Catalog Description:
Single variable calculus treated in depth.

Prerequisites:
1151 or 151.xx, and permission of department.

Exclusions:
Not open to students with credit for any higher numbered math class.

Text:
Calculus with Analytic Geometry, 2nd edition, by Simmons, published by McGraw-Hill, ISBN: 9780070576424

Topics:

2.1	The Problem of Tangents
2.2	How to Calculate the Slope of the Tangent
2.3	The definition of the Derivative
2.4	Velocity and Rate of Change
2.5	The Concept of a Limit; Two Trigonometric Limits
A2	Theorems about Limits;
3.1	Derivatives of Polynomials
3.2	The Product and Quotient Rules
3.3	Composite Functions and the Chain Rule
3.4	Some trig Derivatives;
3.5	Implicit Functions and Fractional Exponents
3.6	Derivatives of Higher Order
12.2	Indeterminate Form 0/0, L'Hopital's Rule
4.1	Increasing and Decreasing Functions, Maxima and Minima
4.2	Concavity and Points of Inflection
4.3	Applied Maxima and Minima Problems
4.4	Reflection & Refraction
4.5	Related Rates
2.6	Continuous Functions
A4	The Mean Value Theorem
	Midterm I
5.2	Differentials and Tangent Line Approx'n
5.3	Indefinite Integrals, Integration by Substitution;
5.4	Differential Equations, Separation of Variables
6.1	Introduction
6.2	The Problem of Areas.
6.3	The Sigma Notation and Certain Special Sums
6.4	Area under a Curve, Definite Integrals, Riemann
6.5	The Computation of Areas as Limits;
6.6	The Fundamental Theorem of Calculus

6.7	Algebraic and Geometric Areas
7.2	Area between Two Curves;
7.3	Volumes: The Disk Method
7.4	Volumes: The Method of Cylindrical Shells
7.5; 7.6	Arc Length; Area of a Surface of Revolution
7.7	Work and Energy
8.2	Review of Exponents and Logarithms;
8.3	The number e and the function y=e^x
8.4	The Natural Logarithm Function, Euler
8.5	Applications, Population Growth and Radioactive Decay
9.1; 9.2	Review of Trig.; Der've and Integrals of Sin and Cos
9.3; 9.4	Der've of the Other Four Fns
9.5	The Inverse Trig Functions
9.6; 9.7	Simple Harmonic Motion; (“Optional”) Hyperbolic Functions

MIDTERM 2

10.1; 10.2	Basic Formulas; Method of Substitution
10.3: 10.4	Certain Trig Integrals; Trig Substitutions;
10.5; 10.6	Completing the Square
10.7	Integration by Parts
10.8	Strategy for Dealing with Integrals
12.2; 12.3	Indeterminate Form 0/0, L'Hopital's Rule; Other Indeterminate Forms
12.3; 12.4	Improper Integrals
13.1	What is an Infinite Series?;
13.2	Convergent Sequences
13.3	Convergent and Divergent Series
13.4	General Properties of Convergent Series
13.5	Series of Non-negative Terms, Compar. Tests
13.6	Integral Test, Euler's Constant
13.7	Ratio and Root Test
13.8	Alternating Series Test, Absolute Convergence

MIDTERM 3

14.2	The Interval of Convergence
14.3	Differentiation and Integration of Power Series
14.4	Taylor' Series and Taylor's Formula
14.5	Computations Using Taylor's Formula
14.6	Applications to Differential Equations
14.8	Operations on Power Series

FINAL