

Indiana University South Bend
M118 Finite Mathematics Syllabus
(June 2004)

Course Coordinator: Morteza Shafii-Mousavi

Textbook Finite Mathematics for Business, Economics, Life Sciences, and Social Sciences, Tenth Edition, R.A. Barnett, M. R. Ziegler, & K.E. Byleen

Contents

- Chapter 4 Systems of Linear Equations**
- Matrices
 - Augmented Matrices
 - Gauss-Jordan Eliminations
 - Matrices: Basic Operations
 - Inverse of a Square Matrix
 - Applications
- Chapter 5 Linear Inequalities and Linear Programming**
- System of Inequalities in Two Variables
 - Linear Programming in Two Dimensions: Geometric Approach
 - The Simplex Method:
 - Geometric Approach
 - Algebraic Approach
 - Optimization (Maximum and Minimum Problems)
 - Applications
- Chapter 6 Sets**
- Basic Counting Principles
 - Permutations
 - Combinations
- Chapter 7 Probability**
- Sample Spaces, Events, and Probabilities
 - Union, Intersection, and Complement of Events
 - Odds
 - Conditional Probabilities
 - Intersection and Independence
 - Bays' Formula:
 - Tree Diagrams
 - Tables
 - Sets
 - Formula
 - Random Variables
 - Probability Distribution
 - Expected Value
 - Applications (e.g. quality control)
- Chapter 8 (optional) Data Description: Graphing Data & Measures of Central Tendency**

Pedagogical Suggestions:

- **Sequence of coverage:** An instructor may choose one of the following orders to teach the materials (most colleagues have found the second order to be more effective):
 1. Chapters 4, 5, 6, and 7, in this order
 2. Chapters 6, 7, 4, and 5, in this order (optional: cover chapter 8 before chapter 6)
- **Emphasis:** An instructor should emphasis on concepts, computational skills, ideas, units, and problem solving.
- **Applications:** An objective of the course is to give the students experience in modeling and solving real-world problems to convince the students that mathematics is useful. In the textbook, almost every exercise set contains application problems applied to business, economics, life sciences, and social sciences. An instructor should choose appropriate applications, suitable for the students' field, for assignment.