# [ECON1078-003] Mathematical Tools for Economists 1

## Fall 2022

Instructor:	Michelle Ko	Time:	MWF 2:30 - 3:20 PM
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Office:	ECON 313 or Zoom	Office Hours:	MW 11am -12pm, TTH 10-11am $$

- Office Hours: MW 11am -12pm, TTH 10-11am or by appointment
  - Office Hours via Zoom Link: https://cuboulder.zoom.us/j/91818714004
  - Please sign up for a time slot through this link: https://calendly.com/michelle-jw-ko/ econ1078
  - If you want to meet me in-person, send me an email and sign up for a time slot using the above calendly link.
  - If you want to meet me at another time, send me an email to make an appointment.
- Course Website: Canvas; https://canvas.colorado.edu/courses/87696
  - The course syllabus, handouts, supplementary materials, homework assignments and announcements will be posted on Canvas. Please check the course webpage frequently. You are responsible for checking the canvas webpage regularly to avoid missing any assignments or announcements.

## Course Description

This course is the first of a two-course sequence (ECON 1078 and ECON 1088), designed to introduce a variety of mathematical concepts which will be used extensively in future economics coursework. Math will help you understand and describe the way firms and consumers optimize decisions subject to constraints. It will also provide the building blocks you will use in your statistics and econometrics courses, which will enable you to apply economics concepts to real-world data. Topics include logic, algebra, number theory, set theory, graphs, functions, and more. These skills are crucial to the study of economics.

### **Course Material**

1) Textbook: Knut Sydsaeter, Peter Hammond, and Arne Strom, Essential Mathematics for Economic Analysis, 4th Edition. (Required)

- You may use a previous edition; however, chapter numbers may differ. It is your responsibility to match up the chapter topics.
- 2) Pen/Pencil and Paper (Required)
- 3) A scanner or camera (Required)

## **Course Policies**

- General Policies
  - Handwriting: All of your assignments in this course are handwritten. Your handwriting must be legible in order for me to grade your work. If I have trouble reading your handwriting, you will receive partial credit at most. If you are unable to meet the handwriting requirements for this course, please contact me immediately.
  - Emails: Outside of lectures and office hours, you can reach me thorugh email. Please use your official CU email because sometimes other email accounts are filtered into my spam folder. Also, please allow up to 24 hours for an email response. If you do not receive my reply after 24 hours, you can send me a reminder. If you want to discuss grades via email, please don't because I am not allowed to, according to FERPA. If you have any questions or concerns about your grade, please come to my office during office hours.
  - Laptops or other electronic devices are allowed in class, but if your use of these devices harms your peer's efforts at learning you will be asked to put the device away or leave the classroom.

#### • Grading / Grading Scale

Midterm 1	20%
Midterm 2	20%
Final Exam	30%
Homework	20%
Weekly Practice Problems	10%

Percentage	Grade	Percentage	Grade
>= 93.00	А	73.00 - 76.99	С
90.00 - 92.99	A-	70.00 - 72.99	C-
87.00 - 89.99	B+	67.00 - 69.99	D+
83.00 - 86.99	В	63.00 - 66.99	D
80.00 - 82.99	В-	60.00 - 62.99	D-
77.00 - 79.99	C+	<= 59.99	F

I will curve final grades to be B- on average following the departmental guideline. Other than that, I will not accept any request to increase your grade. You will receive the grade that you earned throughout the course. If you are concerned about your grade(s) you should immediately come and talk to me. I will do everything I can to help you be successful in this course.

#### • Lectures

Lectures in this course mainly consist of two parts; explanation of concepts and problem solving. In order to be successful in this course, **I strongly recommend that you attend lectures and take notes as I will provide lecture slides after class.** Also, I will solve the practice problems that you have to submit weekly in class. You are also responsible for any announcement or instructions given in class (this may include instructions for tests). **Tentative course schdule is listed at the end of this syllabus.** 

• Exams (Midterms 20% each, Final 30%)

Midterm 1:	September 30th, Friday
Midterm 2:	November 4th, Friday
Final:	December 12th, Monday at 1:30pm - 4pm

All exams (midterms and final) will be held in our normal classroom. Midterms will only cover the chapters you have newly learned (not cumulative). Final will include all the material coverd in class (cumulative). All exams consist of multiple choice questions and short answer questions.

