MCS AP Calculus BC Subject Group Overview

Unit Name	Unit 1: Limits & Continuity	Unit 2: Differentiation: Definition and Basic Derivative Rules	Unit 3: Differentiation: Composite, Implicit, and Inverse Function	Unit 4: Contextual Applications of Differentiation	Unit 5: Analytical Applications of Differentiation
Time Frame	3 Weeks	2 Weeks	2 Weeks	2 Weeks	3 Weeks
Standards	AP Calc BC 1.1-1.16	AP Calc BC 2.1-2.10	AP Calc BC 3.1-3.6	AP Calc BC 4.1-4.7	AP Calc BC 5.1-5.12
Content Specific Information	1.1 Introducing Calculus: Can change occur at an instant? 1.2 Defining limits and using limit notation 1.3 Estimating limit values from graphs 1.4 Estimating limit values from tables 1.5 Determining limits using algebraic properties of limits 1.6 Determining limits using algebraic manipulation 1.7 Selecting procedures for determining limits 1.8 Determining limits using the Squeeze Theorem 1.9 Connecting multiple representations of limits 1.10 Exploring types of discontinuities 1.11 Defining continuity at a point 1.12 Confirming continuity over an interval 1.13 Removing discontinuities 1.14 Connecting infinite limits and vertical asymptotes 1.15 Connecting limits at infinity and horizontal asymptotes 1.16 Working with the Intermediate Value Theorem (IVT)	2.1 Defining average and instantaneous rates of change 2.2 Defining the derivative of a function and using derivative notation 2.3 Estimating derivatives of a function at a point 2.4 Connecting differentiability with continuity 2.5 Applying the power rule 2.6 Derivative rules: constant, sum, difference, and constant multiple 2.7 Derivative of cos(x), sin(x), e^x, and ln(x) 2.8 The product rule 2.9 The quotient rule 2.10 Finding the derivatives of tangent, cotangent, secant, and/or cosecant functions	3.1 The chain rule 3.2 Implicit differentiation 3.3 Differentiation inverse functions 3.4 Differentiation inverse trigonometric functions 3.5 Selecting procedures for calculating derivatives 3.6 Calculative higher order derivatives	4.1 Interpreting the meaning of the derivative in context 4.2 Straight-line motion: Connecting position, velocity, and acceleration 4.3 Rates of change in applied contexts other than motion 4.4 Introduction to related rates 4.5 Solving related rates problems 4.6 Approximating values of a function using local linearity and linearization 4.7 Using L'Hospital's rule for determining limits of indeterminate forms	5.1 Using the mean value theorem 5.2 Extreme value theorem, global versus local extrema, and critical points 5.3 Determining intervals on which a function is increasing or decreasing 5.4 Using the first derivative test to determine relative (local) extrema 5.5 Using the candidates test to determine absolute (global) extrema 5.6 Determining concavity of functions over their domains 5.7 Using the second derivative test to determine extrema 5.8 Sketching graphs of functions and their derivatives 5.9 Connecting a function, its first derivative, and its second derivative
Common Assessments/ Performance Projects	Homework Quizzes Formative Assessments Summative Assessment	Homework Quizzes Formative Assessments Summative Assessment	Homework Quizzes Formative Assessments Summative Assessment	Homework Quizzes Formative Assessments Summative Assessment	Homework Quizzes Formative Assessments Summative Assessment
Differentiation For Tiered Learners	Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.				

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Unit Name	Unit 6: Integration & Accumulation of Change	MHS Unit 7 AP Unit 8: Applications of Integration	MHS Unit 8 AP Unit 10: Infinite Sequences & Series	MHS Unit 9 AP Unit 7: Differential Equations	MHS Unit 10 AP Unit 9: Parametric Equations, Polar Coordinates, and Vector-valued Functions
Time Frame	3 Weeks	3 Weeks	5 Weeks	3 Weeks	4 weeks
Standards	AP Calc BC 6.1-6.14	AP Calc BC 8.1-8.13	AP Calc BC 10.1-10.15	AP Calc BC 7.1-7.9	AP Calc BC 9.1-9.9
Content Specific Information	6.1 Exploring accumulations of change 6.2 Approximating areas with Reimann sums 6.3 Riemann sums, summation notation, and definite integral notation 6.4 The fundamental theorem of calculus and accumulation functions 6.5 Interpreting the behavior of accumulation functions involving area 6.6 Applying properties of definite integrals 6.7 The fundamental theorem of calculus and definite integrals 6.8 Finding antiderivatives and indefinite integrals: basic rules and notation 6.9 Integrating using substitution 6.10 Integrating functions using long division and completing the square 6.11 Integrating using integration by parts 6.12 Using linear partial fractions 6.13 Evaluating improper integrals 6.14 Selecting techniques for antidifferentiation	8.1 Finding the average value of a function on an interval 8.2 Connecting position, velocity, and acceleration of functions using integrals 8.3 Using accumulation functions and definite integrals in applied contexts 8.4 Finding the area between curves expressed as functions of y 8.5 Finding the area between curves expressed as functions of y 8.6 Finding the area between curves that intersect at more than two points 8.7 Volumes with cross sections: squares and rectangles 8.8 Volumes with cross sections: triangles and semicircles 8.9 Volume with disc method: revolving around the x- or y-axis 8.10 Volume with disc method: revolving around other axes 8.11 Volume with washer method: Revolving around the x- or y-axis 8.12 Volume with washer method: revolving around other axes 8.13 The arc length of a smooth, planar curve and distance traveled	10.1 Defining convergent and divergent infinite series 10.2 Working with geometric series 10.3 The nth term test for divergence 10.4 Integral test for convergence 10.5 Harmonic series and p-series 10.6 Comparison tests for convergence 10.7 Alternating series test for convergence 10.8 Ratio test for convergence 10.9 Determining absolute or conditional convergence 10.10 Alternating series error bound 10.11 Finding taylor polynomial approximations of functions 10.12 Lagrange error bound 10.13 Radius and interval of convergence of power series 10.14 Finding Taylor or Maclaurin series for a function 10.15 Representing functions as power series	7.1 Modeling situations with differential equations 7.2 Verifying solutions for differential equations 7.3 Sketching slope fields 7.4 Reasoning using slope fields 7.5 Approximating solutions using Euler's method 7.6 Finding general solutions using separation of variables 7.7 FInding particular solutions using initial conditions and separation of variables 7.8 Exponential models with differential equations 7.9 Logistic models with differential equations	9.1 Defining and differentiating parametric equations 9.2 Second derivatives of parametric equations 9.3 Finding arc lengths of curves given parametric equations 9.4 Defining and differentiating vector-valued functions 9.5 Integrating vector-valued functions 9.6 Solving motion problems using parametric and vector-valued functions 9.7 Defining polar coordinates and differentiating in polar form 9.8 Find the area of a polar region or the area bounded by a single polar curve 9.9 Find the area of the region bounded by two polar curves
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Differentiation For Tiered Learners	Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.				