

**J. Sargeant Reynolds Community College  
Course Content Summary**

**Course Prefix and Number:** MTH 163

**Credits:** 3

**Course Title:** Precalculus I

**Course Description (including lecture hours, lab hours, total contacts)**

Prepares students for applied calculus or elementary discrete mathematics. Presents college algebra, matrices, and algebraic, exponential and logarithmic functions. Prerequisite: a placement recommendation for MTH 163 and completion of Algebra I, Algebra II, and Geometry of equivalent. (Credit will not be awarded for more than one of the following: MTH 163, or MTH 166.) Lecture 3 hours per week.

**General Course Purpose**

Preparation for business calculus and/or statistics.

**Course Prerequisites/Corequisites** (*Entry-level competencies **required** for enrollment*)

Prerequisites: a placement recommendation for MTH 163 and Algebra I, Algebra II, and Geometry or equivalent.

**Course Objectives** (Each item should complete the following sentence.)

Upon completing the course, the student will be able to:

- a. Describe the properties of given functions, including domain, range, increasing, decreasing, even, odd, and whether it has an inverse
- b. Sketch the graphs of polynomial, rational, exponential, and logarithmic functions
- c. Solve exponential and logarithmic equations
- d. Add, subtract, and multiply matrices and calculate the determinant of a square matrix
- e. Find the inverse of a non-singular matrix
- f. Use matrices to solve linear systems
- g. Solve linear programming problems
- h. Generate terms and find the sum of selected sequences
- i. Use summation notation
- j. Use the Binomial Theorem

**Major Topics to be Included**

- a. Introduction to Functions
- b. Linear and Quadratic Polynomial Function
- c. Higher Degree Polynomial Functions
- d. Rational Functions
- e. Exponential and Logarithmic Functions
- f. Matrix Algebra and Linear Programming
- g. Sequences and Series
- h. The Binomial Theorem

**Effective Date of Course Content Summary (Month, Date Year):** February 2009