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2019 AP® Calculus Course Framework (CF)
Alignment to *Calculus for AP* Rogawski & Cannon 2/e

CF Unit	2019 Course Framework Unit Title	Second Edition Chapter/Section	Recommendations and Observations
1	Limits and Continuity	***Limits and Continuity*** 2.1 Limits, Rates of Change, Tangent lines 2.2 Limits: A numerical and Graphical Approach 2.3 Basic Limit Laws 2.4 Limits and Continuity 2.5 Evaluating Limits Algebraically 2.6 Trigonometric Limits 2.7 Limits at Infinity 2.8 Intermediate Value Theorem	L'Hospital's Rule, a limit topic, is taught in Unit 4 Topic 7 (below) After completing these sections, you can use the **Personal Progress Check 1** This topic may be omitted or used for enrichment. It is not tested on the AP Calculus exams: 2.9 The Formal Definition of Limit
2	Differentiation: Definition and Basic Derivative Rules	***The Derivative*** 2.1 Limits, Rates of Change, Tangent lines 3.1 Definition of Derivative 3.2 The Derivative of a Function 3.3 Product and Quotient Rules 3.4 Rates of Change 3.6 Trigonometric Functions	After completing these sections, you can use the **Personal Progress Check 2**
3	Differentiation: Composite, Implicit, and Inverse Functions	***More About Derivatives*** 3.5 Higher Derivatives 3.7 The chain Rule 3.8 Derivatives of Inverse Functions 3.9 Derivatives of General Exponential and Logarithmic Functions 3.10 Implicit Differentiation	After completing these sections, you can use the **Personal Progress Check 3**
4	Contextual Applications of Differentiation	3.4 Rates of Change 3.11 Related Rates 4.1 Local Approximation and Applications 4.5 L'Hospital's Rule	Linear motion is mentioned in 3.4 Rates of Change. This topic should be supplemented with actual AP exam questions. After completing these sections, you can use the **Personal Progress Check 4**.

5	Analytical Applications of Differentiation	4.2 Extreme Values 4.3 The Mean Value Theorem and Monotonicity 4.4 The Shape of a Graph 4.6 Graph Sketching and Asymptotes	After completing these sections, you can use the **Personal Progress Check 5**. These sections/topics may be omitted or used for enrichment. They are not tested on the AP Calculus exams 4.7 Applied Optimization – the setup of this type of problem is not tested on the AP calculus exams; finding extreme values is tested. 4.8 Newton's Method is not tested on the AP Calculus exams.
6	Integration and Accumulation of Change	***The Integral*** 5.1 Approximating and Computing Area 5.2 The Definite Integral 5.3 The Fundamental theorem of Calculus Part 1 5.4 The Fundamental theorem of Calculus Part 2 5.5 Net Change as Integral of Rate ***Techniques of Integration*** 5.6 Substitution Method 5.7 Further Transcendental Functions 7.1 Integration by Parts **BC ONLY** 7.5 Method of Partial Fractions **BC ONLY** 7.6 Improper Integrals 7.8 Numerical Integration (omit error bounds)	After completing these sections, you can use the **Personal Progress Check 6**. These sections/topics may be omitted or used for enrichment. They are not tested on the AP Calculus exams: 7.2 Trigonometric Integrals 7.4 Trigonometric Substitution 7.5 Integrals Involving Hyperbolic and Inverse Hyperbolic Functions 7.7 Probably and Integration
7	Differential Equations	9.1 Solving Differential Equations 5.8 Exponential Growth and Decay 9.2 Models Involving $y' = k(y - b)$ 9.3 Graphical and Numerical Methods (Slope Fields (**AB & BC**), Euler's Method (**BC ONLY**)) 9.4 The Logistic Equation **BC ONLY**	After completing these sections, you can use the **Personal Progress Check 7**. This topic may be omitted or used for enrichment. It is not tested on the AP Calculus exams: 9.5 First-Order Linear Equations

8	Applications of Integration	***Applications of the Integral*** 6.1 Area Between Two Curves 6.2 Setting Up Integrals: Volume, Density, Average Value 6.3 Volumes of Revolution 8.1 Arc Length (include distance traveled, omit Surface area)	Supplement from past AP exams: Connecting Position, Velocity, and Acceleration of Functions Using Integrals After completing these sections, you can use the **Personal Progress Check 8.** These sections/topics may be omitted or used for enrichment. They are not tested on the AP Calculus exams: 6.4 Method of Cylindrical Shells 6.5 Work and Entergy
9	Parametric Equations, Polar Coordinates, and Vector-Valued Functions **BC ONLY**	***Parametric Equations; Polar Equations, Vector Functions*** 11.1 Parametric Equations 11.2 Arc Length and Speed 11.3 Polar Coordinates 11.4 Area, Arc Length and Speed in Polar Coordinates (omit arc length) 11. 5 Vectors in the Plane 11.7 Calculus of Vector-Valued Functions (omit Dot product)	After completing these sections, you can use the **Personal Progress Check 9**. This topic may be omitted or used for enrichment. It is not tested on the AP Calculus exams: 11.6 Dot Product and Angle Between Vectors
10	Infinite Sequences and Series **BC ONLY**	***Infinite Series*** 8.4 Taylor Polynomials 10.1 Sequences 10.2 Summing and Infinite Series 10.3 Convergence of series with Positive Terms 10.4 Absolute and Conditional Convergence 10.5 Ratio and Root Tests 10.6 Power Series 10.7 Taylor Series	After completing these sections, you can use the **Personal Progress Check 10**. This topic may be omitted or used for enrichment. It is not tested on the AP Calculus exams: From 10.5 The root test is not tested.