AP Calculus AB
Curriculum Map

Units	Highlights
Unit 1: Review Pre-Calculus	• Trigonometry: Solving trigonometric functions in the interval [0,2π) --- using quadrantals, special triangles, and trig inverses • Know the six basic graphs and how a reflection, shift, or stretch affects the graph Common Core: F-BF.3, F-TF.8, F-TF.3(+)
Unit 2: Limits	• **Evaluating limits – numerically, graphically, and analytically** • **One-sided limits** • **Continuity versus differentiability** • **Continuity definition** • Intermediate Value Theorem (IVT) • **Vertical asymptotes and limits** Common Core: F-IF.7b, A-SSE.3 AP Calculus Standards 2.1,2.3
Unit 3: Differentiation	• **Derivative --- Using the limit process.** • Tangent lines • **Differentiation rules: Power, Constant Multiple, Constant, Product, Quotient, and Chain rules** • **Source of derivative: table, graph, equation** • Trigonometric Differentiation • Higher- order derivatives • Implicit differentiation • Related rates Common Core: N-RN.2, A-SSE.3a, A-SSE.2, F-IF.6, F-LE.1b AP Calculus Standards: 2.5/2.8/2.12
Unit 4: Applications of Differentiation	• **Absolute Extrema on a closed interval** • Mean Value Theorem (MVT) • **Increasing and decreasing functions** • **First** and Second Derivative Tests • Concavity • Critical numbers and possible points of inflection • Limits at infinity: horizontal asymptotes • Curve sketching • Optimization Common Core: A-SSE.1a, A-SSE.1b, A-SSE.3 AP Calculus Standards: 2.6, 2.10, 2.12
Semester 2	**Highlights**
Unit 5: Integration	• Antiderivatives: indefinite integration: a “family” of antiderivatives • Initial conditions and c value • Relationship between position, velocity, and acceleration • Reverse power rule

	• Definite integral and area under a curve • Riemann sums • The Fundamental Theorem of Calculus (There are 2) • Integration by substitution (reverse chain rule) • If time allows --- finding area under a curve using infinite rectangles • Trapezoidal Rule AP Calculus Standards: 3.1, 3.2, 3.3,3.6, 3.4
Unit 6: Logarithmic and Exponential Functions	• Natural logarithm: differentiation and Integration • Properties of logarithms • Exponential functions (e^x): differentiation and integration AP Calculus Standards: 1.1, 1.4, 2.8,
Unit 7: Differential Equations	• Slope fields • Growth and decay • Separation of variables AP Calculus Standards: 2.12, 3.2
Unit 8: Applications of Integration	• Area between to curves (Previously area of a curve and x-axis) • Volume: disk method, shell method AP Calculus Standards: 3.5
Unit 9: Review for AP Exam	• L'Hopital's Rule (Last of new material) –limits • Free Response and MC

Throughout year will do free response problems and multiple-choice problems to familiarize students to the AP test format.
Portions of some assessments will be no calculator.

The bolded highlights are first introduced semester 2 of Honors Pre-Calculus