

MATH 1670 QUANTITATIVE BUSINESS ANALYSIS I

3 Credits

Offered in Lecture Format

**Prerequisite required (MATH 1200 with a grade of C or better
or Appropriate Placement-Test Score)**

Revised 3/26/93

SYLLABUS

I. FUNCTIONS AND GRAPHS

- A. Definition and examples
- B. Domain and range
- C. Combinations of functions
- D. Composition/decomposition of functions
- E. Graphing of functions

II. LINEAR FUNCTIONS

- A. Definition
- B. Graphs
- C. Equations of lines
 - 1. Slope-intercept problems
 - 2. Two-point problems
- D. Applications to economics and business

III. QUADRATIC FUNCTIONS

- A. Definition
- B. Graph of $y = ax^2 + bx + c$
 - 1. x-, y-intercepts
 - 2. Vertex

IV. SYSTEMS OF EQUATIONS

- A. Methods of solving linear equations
 - 1. Substitution
 - 2. Elimination by addition
- B. Solving nonlinear systems of equations
- C. Applications
 - 1. Supply and demand analysis
 - a. Writing supply and demand equations
 - b. Finding equilibrium position for the market
 - 2. Break even analysis

V. MATRICES

- A. Definition
- B. Operations with matrices
 - 1. Addition and scalar multiplication
 - 2. Matrix multiplication
- C. Special types of matrices
 - 1. Diagonal matrix
 - 2. Identity matrix
 - 3. Zero matrix
- *D. Matrix reduction
 - 1. Elementary row operations
 - 2. Properties of a reduced matrix
- E. A method of determining the inverse of a matrix
- F. Matrix solutions to systems of equations

VI. DETERMINANTS

- A. Definition
- B. Properties
- C. Cramer's rule

VII. LINEAR PROGRAMMING

- A. Definitions of constraints and objective function
- B. Methods of solution
 - 1. Graphical method of solution
 - a. Graphing the feasible solution area
 - b. Substituting corner points of the feasible solution area into the objective function
 - *2. Simplex method

VIII. EXPONENTIAL AND LOGARITHMIC FUNCTIONS

- A. Laws of exponents
- B. Exponential functions
 - 1. Definition
 - 2. Graphs
- C. Logarithmic functions
 - 1. Definition
 - 2. Common and natural logarithms
 - 3. Graphs
 - 4. Properties of logarithms
- D. Relationship between exponential and logarithmic functions
- E. Solving logarithmic and exponential equations

IX. MATHEMATICS OF FINANCE

- A. Compound interest
 - 1. Amount
 - 2. Effective rate of interest
 - 3. Present value

- B. Annuities
 - 1. Ordinary annuity
 - a. Present value
 - b. Future value
 - 2. Annuity due
 - a. Present value
 - b. Future value
 - 3. Sinking fund
 - 4. Amortization
 - *5. Complex annuities

*Optional