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**SCOPE AND SEQUENCE (2012 - 2013)**

**AP Calculus AB**

**UNIT 1** (August 13 – August 24): **Functions and Models**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| August 13–24 | * Summer Homework Review * Graphing Review * Summer Homework Assessment | Pre-AP Study Guide, Diagnostic Test, Graphing Packet | * Functions * Graphing * Factoring |

**UNIT 2** (August 27 – October 14): **Limits and Continuity**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| August 27 – September 7 | * Limit of a Function * Calculating Limits Using the Limit Laws * The Precise Definition of a Limit | Stewart, Chapter 2.2, 2.3, 2.4 | * Limit * Tangent * Evaluating limits * Calculating limits using Algebra |
| September 10 – September 20 | * Continuity * Limits at Infinity; Horizontal Asymptotes * Tangents, Velocities, and Other Rates of Change * Unit Assessment, Remediation, Enrichment | Stewart, Ch. 2.5, 2.6, 2.7 | * Understanding continuity in terms of limits * Limits at infinity * Asymptotes * Tangent * Velocity * Rate of change |

**UNIT 3** (September 24 – November 18): **Derivatives**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| September 24 - 28 | * Derivatives * Derivative as a Function | Stewart, Ch. 2.8, 2.9 | * Derivative * Tangent * Graph sketching * Differentiability * Continuity |
| October 1 – October 18  **Benchmark 1**  **October 8 - 18** | * Derivatives of Polynomials and Exponential Functions * The Product and Quotient Rules | Stewart, Ch. 3.1, 3.2 | * Derivative of basic functions * Derivative of a product * Derivative of a quotient |
| October 22 – November 9 | * Rates of Change in the Natural and Social Sciences * Derivative of Trigonometric and Logarithmic Functions * The Chain Rule * Implicit Differentiation * Higher Derivatives * Related Rates | Stewart, Ch. 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.10 | * Derivative of basic functions * Chain rule * Implicit differentiation * Particle motion on a line |
| November 13 – November 14 | * Unit 3 Test, Remediation, Enrichment |  |  |

**UNIT 4** (November 13 – December 21): **Application of Derivatives**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| November 15 – December 11 | * Maximum and Minimum Values * The Mean Value Theorem * How Derivatives Affect the Shape of a Graph * Indeterminate forms and L’Hospital’s Rule * Summary of Curve Sketching | Stewart, Ch. 4.1, 4.2, 4.3, 4.4, 4.5 | * Curve sketching * Concavity * Critical points * Analysis of curves * Corresponding characteristics of graphs *f* and *f’* * Local and global extrema * Mean Value Theorem * Points of inflection |
| December 12 –21  **Benchmark 2**  **December 3 - 20** | * Final Exams * Benchmark 2 Review, Remediation, and Enrichment * Unit 4 Review and Assessment |  |  |

**UNIT 5** (January 3 – February 1): **Integrals**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| January 3 - 11 | * Optimization Problems * Application to Business and Economics | Stewart, Ch. 4.7, 4.8 | * Absolute maximum and minimum |
| January 14 – February 1 | * Areas and Distances * The Definite Integral * The Fundamental Theorem of Calculus * Indefinite Integrals and the Net Change Theorem * The Substitution Rule * Unit 5 Test | Stewart, Ch. 5.1, 5.2, 5.3, 5.4, 5.5 | * Computation of left Riemann sum * Computation of right Riemann sum * Fundamental Theorem of Calculus * Summation notation * Trapezoidal approximation |

**UNIT 6** (February 4 – March 14): **Application of Integration**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| February 4 – March 1 | * Areas Between Curves * Volumes * Average Value of a Function * Unit 6 Test, Remediation, Enrichment | Stewart, Ch. 6.1, 6.2, 6.5 | * Area of a region * Average value of a function * Volumes of Revolution * Integration as an accumulation process * Disk, washer and shell methods |
| March 1 – March 14  **Benchmark 3** | * Benchmark 3 Review, Remediation and Enrichment |  |  |

**UNIT 7** (March 25 – May 3): **AP Exam Review**

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| **DATES** | **TOPICS** | **TEXT/ RESOURCES** | **CONCEPTS** |
| March 25 – May 3 | * Limits * Derivatives * Chain Rule * Application of Derivatives (Mean Value Theorem, Tangent Lines) * Graphing: Minimum, Maximum, Concavity * Motion Problems * Basic Integration * Area Between the Curves * Volumes of Revolution | Stewart textbook, |  |