

Economics 4808
Introduction to Mathematical Economics
Fall 2019

Important!!!! Please note that ALL information contained in this syllabus, except the part under “additional notes” is crucial for the course, and therefore, subject to examination. In other words, anything from this syllabus could turn up on an exam!

Instructor: Billy Mertens

Office: ECON 12

E-mail: mertens@colorado.edu Email is by far the best way to contact me. I check my email and respond (if time) every M,W,F and most T,R between 9 and 9:30am. If there is not enough time to respond to all emails during that time, then I will respond in the evening.

Class website: <https://canvas.colorado.edu/>

Office Hours: M,W,F 12:00 – 12:45pm, and M,F 2-3:10pm.

Course Description

Econ 4808 is a course that will improve your math skills and will introduce you to how mathematical tools are applied in economic analysis. The ability to apply mathematics is crucial for economic analysis.

The course covers the mathematics and economic applications of equilibrium, slopes and derivatives, differentials, optimization (maximizing profit and utility, and minimizing cost), constrained optimization (e.g., maximizing utility subject to the budget constraint) and integration. Applications include problems in consumer and producer theory, general equilibrium, and welfare economics.

Prerequisites

Principles of Economics, Econ 2010 and Econ 2020, are prerequisites, as are Econ 1078 (Mathematical Tools for Economists 1) and Econ 1088 (Mathematical Tools for Economists 2), or the equivalent. One or more semesters of Calculus would suffice for Econ 1078 and 1088, but **“Business Calculus” is not recommended**. Econ 3070 is a prerequisite, but this course and 3070 are complements so you may be able to take them at the same time. It is **very** important that you fulfill the prerequisites **before** you take this course, **and still understand the materials in the prerequisites**. To be successful in mathematical economics, you need to first be comfortable with algebra and derivatives. If you have any uncertainty as to whether you are under or over qualified to take the course, please talk to me ASAP. The prerequisites must be strictly enforced.

Prerequisite Quiz

To be sure you are prepared for the material to be covered in this course, you will take a preliminary quiz. The quiz will cover some basic economics and calculus, as well as many of the concepts we will cover in the course. The quiz *may* have an impact on your overall grade. Two items are very important for passing this course: a good economics and math foundation, and more importantly, a willingness to strive to find answers even when they are not obvious. For this reason, you either need to score 80% or more on the prerequisite quiz, **or** at least continue to attempt to solve the problems given for a full 40 minutes. If you do not spend 40 minutes on the quiz, **or** you do not score above 80% (you only need 1 of the 2), then your overall grade will be reduced by 10%. I will also group-score the exams and give you feedback and possible options going forward.

Policy on Cheating:

If you are suspected of cheating, I will immediately and without notification forward your case to the honor code office. This is actually the fairest way to proceed. In these instances, if I took it upon myself to make the decision of whether you violated the honor code, there could be bias involved. The honor code council has both students and faculty members, and they are trained to deal with these types of situations. I will accept the honor code decision as final. If the honor code finds that you did not violate the code, then there will be no repercussions, and all grades will be entered based on your submitted work. If you are found to have violated the honor code (see below), by both the honor code council and I, you will automatically fail the course!

Electronics in the Classroom

Laptops, tablets, and even phones can actually benefit learning in many types of classes. There are many pros and cons of allowing consistent use of these devices during the class period. However, it has become abundantly clear to me that these devices are more of a distraction than a learning aid in most (but not all) situations. In addition, taking notes by hand has been shown to be [more effective than taking them on a laptop or tablet.](#) , and use of devices has been shown to [lower not only the grades of the users, but also of the surrounding students.](#) Therefore, electronic devices will NOT be allowed in the classroom (this includes cell phone use for texting, etc.). **You especially cannot use any form of electronic device during Group Assignments (it defeats the purpose of working together). If you use them on those days, you will automatically receive a zero for that day's assignment. You should take a calculator to class on Group Assignment days and put your phone completely out of sight!** If you are expecting an important call or text, then simply put your phone on vibrate (in your pocket), sit near the door, and step out when the call/text comes through. Of course, if you have a disability services related need for these devices they will be allowed – in that case notify me of your exception ASAP. Some people write out their notes into a tablet; in this case, an exception may be made – again notify me ASAP.

Readings

Essential Mathematics for Economic Analysis (by Knut Sydsaeter and Peter Hammond) is the official math text for undergraduate economics majors here at C.U. You are expected to own a copy and understand much of the material in this book. The book is the required text for Econ 1078 and Econ 1088 and students in those courses are told to keep and use the book until they finish their undergraduate major in economics. **Book problems will be assigned.**

Class format

The course includes both lectures and problem-solving. In-class problems will be performed both in pairs and in small groups. The readings for this course will be posted on the course web site although some of the material for which you are responsible will be presented in lectures only and is not explicitly covered in the readings. Review problems will be posted on the course web site.

