

Course: (EC 570) Mathematics for Economists
Instructor: Gary A. Hoover
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Office Hours: By appointment.

Course Description and Layout:

Generally, we will meet every day from 9 in the morning until sometime around noon. We will spend the first part of the class reviewing homework problems and working through particularly difficult questions from the previous day. After a short break, we will spend the latter portion of the class learning new material.

At the end of each class, I will assign selected homework problems. Every student is responsible for working through (or attempting to work through) all of them. At random, I will ask a student to work out a particular problem at the board for the benefit of the other students. Having not completed the assignments will seriously hurt your grade in some strange and nebulous way that I have not figured out yet.

Intro to course: diagnostic test, (importance of cooperation) and concepts: propositions, elements of logic, proofs, set theory, numbers

Probability Theory

Matrix Algebra: rank, matrix, special kinds of matrices, algebra of square matrices, determinants, linear independence, definiteness of quadratic forms, Eigenvalues

One Variable Calculus: functions on \mathbb{R} and continuity, computing derivatives, analysis, chain rule for univariate functions, inverse function theorem

Calculus of Several Variables: implicit function IS/LM problem.

Integral Calculus: (one variable), change of variable (when integrating over 2 or 3 variables)

Optimization: (constrained and unconstrained) quadratic forms and definite matrices, convexity, Lagrange, Kuhn-Tucker, examples and applications

Comparative Statics

Envelope Theorems

(If there is time) Linear Programming, Dynamic Optimization, and other fun stuff.

Course Evaluation:

There will be a midterm and a final, each counting for 50%, unless your grade on the final is better than the one on the midterm, in which case the final will count for 100% of the grade. There will also be quizzes every now and then to help you gauge your progress, but they will not count towards your grade.

Required Text:

Mathematical Economics by Baldani, Bradfield, and Turner

Shaum's Outline Introduction to Mathematical Economics by Dowling

Additional References:

Mathematics for Economists, by Simon and Blume

Introduction to Mathematical Statistics, by Craig

Fundamental Methods of Mathematical Economics, by Chiang

Probability and Statistics, by DeGroot

Mathematics for Economics, by Michael Hoy, John Livernois, Chris McKenna, Ray Rees, Thanais Stengos

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