

Mathematical Methods for Economists **Economics 440.304, Fall 2007**

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Course Webpage: https://jshare.johnshopkins.edu/kismail1/public_html/MM440.304.htm
Office Hours: By appointment

Purpose: This class will provide students with the mathematical background necessary to successfully complete subsequent course work for masters-level graduate work in applied economics. In particular, the course will cover topics in calculus, linear algebra, and other mathematical methods that are commonly used tools in economics. Throughout the course, the application of mathematical methods to applied economic analysis will be emphasized.

Grading: Grades will be based on the student's performance on problem sets, a mid-term examination and a final examination. The weights and scheduled dates of each these components and scheduled dates are as follows:

	<u>Weight</u>	<u>Date</u>
Problem Sets	30%	6 Problem Sets Total
Midterm Exam:	30%	October 23
Final Exam:	40%	December 11

Problem Sets: Problem sets will be assigned every two weeks. Each set will be due at the beginning of class two weeks after it is handed out. Each problem set is out of 20 except problem sets 3 and 6 which are shorter and out of 10.

[Problem Set 1](#) (due Sept 25)

[Problem Set 2](#) (due Oct 9)

[Problem Set 3](#) (due Oct 16)

[Solutions to Practice Questions](#)

[Problem Set 4](#) (due Nov 13)

[Problem Set 5](#) (due Nov 27)

[Problem Set 6](#) (due Nov 4)

Sample Midterm [Midterm \(Fall 2007\) Solutions](#)

Text Books: Michael Hoy, et al., *Mathematics for Economics*, Second Edition, The MIT Press.

Michael Hoy, et al., *Student's Solutions Manual for Mathematics for Economics*,
Second Edition, The MIT Press.

Other Text Books: While the lectures and Hoy's text should be sufficient, here are some texts that can be supplemental. The first is a higher level textbook, and the second is a classic math for economists textbook whose tone is more "chatty". The third is a reference book on Calculus.

- (1) *Mathematics for Economists*, Carl Simon and Lawrence Blume
- (2) *Fundamental Methods of Mathematical Economics*, Alpha Chiang
- (3) *Calculus Early Transcendentals*, James Stewart

Honor Code: The strength of the university depends on academic and personal integrity. In this course, you must be honest and truthful. Ethical violations include cheating on exams, plagiarism, reuse of assignments, improper use of the Internet and electronic devices, unauthorized collaboration, alteration of graded assignments, forgery and falsification, lying, facilitating academic dishonesty, and unfair competition.

Schedule

Date	Topic
1) September 11	Review of Fundamentals: Proofs, Sets, and Functions Chapters 1 and 2 (problem set 1 handed out)
2) September 18	Review of Fundamentals: Proofs, Sets, and Functions Chapters 1 and 2
3) September 25	Calculus: Limits, Continuity, and Differentiation Chapters 3 and 4 (problem set 1 due, problem set 2 handed out)
4) October 2	Calculus: Optimization and Applications Chapter 5 and 6

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- 5) October 9
Calculus:
Multivariate Differentiation
Chapters 11 (problem set 2 due, problem set 3 handed out)
- 6) October 16
Matrices, Vectors, and Systems of Equations
Chapter 8
- 7) October 23
MIDTERM EXAM
- 8) October 30
Solutions and Eigenvalues
Chapter 9 and 10 (problem set 4 handed out)
- 9) November 6
Finishing Chapters 10 and 11
- 10) November 13
Calculus:
Multivariate Optimization
Chapter 12(problem set 4 due, problem set 5 handed out)
- 11) November 20
Constrained Optimization
Chapter 13
- 12) November 27
Constrained Optimization
Chapter 15(problem set 5 due, problem set 6 handed out)
- 13) December 4
Integration
Chapter 16 (problem set 6 due)
- 14) December 11
FINAL EXAM