Eustace High School
Calculus I and II Objectives
(concurrent with TVCC)

1st Six Weeks

- Intro. to Limits
- Definition of a Limit
- Techniques for Finding Limits
- Limits Involving Infinity
- Continuous Functions
- Tangent Lines and Rates of Change
- Definition of a Derivative
- Techniques of Differentiation
- Derivatives of Trig Functions
- The Chain Rule
- Implicit Differentiation
- Related Rates

2nd Six Weeks

- Extrema of Functions
- Mean Value Theorem
- First Derivative Test
- Concavity and the Second Derivative Test
- Summary of Graphical Methods
- Optimization Problems
- Velocity and Acceleration
- Antiderivatives and Indefinite Integrals
- Change of Variables

3rd Six Weeks

- Summation Notation and Area
- The Definite Integral
- Properties of the Definite Integral
- The Fundamental Theorem of Calculus
- Area
- Solids of Revolution
- Volumes of Cylindrical Shells
- Volumes by Cross Sections
- Arc length / Surface Area

4th Six Weeks

- The Natural Log Function
- The Exponential Function
- Integration of LN and Exp.
- General LN and Exp. Functions
- Inverse Trig. Functions
- Hyperbolic/Inverse Functions
- Independent Forms and l'Hopital's Rule
- Integration by Parts

5th Six Weeks

- Trigonometric Integrals
- Trigonometric Substitutions
- Integrals of Rational Functions
- Quadratic Expressions and Substitutions
- Tables of Integrals and CAS
- Improper Integrals
- Sequences
- Convergent and Divergent Series
- Positive-term Series

6th Six Weeks

- Ratio and Root Tests
- Alternating Series and Absolute Convergence
- Power Series and their Representations of Functions
- Maclaurin and Taylor Series
- Parametric Equations
- Polar Coordinates
- Integrals in Polar