There will be no early or make-up exams. If you have to miss any of the midterms for emergency reasons (i.e. a family or medical emergency), you must inform me before the exam and provide documented accommodation. Only then, I will shift the weight of the midterms to the final exam.

The final exam cannot be missed under any circumstances. If you have more than two finals on the same day, you can reschedule all exams after the first two. If the final exam of this course should be rescheduled, you must notify me of this no later than October 28th, Friday with a **proof** that you already have two or more exams before this course's final exam.

**Cheating in any of the exams is unacceptable** Any cheating instances will result in a grade of zero and a report to the Honor Code Council.

#### • Homework (20%)

There will be 4 homework assignments throughout the semester. Please make a group consisting of 3-5 students to do the assignments. I will only accept homework from groups. The due dates will be announced during class. For submission, please scan and upload your homework on Canvas. There will be a section for homework submission under Assignment tab. Late submissions are not allowed.

#### • Weekly Practice Problems (10%)

Every Wednesday, I will upload a worksheet named 'Weekly Practice Problems'. You are **required** to turn in your detailed handwritten solutions to these practice problems every week. This worksheet includes both the practice problems I solved during class for the past week and some

new problems that you can try to solve on your own.

Weekly Practice Problems will be **due weekly on Wednesdays at 2:30PM**, **before the class starts.** You can turn in your work either by submitting it as a hard-copy in class or by uploading it on Canvas. If you will submit a hard-copy, please be aware that I will not return your work. If you will use Canvas, please scan your handwritten work with a scanner or camera.

These assignments are graded based on completion and effort. To receive full credit, you <u>must</u> submit detailed handwritten solutions for each practice problem from that week. I will not accept late work; instead, I will automatically drop two lowest grades from your final grade.

## 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 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.
- Intellectual Property All course materials are the property of the instructor and may not be shared with any individual outside of the course at any time for any reason without permission in writing from the instructor. Course materials, including but not limited to lecture presentation slides, assignments, grading rubrics, exams, discussion posts, and recitation activities, may not be posted to any website (e.g., Course Hero or similar sites, social media, etc.). The same applies to any audio or video recordings of lecture or recitation. A violation of this policy will be treated as a violation of the academic integrity policy.
- Honor Code: 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. Incidents of academic misconduct will 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 myself and non-academic sanctions (including but not limited to university probation, suspension, or expulsion).
- **Religious Holidays:** 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 make arrangements with me no later than the first week of the semester.
- Code of 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 we express opinions. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences or race, culture, religion, politics, sexual orientation, gender variance and nationalities.
- 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. 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, har assment and/or related retaliation, to ensure that individuals impacted receive information about options for reporting and support resources.

#### **Tentative Course Outline:**

The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Week	Date	Content
1	Aug 22, 24, 26	Course material: 1.1, 1.2, 1.3
2	Aug 29, 31, Sept. 2	Course material: 1.4, 1.5, 1.6
3	Sept. 7, 9	No Class on Labor Day, Course material: 1.7, 2.1
4	Sept 12, 14, 16	Course material: 2.2, 2.3, 2.4
5	Sept 19, 21, 23	Course material: 2.5, 3.1, 3.2
6	Sept. 26, 28, <b>30</b>	Course material: 3.3, Review, Midterm 1
7	Oct. 3, 5, 7	Course material: 3.4, 3.5, 3.6
8	Oct. 10, 12, 14	Course material: 4.1, 4.2, 4.3
9	Oct. 17, 19, 21	Course material: 4.4, 4.5, 4.6
10	Oct. 24, 26, 28	Course material: 4.7, 4.8, 4.9
11	Oct. 31, Nov. 2, 4	Course material: 4.10, Review Midterm 2
12	Nov. 7, 9, 11	Course material: 5.1, 5.2, 5.3
13	Nov. 14, 16, 18	Course material: 5.4, 5.5, 5.6
14	Nov. 21, 23, 25	Fall Break & Thanksgiving, No Class
15	Nov. 28, 30, Dec. 2	Course material: TBD
16	Dec. 5, 7	Course material: Final Review
Final Exam	December 12	Monday, 1:30 - 4 pm

#### **Important Dates:**

- First Day of Class: August 22 (Mon)
- Labor Day September 5 (Mon), No Class
- Fall Break & Thanksgiving: November 21-25 (Mon-Fri), No Class
- Last Day of Class: December 7 (Wed)