J. Sargeant Reynolds Community College
Course Content Summary

Course Prefix and Number: MTH 174 **Credits:** 5

Course Title: Calculus with Analytic Geometry II

Course Description:
Continues the study of analytic geometry and the calculus of algebraic and transcendental functions including rectangular, polar, and parametric graphing; indefinite and definite integrals; methods of integration; and power series, along with applications. Designed for mathematical, physical, and engineering science programs. Prerequisite: MTH 173 or equivalent. (Credit will not be awarded for more than one of the following: MTH 174, MTH 176, or MTH 274.) Lecture 5 hours per week.

General Course Purpose:
Designed for mathematical, physical, and engineering science transfer degree programs.

Course Prerequisites/Co-requisites:
MTH 173 or equivalent.

Course Objectives:
Upon completing the course, the student will be able to:
1. Differentiate and integrate exponential and logarithmic functions.
2. Use derivative and integral formulas involving inverse trigonometric functions and hyperbolic functions.
3. Use integration to calculate arc length, moments, and center of mass.
4. Use a variety of techniques to evaluate integrals including parts, trigonometric integration and substitution, partial fractions, and tables.
5. Evaluate limits of indeterminate forms and improper integrals.
6. Determine whether a series converges or diverges using various tests.
7. Demonstrate understanding of power series including Taylor and Maclaurin series.
8. Demonstrate understanding of calculus applications to parametric equations and area and arc length of polar equations.

Major Topics to be Included:
1. Logarithmic, Exponential, and Other Transcendental Functions
2. Integration Techniques, L'Hopital's Rule, and Improper Integrals
3. Infinite Series
4. Parametric Equations
5. Polar Coordinates and Polar Graphs

Effective Date of Course Content Summary (Month, Date Year): May 4, 2012