Prerequisite: Calculus I (Math 161, formerly Math 251) with a grade of “C” or better
Coverage: Chapters 7, 8, 9, 11, and 12
BEHAVIORAL OBJECTIVES

After successfully completing this course, the students should be able to perform the following tasks:

The Transcendental Functions
- Compute the derivative of logarithmic and exponential functions
- Compute derivatives using logarithmic differentiation
- Compute derivatives involving the inverse trigonometric functions
- Evaluate integrals yielding trigonometric and inverse trigonometric functions
- Discuss derivatives and antiderivatives of the hyperbolic functions

Techniques of Integration
- Discuss and use the technique of integration by parts
- Compute antiderivatives involving trigonometric functions
- Find antiderivatives of rational functions using partial fractions
- Find antiderivatives of functions using trigonometric substitutions
- Find integrals using miscellaneous substitutions
- Carry out numerical integration schemes

Further Applications of the Integral
- Find the centroid of a region
- Compute the fluid pressure of water

Polar Coordinates; Parametric Equations
- Locate points in a plane using the polar coordinates
- Graph equations in polar coordinates
- Find area bounded by polar curves
- Obtain the graph of a parametric curve as well as tangents to the graph
- Compute arc lengths, surface areas, and centroids involving parametric curves

Sequences; Indeterminate Forms; Improper Integrals
- Determine whether the limit of a sequence exists
- Discuss properties of bounded and monotonic sequences
- Discuss indeterminate forms
- State and use L'Hospital’s rules
- Recognize and evaluate improper integrals

Infinite Series
- Discuss properties of convergent and divergent series
- Discuss and use the comparison, integral, ratio, and root tests for determining convergence of series
- Determine if a convergent series is absolutely or conditionally convergent
- Determine whether an alternating series diverges, converges absolutely, or converges conditionally
- Find the interval and radius of convergence of a power series
- Discuss the properties of Taylor Polynomials, Taylor Series, and power series
- Expand functions in power series