ECON 3620-002 Mathematics for Economics
Fall Semester of 2021
Tuesday - Thursday / 12:25 PM-01:45 PM; GC 2660

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Office Hours: by appointment
Office Location: Department of Economics

Required Materials
(Required) A.C. Chiang & K. Wainwright, *Fundamental Methods of Mathematical Economics*, 4th edition, McGraw Hill.

(Optional)
Edward T. Dowling (2011), *Schaum's Outline of Introduction to Mathematical Economics*, 3rd Edition, Publisher: Mcgraw Hill.
Michael Hoy, John Livernois, Chris McKenna, Ray Rees and Thanasis Stengos (2011), *Mathematics for Economics*, 3rd Edition, Publisher: The MIT Press

Course Description
This course will introduce students to how economists use mathematics as the primary tool in their analyses in order to understand, and often apply, economic theory. It is intended to cover several important mathematical concepts that will be studied in the context of their applications to economics theories. Also, it is aimed to develop students' abilities to use mathematical techniques to solve problems in economics applications. At the end of this semester, students would be expected to understand basic mathematical techniques used in economics such as linear algebra, derivative, differential, optimization with and without constraints, and matrix algebra, and be prepared to take courses in the Economics major that have 3620 as a prerequisite. However, students should be aware that the real use of mathematics in economics is far more advanced than what they will see in the class; therefore, the course is merely designed to be the first step for those who are interested in mathematical economics.

In this three credit hours class, it is expected a good background in college algebra and equivalent knowledge to ECON 2010 and ECON 2020.

Course Outcomes
By the end of this course, you will be able to:
  • Recognize the components of functions used in economics theory.
  • Integrate Math skills in solving economics problems.

• Recognize how Math and previously learned theories are integrated and applied in academic journals or contemporary research.
• Build confidence in using Math skills to help complete advanced economic classes.
• Think about and develop strategies for learning Math, e.g., to solve problems and develop good study habits and skills.

Teaching and Learning Methods
This class uses a combination of lectures, assignments and exams. Class attendance and participation are integral aspects of this course, and you will not likely pass the course without consistent attendance and participation. Like any other quantitative class, reviewing class materials and completing assignments will be helpful to understand the course material.

University Policies

1. ***The Americans with Disabilities Act***. The University of Utah seeks to provide equal access to its programs, services, and activities for people with disabilities. If you will need accommodations in this class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, (801) 581-5020. CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in an alternative format with prior notification to the Center for Disability Services.

2. ***University Safety Statement.*** The University of Utah values the safety of all campus community members. To report suspicious activity or to request a courtesy escort, call campus police at 801-585-COPS (801-585-2677). You will receive important emergency alerts and safety messages regarding campus safety via text message. For more information regarding safety and to view available training resources, including helpful videos, visit safeu.utah.edu.

3. ***Addressing Sexual Misconduct***. Title IX makes it clear that violence and harassment based on sex and gender (which Includes sexual orientation and gender identity/expression) is a civil rights offense subject to the same kinds of accountability and the same kinds of support applied to offenses against other protected categories such as race, national origin, color, religion, age, status as a person with a disability, veteran's status or genetic information. If you or someone you know has been harassed or assaulted, you are encouraged to report it to the Title IX Coordinator in the Office of Equal Opportunity and Affirmative Action, 135 Park Building, 801-581-8365, or the Office of the Dean of Students, 270 Union Building, 801-581-7066. For support and confidential consultation, contact the Center for Student Wellness, 426 SSB, 801-581-7776. To report to the police, contact the Department of Public Safety, 801-585-2677(COPS).

4. ***Undocumented Student Support Statement.*** Immigration is a complex phenomenon with broad impact—those who are directly affected by it, as well as those who are indirectly affected by their relationships with family members,

friends, and loved ones. If your immigration status presents obstacles to engaging in specific activities or fulfilling specific course criteria, confidential arrangements may be requested from the Dream Center. Arrangements with the Dream Center will not jeopardize your student status, your financial aid, or any other part of your residence. The Dream Center offers a wide range of resources to support undocumented students (with and without DACA) as well as students from mixed-status families. To learn more, please contact the Dream Center at 801.213.3697 or visit dream.utah.edu.

Course Policies

1. Attendance & Punctuality. You will not be graded on attendance, however, it is a must for this course if you wish to pass. Notify me in the event of an emergency that prevents you from doing an exam or completing the course immediately
2. Food & Drink. You can eat and drink in the class without disturbing others
3. Electronic Devices in Class. You are not allowed to use your electronic devices in class
4. Exams and Assignments. There will be assignments and exams.

Assignments
Assignments will be posted in detail in Canvas, including due dates.

Grading Policy (Evaluation Methods & Criteria)

Assignments are classified as:

Weekly Quizzes (20%), all in multiple-choice questions, will be available on Canvas and are due on Tuesdays before the class starts.

Two assignments before the exams (30%): You will be assigned two sets of problems (one before the midterm and the other before the final) to practice for the exams.

Midterm (25%) and Final (25%) exams to be taken in class.

Midterm Exam: Th. 10/14/2021

Final Exam: Tu 12/14/2021

Grading Scale (all assignments graded on a 0-100% scale)

93-100 = A   90-92.99 = A-
87-89.99= B+ 83-86.99= B   80-82.99= B-
77-79.99= C+ 73-76.99= C   70-72.99= C-
67-69.99= D+ 63-66.99= D   60-62.99= D-
Below 60= E

Course Schedule

WEEK	TOPIC	READING
1	Equilibrium Analysis/Linear Models and Matrix Algebra	CH 3,4
2	Linear Models and Matrix Algebra	CH 5
3	Linear Models and Matrix Algebra, continued	CH 5
4	Differentiation and Comparative Statics	CH 6, 7
5	Comparative Statics of General Function Models	CH 8
6	Comparative Statics, continued	CH 8
7	Optimization and Equilibrium	CH 9
8	**Midterm exam**	
9	Exponential and Logarithmic Functions	CH 10
10	Multi variable optimization	CH 11
11	Optimization with Equality Constraints	CH 12
12	Optimization with Equality Constraints (continued)	CH 12
13	Non-Linear Programming and Kuhn-Tucker conditions	CH 13
14	Duality and the Envelope Theorem	CH 13
15	Additional topics, Course Wrap-up and Review	
16	**Final exam**	

Note: This syllabus is meant to serve as an outline and guide for our course. Please note that I may modify it with reasonable notice to you. I may also modify the Course Schedule to accommodate the needs of our class. Any changes will be announced in class and posted on Canvas under Announcements.