# AP Calculus Curriculum Map

| **Standards** | **Content** | **Skills/Practices** | **Materials/ Resources** | **Assessments (All)** Daily/Weekly/ Benchmarks | **Timeline** (Months/Weeks /Days) |
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| Link for more detail from the College Board<br><br>https://apcentral.collegeboard.org/pdf/ap-calculus-ab-and-bc-course-and-exam-description.pdf | Unit 1<br>Limits and Continuity | 1.1 Introducing calculus: Can change occur at an instant?<br><br>1.2 Defining limits and using limit notation<br><br>1.3 Estimating limit values from graphs.<br><br>1.4 Estimating limit values from tables.<br><br>1.5 Determining limits using algebraic properties of limits.<br><br>1.6 Determining limits using algebraic manipulation. | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | September<br>October |

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| | | 1.7 Selecting procedures for determining limits.<br><br>1.8 Determining limits using the squeeze theorem.<br><br>1.9 Connecting multiple representations of limits.<br><br>1.10 Exploring types of discontinuities.<br><br>1.11 Defining continuity at a point.<br><br>1.12 confirming continuity over an interval.<br><br>1.13 Removing discontinuities.<br><br>1.14 Connecting infinite limits and vertical asymptotes | | | |

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| | | 1.15 Conncting limits at infinity and horizontal asymptotes.<br><br>1.16 Working with the intermediate value theorem (IVT) | | | |
| | Unit 2<br><br>Differentiation: Definition and basic derivative rules | 2.1 Defining average and instantaneous rates of change at a point.<br><br>2.2 Defining derivative of a function and using derivative notation<br><br>2.3 Estimating derivatives of a function at a point.<br><br>2.4 Connecting differentiability and continuity: Determining when derivatives do and do not exist.<br><br>2.5 Applying the | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | October<br>November |

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| | | power rule.<br><br>2.6 Derivative rules: Constant, sum, difference, and constant multiple<br><br>2.7 Derivatives of cos x, sin x, e^x, and ln x<br><br>2.8 The product rule<br><br>2.9 The quotient rule.<br><br>2.10 Finding the derivatives of Tangent, Cotangent, secant, and/or Cosecant functions. | | | |
| | Unit 3<br>Differentiation: Composite, implicit, and inverse functions | 3.1 The chain rule<br><br>3.2 Implicit differentiation<br><br>3.3 Differentiating inverse functions | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | November |

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| | | 3.4 Differentiating inverse trigonometric functions<br><br>3.5 Selecting procedures for calculating derivatives<br><br>3.6 Calculating higher order derivatives | | | |
| | Unit 4<br>Contextual applications of differentiation | 4.1 Interpreting the meaning of the derivative in context.<br><br>4.2 Straight line motion: connecting position, velocity, and acceleration.<br><br>4.3 Rates of change in applied contexts other than motion.<br><br>4.4 Introduction to related rates.<br><br>4.5 Solving related | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | November<br>December |

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| | | rates problems.<br><br>4.6 Approximating values of a function using local linearity and linearization<br><br>4.7 Using L'Hospital's rule for determining limits of indeterminate form. | | | |
| | Unit 5<br>Analytical applications of differentiation | 5.1 Using the mean value theorem.<br><br>5.2 Extreme value theorem, global versus local extrema, and critical points<br><br>5.3 Determining intervals on which a function is increasing or decreasing.<br><br>5.4 using first derivative test to | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | December<br>January |

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| | | determine relative (local) extrema.<br><br>5.5 Using candidates test to determine absolute (global) extrema<br><br>5.6 Determining the concavity of functions over their domains.<br><br>5.7 Using second derivative test to determine extrema.<br><br>5.8 Sketching graphs of functions and their derivatives.<br><br>5.9 Connecting a function, its first derivative, and its second derivative.<br><br>5.10 Introduction to optimization problems. | | | |

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| | | 5.11 Solving optimization problems.<br><br>5.12 Exploring behaviors of implicit relations. | | | |
| | Unit 6<br>Integration and accumulation of change | 6.1 Exploring accumulations of change<br><br>6.2 Approximating areas with Riemann sums.<br><br>6.3 Riemann sums, summation notation, and definite integral notation.<br><br>6.4 The fundamental theorem of calculus and accumulation functions.<br><br>6.5 Interpretingthe behavior of accumulation functions involving | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | February<br>March |

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| | | area.<br><br>6.6 Applying properties of definite integrals<br><br>6.7 The fundamental theorem of calculus and definite integrals<br><br>6.8 Finding antiderivatives and indefinite integrals: basic rules and notation.<br><br>6.9 Integrating using substitution.<br><br>6.10 Integrating functions using long division and completing the square.<br><br>6.11-6.12 BC ONLY<br><br>6.14 Selecting techniques fo antidifferentiation. | | | |

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| | Unit 7<br>Differential equations | 7.1 Modeling situations with differential equations.<br><br>7.2 Verifying solutions for differential equations.<br><br>7.3 sketching slope fields.<br><br>7.4 Reasoning using slope fields.<br><br>7.5 BC Only<br><br>7.6 Finding general solutions using separation of variables.<br><br>7.7 Finding particular solutions using initial conditions and separation of variables.<br><br>7.8 Exponential models with differential | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | March<br>April |

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| | | equations. | | | |
| | Unit 8<br>Applications of integration | 8.1 Finding teh average values of a function on an interval<br><br>8.2 Connecting position, velocity, and acceleration of functions using integrals.<br><br>8.3 Using accumulation functions and definite integrals in applied contexts.<br><br>8.4 Finding the area between curves expressed as functions of x<br><br>8.5 Finding the area between curves expressed as functions of y.<br><br>8.6 Finding the area between curves that intersect at more | Textbook<br>AP questions<br>College Board materials<br>Teacher created materials | Homework<br>Quizzes<br>Tests<br>Personal Progress Checks from the College Board | April<br>May |

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| | | than two points.<br><br>8.7 Volumes with cross sections: squares and rectangles<br><br>8.8 Volumes with cross sections: triangles and semicircles<br><br>8.9 Volume with disc method: revolving around the x- or y-axis.<br><br>8.10 Volume with disc method: revolving around other axes.<br><br>8.11 Volume with washer method: revolving around the x- or y-axis<br><br>8.12 Volume with washer method: revolving around other axes. | | | |
| | AP EXAM REVIEW | | Textbook | Homework | May |

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| | | | AP questions<br>College Board materials<br>Teacher created materials | Quizzes<br>Tests<br>Personal Progress Checks from the College Board | June |