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| SLPS.gifADVANCED PLACEMENT INCENTIVE PROGRAM (APIP)**AP CALCULUS AB****Scope and Sequence** |
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| 2012 - 2013 |

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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
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**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
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**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
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**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
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**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
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**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, |  |