

Mathematics for Economists

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Course Description

This course will introduce a variety of mathematical tools that are useful for a graduate student in writing her/his thesis. These tools include linear algebra, differentiation, optimization, dynamic system and dynamic optimization, etc.

Text Book: Simon, Carl P. and Lawrence Blume. *Mathematics for Economists*.

Grades:

Problem Sets 30%

Mid-term Exam 30%

Final Exam 40%

You are encouraged to work with other students on the problem sets; however, make sure that you are fully understand the answers to each problem, because the exams will resemble quite closely to the problem sets.

Course Outline

1. Part II Linear Algebra
 - Ch7 System of Linear Equations
 - Ch8 Matrix Algebra
 - Ch9 Determinants: An Overview
 - Ch11 Linear Independence
2. Part III Calculus of Several Variables
 - Ch13 Functions of several Variables
 - Ch14 Calculus of Several Variables
 - Ch15 Implicit Functions and Their Derivatives
3. Part IV Optimization
 - Ch16 Quadratic Forms and Definite Matrices
 - Ch17 Unconstrained Optimization
 - Ch18 Constrained Optimization I
 - Ch19 Constrained Optimization II
 - Ch20 Homogeneous and Homothetic Functions
 - Ch21 Concave and Quasiconcave Functions
 - Ch22 Economic Applications
4. Part V Eigenvalues and Dynamics
 - Ch 23 Eigenvalues and Eigenvectors
 - Ch24 Ordinary Differential Equations
 - Ch25 Economic Application