Mathematics 1324 - Finite Mathematics I

Student Learning Outcomes

- 1. The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in Finite Mathematics I including linear and quadratic equations, inequalities, number systems, polynomials, exponents, logarithms, matrices, linear programming and mathematics of finance.
- 2. The students will describe the fundamental principles arising from the mathematical ideas associated to business applications. Students will identify and apply the laws and formulas that result directly from the definitions; for example, the properties of exponents, logarithms, equations, inequalities and their graphs, and the formulas associated with matrices and the mathematics of finance.
- 3. The students will apply the course material along with techniques and procedures covered in this course to solve business related problems. Students will use the facts, formulas, and the techniques learned in this course to solve basic business problems. This includes modeling and solving linear programming problems by graphical or algebraic methods; solving annuity and interest problems; analyzing and interpreting graphs; converting logarithmic equations to exponential equations and vice-versa; using lines and their properties; performing matrix operations; graphing various function types; and employing the use of calculators and/or computers.
- 4. The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields. Students will acquire a level of proficiency in the fundamental concepts and applications necessary for Business Calculus and Finite Mathematics II as well as well as other areas requiring Finite Mathematics I as a prerequisite. These areas might include business, marketing, finance, computer science, nursing, and the social sciences, as well as mathematics.

Course Content

Textbook: *Mathematical Applications,* 10^{th} *edition,* by Harshbarger and Reynolds. The following chapters including the particular sections listed are covered.

- **0. Algebraic Concepts.** Sets, real numbers; exponents; radicals; operations with algebraic expressions; factoring; algebraic fractions.
- 1. Linear Equations and Functions. Solutions of linear equations and inequalities; functions; linear functions; systems of linear equations; applications of functions in business and economics.
- **2. Quadratic and Other Special Functions.** Quadratic equations; quadratic functions: parabolas; business applications.
- **3.** Matrices. Matrices; multiplication of matrices; Gauss-Jordan elimination; inverse of a square matrix.
- **4. Inequalities and Linear Programming.** Linear inequalities in two variables; linear programming: graphical methods; the Simplex method: maximization.
- **5. Exponential and Logarithmic Functions.** Exponential functions; logarithmic functions and their properties; solution of exponential equations; applications.
- **6. Mathematics of Finance.** Simple interest; compound interest; future value of ordinary annuities; present values of ordinary annuities; loans and amortization.