

臺大農經系 2007 年上學期

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## Mathematics for Economists

### 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