In AP Calculus AB, students learn to understand change geometrically and visually (by studying graphs of curves), analytically (by studying and working with mathematical formulas), numerically (by seeing patterns in sets of numbers), and verbally. Instead of simply getting the right answer, students learn to evaluate the soundness of proposed solutions and to apply mathematical reasoning to real-world models. Calculus helps scientists, engineers, and financial analysts understand the complex relationships behind real-world phenomena. The equivalent of an introductory college-level calculus course, AP Calculus AB prepares students for the AP exam and further studies in science, engineering, and mathematics.

This course has been authorized by the College Board® to use the AP designation.

Length: Two semesters

UNIT 1: PRECALCULUS REVIEW

UNIT 2: BRIDGE TO CALCULUS

- Lesson 1: Intro to Calculus
- Lesson 2: Functions
- Lesson 3: Graphical Symmetry
- Lesson 4: Patterns in Graphs: Parameters
- Lesson 5: Bridge to Calculus Wrap-Up

UNIT 3: LIMITS AND CONTINUITY

- Lesson 1: Limits and Continuity
- Lesson 2: Asymptotic and Unbounded Behavior
- Lesson 3: Continuous Functions
- Lesson 4: Limits and Continuity Wrap-Up

UNIT 4: DERIVATIVES

- Lesson 1: Derivatives at a Point
- Lesson 2: Computing Derivatives
- Lesson 3: Derivative as a Function
- Lesson 4: Higher-Order Derivatives
- Lesson 5: Chain Rule and Implicit Differentiation
- Lesson 6: Derivatives Wrap-Up

UNIT 5: RATES OF CHANGE

- Lesson 1: Extrema and Optimization
- Lesson 2: Tangent and Normal Lines
- Lesson 3: Rates of Change
- Lesson 4: Related Rates
- Lesson 5: Rectilinear Motion
- Lesson 6: Semester Wrap-Up

UNIT 6: THE INTEGRAL AND THE FUNDAMENTAL THEOREM OF CALCULUS

- Lesson 1: Area Under a Curve
- Lesson 2: Definite Integrals

- Lesson 3: Antiderivatives
- Lesson 4: The Fundamental Theorems of Calculus
- Lesson 5: The Integral and the Fundamental Theorem of Calculus Wrap-Up

UNIT 7: APPLICATIONS OF THE INTEGRAL

- Lesson 1: Area
- Lesson 2: Volume
- Lesson 3: Other Applications of the Definite Integral
- Lesson 4: Applications of the Integral Wrap-Up

UNIT 8: INVERSE AND TRANSCENDENTAL FUNCTIONS

- Lesson 1: Inverse Functions
- Lesson 2: Review of Logarithmic and Exponential Functions
- Lesson 3: Computation of Derivatives for Some Transcendental Functions
- Lesson 4: Integrals of Some Transcendental Functions
- Lesson 5: Inverse and Transcendental Functions Wrap-Up

UNIT 9: SEPARABLE DIFFERENTIAL EQUATIONS AND SLOPE FIELDS

- Lesson 1: Separable Differential Equations
- Lesson 2: Exponential Growth and Decay and Related Applications
- Lesson 3: Separable Differential Equations and Slope Fields Wrap-Up

UNIT 10: AP EXAM REVIEW AND FINAL EXAM

- Lesson 1: Calculus as a Cohesive Whole
- Lesson 2: Review of Topics
- Lesson 3: Practice Final Exams
- Lesson 4: Final Exam