

Prepared by the Department of Mathematics

Date of Departmental Approval: December 4, 2017

Date approved by Curriculum and Programs: January 31, 2018

Effective: Fall 2018

1. **Course Number:** MAT165
Course Title: Finite Mathematics
2. **Description:** An introduction to selected applications of mathematics in business, management, social sciences, and economics. Topics include: elementary descriptive statistics, graphing of functions, simple and compound interest functions and their applications/computation, probability, and elements of mathematical modeling using first and second degree polynomials. The course is designed for students in career programs.
3. **Student Learning Outcomes (Instructional Objectives):** Upon successful completion of the course, students are able to do the following:
 - Identify and use a variety of essential elementary model functions to apply to business context.
 - Identify linear and quadratic functions.
 - Solve systems of linear equations and inequalities and present the results in writing and verbally.
 - Solve linear programming problems and present the solutions in writing.
 - Identify exponential and logarithmic functions.
 - Use methods of regression and correlation analysis for various mathematical models (i.e. linear, quadratic, and exponential functions).
 - Use simple and compound interest formulas.
 - Calculate present and future value of an annuity and discuss the economic implications of the calculations.
 - Apply the rules of basic probability.
 - Calculate measures of central tendency and dispersion.
 - Use a variety of graphs.
 - Use probability distributions such as binomial and normal distributions.
 - Apply statistical techniques to real-life applied cases.
 - Use the TI83 Calculator for every topic (linear and quadratic functions, math for finance, probability).
 - Communicate mathematical procedures involving calculations associated with business problems both orally and in writing.
4. **Credits:** 3 credits
5. **Satisfies General Education Requirement:** Mathematics or Quantitative Reasoning
6. **Prerequisite:** MAT035 (Algebra for Non-STEM) or MAT045 (Intermediate Algebra for STEM) or satisfactory basic skills assessment score
7. **Semesters Offered:** Fall, Spring
8. **General Guidelines for Evaluation:** Comprehensive final examination, tests, problems, cases, and quiz papers.
9. **General Topical Outline:** Please see the attached outline.

MAT165 Finite Mathematics

- I. Linear Equations and Functions
 - A. Mathematical Techniques
 - B. Applications in Business and Economics
 1. Market Equilibrium
 2. Break-even Analysis
- II. Inequalities and Linear Programming
 - A. Mathematical Techniques
 1. Graphical

- 2. Algebraic
 - 3. Introduction to the Simplex Method
 - B. Applications
- III. Quadratic Functions
 - A. Mathematical Techniques
 - B. Applications in Business and Economics
 - 1. Market Equilibrium
 - 2. Break-even Analysis
- IV. Mathematics of Finance
 - A. Simple Interest and Discount
 - B. Compound Interest
 - C. Annuities
- V. Probability
 - A. Introduction and Techniques
 - B. Conditional Probability and Independence
 - C. Expected Value and Decision Making
 - D. Binomial and Normal Distributions
- VI. Statistics
 - A. Measures of Central Tendency
 - B. Measures of Variation
 - C. Linear and Non-linear regression analysis using technology
- VII. Functions
 - D. Exponential Functions
 - E. Logarithmic Functions