COUNTY COLLEGE OF MORRIS
Course Information Outline

Course Title Precalculus **PREFIX&NUMBER** MAT 123

Lecture Hours 60 **Laboratory Hours** 0 **Credit Hours** 4 **Course Fee** None

Department Chairperson Approval J. Monaghan **Date** 04-03-2009

Division Dean Approval P. Enright **Date** 5/1/09

1. **Catalog Course Description**
   An intensive one-semester course to prepare students for Analytic Geometry and Calculus, including absolute values; relations; functions; equations; inequalities; polynomial, rational, trigonometric equations and identities; and graphs.

2. **Prerequisite(s)**
   MAT 110 (grade of "C" or better) or equivalent.

3. **Co-requisite(s)**
   None

4. **Textbooks**
   Blitzer, *Precalculus Essentials*, 2nd ed. (Pearson Prentice Hall, 2007).

5. **Supplementary Books and/or Materials**
   Student Study Pack and MyMathLab bundled with textbook . Scientific or graphing calculator.

6. **Specialized equipment, supplies, facilities, for classes limited by enrollment or restricted by accreditation and/or equipment limitations.** (Information will be used to determine differential funding category.)
   None

7. **Course Content (List of Topics)**
   - Graphs and functions, linear functions, slope, equations of lines
   - Transformations of graphs of functions
   - Combinations, composite and inverse functions
   - Distance and midpoint formulas, equations of circles, modeling
   - Complex numbers
   - Quadratic and polynomial functions
   - Polynomials and synthetic division, zeros of polynomials
   - Rational functions, polynomial and rational inequalities
   - Exponential and logarithmic functions
   - Properties of logarithms, exponential and logarithmic functions

- Modeling with logarithmic and exponential functions
- Angles and radian measure, trigonometric functions, unit circle
- Right-angle trigonometry, trigonometric functions of any angle
- Graphs of trigonometric functions
- Inverse trigonometric functions, applications of trigonometry
- Verifying trigonometric identities
- Sum and difference, double-angle and other formulas
- Trigonometric equations
- Laws of sines and cosines, de Moivre's Theorem

8. Statement of Course LEARNING OUTCOMES

- **Identify**, **solve**, and **apply** polynomial, exponential, logarithmic, and trigonometric equations
- **Solve** and **interpret** polynomial, rational, and absolute value inequalities
- **Identify**, **evaluate**, and **perform** operations on functions
- **Construct** graphs of functions, **interpret** them, and **draw** appropriate conclusions
- **Identify** conic sections from their equations and **sketch** their graphs
- **Manipulate** trigonometric identities
- **Solve** triangles by the appropriate method

9. Statement of Relation to Curriculum(s)

MAT 123 is often required in several science and engineering science programs, such as chemistry, biology and mathematics, and the scientific programming option of computer information systems. It is also an appropriate elective for students in some other programs.