

**Tennessee Technological University  
Mathematics Department**

**MATH 1630: Finite Mathematics**

**I. COURSE DESCRIPTION FROM CATALOG:**

Brief review of basic algebra; introduction to probability; matrix algebra and linear programming; applications to business and economics. Lec. 3. Cr. 3.

**II. PREREQUISITE(S):**

Minimum of two years of high school algebra and one year of high school geometry.

**III. COURSE OBJECTIVE(S):**

Build on (not replicate) the competencies gained through the study of two years of high school algebra and one year of high school geometry. Use mathematics to solve problems and determine if the solutions are reasonable. Use mathematics to model real world behaviors and apply mathematical concepts to the solution of real-life problems. Make meaningful connections between mathematics and other disciplines. Use technology for mathematical reasoning and problem solving. Apply mathematical and/or basic statistical reasoning to analyze data and graphs. Ability to analyze and synthesize ideas, information, and data arising from selected topics in mathematics.

**IV. TOPICS TO BE COVERED:**

**CHAPTER 10**

**PRECALCULUS REVIEW**

- 10.1 Exponents and Radicals
- 10.2 Algebraic Expressions
- 10.3 Algebraic Fractions
- 10.4 Inequalities and Absolute Value

**CHAPTER 1**

**STRAIGHT LINES AND LINEAR FUNCTIONS**

- 1.1 The Cartesian Coordinate System
- 1.2 Straight Lines
- 1.3 Linear Functions and Mathematical Models
- 1.4 Intersections of Straight Lines

**CHAPTER 2**

**SYSTEMS OF LINEAR EQUATIONS AND MATRICES**

- 2.1 Systems of Linear Equations: An Introduction
- 2.2 Systems of Linear Equations: Unique Solutions
- 2.3 Systems of Linear Equations: Underdetermined and Overdetermined Systems
- 2.4 Matrices
- 2.5 Multiplication of Matrices
- 2.6 The Inverse of a Square Matrix

**CHAPTER 3**

**LINEAR PROGRAMMING: A GEOMETRIC APPROACH**

- 3.1 Graphing Systems of Linear Equalities in Two Variables
- 3.2 Linear Programming Problems
- 3.3 Graphical Solution of Linear Programming Problems

**CHAPTER 6****SETS AND COUNTING**

- 6.1 Sets and Set Operations
- 6.2 The Number of Elements in a Finite Set
- 6.3 The Multiplication Principle
- 6.4 Permutations and Combinations

**CHAPTER 7****PROBABILITY (As time permits)**

- 7.1 Experiments, Sample Spaces, and Events
- 7.2 Definition of Probability
- 7.3 Rules of Probability
- 7.4 Use of Counting Techniques in Probability
- 7.5 Conditional Probability and Independent Events
- 7.6 Bayes' Theorem

**V. ADDITIONAL INFORMATION:**

This course may be used to satisfy the minimum general education requirements in mathematics. It provides an opportunity for students to address real-life problems in business and economics through strategic reasoning and applications of the scientific method.

**VI. POSSIBLE TEXTS AND REFERENCES:**

*College Mathematics*, 7<sup>th</sup> ed., S. T. Tan

**VII. ANY TECHNOLOGY THAT MAY BE USED:**