

Mathematics Department
Brooklyn College, City University of New York
Math 1201 (Calculus I) Syllabus

4 hours, 4 credits

An asterisk (*) indicates optional topics

Background

Review of precalculus material

Limits

Introduction to limit concept

Numerical evaluation of limits

One-sided limits

Continuity

Limits of and at infinity

Continuity

Intermediate value theorem (bisection methods)

Introduction to the Derivative

Formal definition of the derivative

*numerical methods

Differentiation of algebraic, trigonometric, and exponential functions

Applications of the Derivative.

*Newton's Method for finding roots

Implicit differentiation

Derivatives of inverse functions

Related rates

Second and higher order derivatives

Graphing based on derivatives

Optimization (Applications to biology, economics, chemistry)

Anti-differentiation

Introduction to anti-derivatives

Applications to physics

The Riemann Integral

Introduction to Riemann sums

Approximating areas using summations

The definite integral

Applications

The Fundamental Theorem of Calculus

Approved by the Mathematics Department Curriculum Committee November 26, 2013.