution to supplement CU Boulder’s COVID-19 vaccine requirement. Exemptions include individuals who cannot medically tolerate a face covering, as well as those who are hearing-impaired or otherwise disabled or who are communicating with someone who is hearing-impaired or otherwise disabled and where the ability to see the mouth is essential to communication. If you qualify for a mask-related accommodation, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus. In addition, vaccinated instructional faculty who are engaged in an indoor instructional activity and are separated by at least 6 feet from the nearest person are exempt from wearing masks if they so choose.

If you feel ill and think you might have COVID-19, if you have tested positive for COVID-19, or if you are unvaccinated or partially vaccinated and have been in close contact with someone who has COVID-19, you should stay home and follow the further guidance of the [Public Health Office](#) ([contacttracing@colorado.edu](mailto:contacttracing@colorado.edu)). If you are fully vaccinated and have been in close contact with someone who has COVID-19, you do not need to stay home; rather, you should self-monitor for symptoms and follow the further guidance of the [Public Health Office](#) ([contacttracing@colorado.edu](mailto:contacttracing@colorado.edu)).

### 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 academic integrity policy. Violations of the Honor Code may include, but are not limited to: 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 on the [Honor Code website](#).

## SEXUAL MISCONDUCT, DISCRIMINATION, HARASSMENT AND/OR RELATED RETALIATION

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. The university 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 or against 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 email [cureport@colorado.edu](mailto:cureport@colorado.edu). Information about university policies, [reporting options](#), and the 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 of sexual misconduct, dating and domestic violence, stalking, discrimination, harassment and/or related retaliation, to ensure that individuals impacted receive information about their rights, support resources, and reporting options. To learn more about reporting and support options for a variety of concerns, 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.

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