ECON 105 - Introduction to Mathematical Economics

Instructor: Patrick Molligo
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UCLA, Fall 2025

Lecture days and times: Tuesday & Thursday 12:30 PM to 1:45 PM
Classroom: Haines Hall, Room A25
Office hours: Wednesdays 4-6PM (or by appointment), Bunche 2265, "Alper Room"
Course webpage: https://bruinlearn.ucla.edu/courses/219246

1. Course Description

This course covers the essential mathematical and computing skills needed to study modern economics. We will review both differential and integral calculus (first derivatives, partial derivatives, optimization, integration), as well as the basics of Excel and R (a statistical programming language). The course closely follows the Economics 11 syllabus, but it is not meant as a replacement, nor is it an economics class. We will build a toolkit of mathematical concepts and skills that will be useful in future coursework at UCLA and beyond. The class will be organized into lectures and practice sessions, but the schedule of topics is likely to adjust during the quarter.

2. Corequisites

Economics 11

3. Grading

You will receive a letter grade. The final grade depends on attendance and 3 quizzes as follows:

- Attendance (40%)
- Quiz 1 (20%)
- Quiz 2 (20%)
- Quiz 3 (20%)

The quizzes are not designed to be very difficult, but rather to check your level of understanding at different points in the course. If you participate actively in class you should do very well.

Attendance is mandatory and participation is strongly encouraged. To receive full credit you must attend at least 15 of the 18 meetings (starting in Week 1). In other words you're allowed 3 unexcused absences. Unless you speak with me beforehand, each additional absence will reduce your attendance grade by 10% (e.g., 2 absences = 100%, but 5 absences = 80%). Each class will begin with a brief, ungraded knowledge check using the iClicker app, which will also count as your attendance for that day. To set up a student account follow the steps here.

4. Textbooks

You do NOT need to purchase any books for this class. Below are two sources I will occasionally reference.

- Microeconomic Theory: Basic Principles and Extensions. Nicholson, W., and Snyder, C., 12th Edition, 2016. Chapter 2: Mathematics for Microeconomics. [Do not purchase! PDF on BruinLearn]
- R for Data Science (2e)

5. Center for Accessible Education (CAE)

Any student with a pre-existing illness or condition who requests special arrangements must (a) qualify under CAE rules for such special arrangements, and (b) take the exam with CAE. Any such arrangements with CAE must be communicated to the instructor during the first week of classes. For additional information, please visit the CAE website.

6. Academic Dishonesty

Any cases of cheating will be reported to the Office of the Dean of Students. For more details, please refer to the Office of the Dean of Students website.

7. Topics and Schedule*

Week	Date	Topics/Activities
0	9/25/25	Introduction
1	9/30/25	Review of concepts (functions, derivatives, logs/exponents)
	10/2/25	Unconstrained optimization
2	10/7/25	Constrained optimization (Lagrange multiplier method)
	10/9/25	Constrained optimization & consumer theory
3	10/14/25	**QUIZ #1** + introduction to Excel & R
	10/16/25	Consumer theory (continued)
4	10/21/25	Review of concepts
	10/23/25	Practice: Midterm 1
5	10/28/25	Excel & R
	10/30/25	Implicit Functions and Elasticities
6	11/4/25	**QUIZ #2** + Slutsky equation
	11/6/25	Optimization & firms
7	11/11/25	Veteran's Day holiday (no class)
	11/13/25	Practice session
8	11/18/25	Practice: Midterm 2
	11/20/25	Excel & R
9	11/25/25	Integration
	11/27/25	Thanksgiving holiday (no class)
10	12/2/25	**QUIZ #3** + firms
	12/4/25	Practice: Final Exam

*Schedule is subject to change based on the pace of Econ 11.