A Note on Learning Systems and Assessments:

This course is a little more traditional than many of the other classes I teach. Lecture is still the primary component, but group assignments and discussion are taking on a larger role. One of the most important changes from prior semesters is that all exams will be cumulative, and we will spend at least a little time reviewing for each exam. A little more detail on these systems is given below:

Learning systems:

1. Lecturing: explaining difficult material not easily learned on your own with text, groups, etc.
2. Exams: exams should be learning tools as well as assessment tools! We will go over each exam in depth in class. Reviewing exams is one area where in-class discussion and explanation are most effective. Just reading answers on a key has been shown to be one of the least effective ways to learn material. Therefore, exam reviews will be the one area of class where no notes, associated pictures or keys will be posted.
3. Group scholarship: we will work some practice problems in groups, which can help your understanding of the material whether you already understand it fairly well or are struggling a bit. These cooperative learning exercises are extremely helpful in preparing you to solve more in-depth analytical problems.
Peer-learning of material is one of the most instructive learning systems because:
 - a. *If you are going to inform others about what you know, you must first fully understand it yourselves. If you cannot explain a concept to others you may not fully understand it yourself.*
 - b. *Most “real-world” careers require some form of teamwork skills.*
 - c. *You can discern what it takes to teach others.*
 - d. *It will teach you how to respond to critical questions in front of others.*
4. Self-study: reading the text and solving the review questions.

In-class Problems

It is important to understand how to apply concepts as we cover them, so you will have the opportunity to work on some problems in class (in pairs or small groups) almost every day. You may be selected to show some of these to the class, and this demonstration can add to your group-assignments grade.

Group Assignments:

These cooperative learning exercises (detailed above) are extremely important. The group assignment dates are listed in the course outline. It is important not to miss these days without an excused absence. The object of these assignments is to work together and engage your brains in the learning process. The goal is NOT to try and finish the assignments quickly, or in most cases, to even finish them at all. You will receive a passing score of 75% just for being present and working on the in-class problems with your group. Additionally, I will sometimes have a random member of a random group demonstrate a problem at the board, and if you are a member of the group that presents, it can raise your grade for all assignments by 0-5%. Also, any group-work that you submit with the names of all members of your group listed by last name in alphabetical order, will receive an additional 10%. Any day that no cell phone of any member of your group is visible, your group will receive an additional 5%. Lastly, if I never see your cell phone during class throughout the entire semester, your overall grade for these assignments will be raised another 5%.

Exams: There will be three exams and a cumulative final. These will be given in class on the days listed. No exams will be dropped. To be fair to everybody, I will not answer ANY questions during exams (even about typos) – this puts everyone on equal footing during the exams. The material does build on itself, so it is important to understand all of the concepts as we go. **Exams will be given in class on the days listed. If you miss an exam with a valid excuse (e.g. a note from your doctor or**

Wardenburg), then the weight of your final will be increased. Undocumented illnesses do not count as valid excuses (as long as this is not in conflict with a University policy). Note that the exam dates below are not tentative – exams will be given in class on the days listed. **NO EXAMS Will Be DROPPED!!**

Exam Schedule:

Exam I: Monday, September 23rd
Exam II: Wednesday, October 23rd
Exam III: Wednesday, December 4th
Final exam: Sunday, December 15th at 1:30 pm in our usual room

Final Exam Conflicts

Official University Policy states that: 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 your instructor no later than the end of the tenth week of the semester (i.e. before Halloween!)

Weights of Assignments:

Group Assignments	15%
Exam I	19%
Exam II	20%
Exam III	21%
Final Exam	25%

Incompletes, Extra Credit, etc.

I adhere strictly to the University guidelines on Incompletes (“An I is given only when students, *beyond their control*, have been unable to complete course requirements. A substantial amount of work must have been *satisfactorily completed* before approval for such a grade is completed.”). Bad grades, unsatisfactory performance, too many credit hours, work conflicts, etc. are not reasons for an incomplete.

I am adamant about giving each student an equal opportunity to perform well in the course, so there will be no extra credit opportunities that are not offered to the entire class. You should focus your efforts on learning the material and doing well on the exams.

Grading Scale:

Your Score:	Grade:	Your Score:	Grade:
92% to 100%	A	78% to 79%	C+
90% to 91%	A-	72% to 77%	C
88% to 89%	B+	68% to 71%	C-
82% to 87%	B	62% to 67%	D
80% to 81%	B-	60% to 61%	D-

Additional Notes:

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); 303-492-5550). Students who are 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](#).

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 or injury, see [Temporary Medical Conditions](#) under the Students tab on the Disability Services website.

Classroom Behavior

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 race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. For more information, see the policies on [classroom behavior](#) and the [Student Code of Conduct](#).

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

The University of Colorado Boulder (CU Boulder) is committed to fostering a positive and welcoming learning, working, and living environment. CU Boulder will not tolerate acts of sexual misconduct intimate partner abuse (including dating or domestic violence), stalking, 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, 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, **{Faculty: insert your procedures here}**. See the [campus policy regarding religious observances](#) for full details.

Any University policies that are in conflict with my own policies will supersede my policy!

A reply from one student to another on the discussion board for one of my colleague's online classes: "If you read the course syllabus you will find the answer to your questions. If you do not understand what you read I recommend you read multiple times. After reading the syllabus if you still have questions come back and I will try to help you as much as possible."

