Course Syllabus
Mathematical Preparation for Studying Economics
August 11- August 21, 1997, 9.00 A.M.—12.30 P.M., daily
Economics Building Room 119

Instructor
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Course Description
This is a course in mathematical preparation for studying economics ——
Microeconomics, Macroeconomics, and Econometrics, etc.. Basic mathematical tools
and techniques that you will use most often in studying these courses will be reviewed.
Tentative course topics are as follows:

I. Calculus
   A. Differentiation
      1. Chain Rule
      2. Implicit Differentiation
      3. Taylor’s Expansion
   B. Limits
      1. Basic Limits
      2. Exchanging Order of Limits
      3. Sequences
      4. Continuity
   C. Integration
      1. Basic Integration - Integral as a limit
         a. Exchanging order of limits, specifically integration and
differentiation
      2. Integration by Parts
      3. Change of Variables

II. Linear Algebra
   A. Vector and Matrix Operations
   B. Diagonalization
   C. Implicit Function Theorem
   D. Taylor’s Expansion with Functions from $\mathbb{R}^k \rightarrow \mathbb{R}^1$
III. Probability
A. Random Variable
B. Distribution Function
C. Density Function and Relation to Distribution Function
D. Expectation
E. Variance

IV. Differential Equations (if there is time)

Course Prerequisites
The most important prerequisite is intending to study graduate economics upon completion of this course. I will assume that students are familiar with the basics of above topics. Due to the time limit, actually I will just review these materials instead of teaching them step by step. If you are concerned about your weakness with respect to any of these prerequisites, please let me know before the course starts. I will be in town all the time except the period from July 23 to August 5.

Lectures
The course meets daily for three and half hours (less some break time) for nine days. Each day there will be some suggested exercises, these exercises will not be graded, but answers will be provided.

Examination
Participation in this course is not a compulsory part of the graduate program in economics, but passing its final exam is. The final exam will take place 9.00 A.M. - 12.00 NOON on Thursday August 21, 1997.

Suggested Texts
Basic Calculus:
Salas, Hille, and Anderson: Calculus: One and Several Variables, 7th edition, John Wiley & Sons.

Linear Algebra:

Probability:

More Advanced textbooks:

I will not assume that you have any of these books. If you like having published material to supplement lecture notes, these are books to have.