Course Overview

Content Area: **Mathematics**
Course(s): **Calculus**
Time Period: **Year**
Length:
Status: **Published**

Course Overview

Aligned to Standards: College Board
Revision Date: 2017
In compliance with the NJ Student Learning Standards, climate change, career readiness, DEI (Diversity, Equity, & Inclusivity), as well as other standards have been integrated within the NBCRSD curricula (NJ Administrative Code Title 6A: chapter 8; Title 18A: chapter 35).

Course Overview
Sequence- Unit Titles, Summaries, and Number of weeks per unit (total = 18 semester/36 year)

Unit 1: Preparation for Calculus - 4 weeks

This unit reviews the most important algebra and precalculus topics that are required in Calculus I: Function Notation, Function evaluation, Composite functions, Solving equations (polynomial, exponential and trigonometric), and slope of the equation of a line.

Unit 2: Limits and their Properties - 8 weeks
This unit is an introduction of limits, taken both numerically and analytically with the goal of leading to calculus concepts of continuity and differentiability.

Unit 3: Differentiation - 12 weeks weeks

This unit starts by using the limit to extent the definition of the slope between 2 points in algebra 1 to the instantaneous slope at a single point.

With the derivative being defined we move on to rules of differentiation: Product and Quotient Rule, Chain Rule, Conditions for differentiability, Tabular differentiation.

Unit 4: Applications of Differentiation - 8 weeks

This chapter applies the derivative to situations requiring topics such as: Projectile motion and higher order derivatives, Curve sketching ,The Mean value theorem, Functional analysis and extrema, L'Hôpital's rule, Related rates, Optimization

Unit 5: Integration - 8 weeks

The fundamental theorem of calculus introduces key concepts of: The existence of an antiderivative, An acculturation of change done by a rate function, The area underneath a curve, Reimann sums, The average value of a function, Volumes created by cross section

and revolution Advanced technique include: U-substitution and applications include Arc length and Euler's Method.

[Reporting Student Progress](link) **(link to NB's Assessment System)**
All courses follow a balanced assessment system with Practice and Assessments.
Each category includes formative, summative and alternative assessments.

[Accommodations and Modifications](link) **(link to menu)**
Integrated accommodations and modifications for special education students, English language learners, students at risk of school failure, gifted and talented students, and students with 504 plans.