Board Approved 6/06

CALCULUS
GRADES 11, 12

MATH CURRICULUM SUMMARY ~ GRADES 11 & 12

Assessments include: daily work, worksheets, homework, quizzes, tests, math journals, notebooks.

Prerequisites for Calculus

- Coordinate geometry
- Relations, functions and their inverses
- Review of geometric transformations
- Review of trigonometric functions
- Review of finding models to fit data using the graphing calculator

Applications of Derivatives

- Maxima, Minima and the Mean Value Theorem
- First and second derivative tests for relative extrema
- Concavity and points of inflection
- Limits at infinity
- Sketching polynomial, rational, radical and transcendental functions
- Optimization problems

Applications of Definite Integrals

- Areas: under a curve, between two curves, and surfaces of revolution
- Volumes of solids: using disks, using washers, and using cylindrical shells
- Lengths of curves

Limits and Continuity

- Limits as x approaches a single value and one-sided limits
- Continuous functions
- Sandwich or Squeeze theorem
- Formal definition of limits (optional)

Derivatives

- Definition of derivative in terms of The Tangent Line Problem
- Numerical derivatives
- Differentiation rules
- Rates of change and related rates
- Derivatives of trigonometric functions
- Implicit differentiation

Integration

- Approximating areas – rectangular, trapezoidal, and Simpson's methods
- Definite integrals
- Antiderivatives and indefinite integrals
- Fundamental Theorem of Calculus
- Indefinite Integrals
- Integration by substitution (the Chain Rule in reverse)

Transcendental Functions (OPT.)

* Natural logarithms
* The Exponential function
* Other exponential and logarithmic functions
* Exponential growth

Instructional Strategies include: cooperative learning groups, integration of technology, mini-lecture, concrete materials, guided practices,

	independent practice.