Catalog Description:
Differential and integral calculus of one real variable.

Prerequisites:
Math Placement Level L and previous calculus experience.

Exclusions:
For 1161.01: Not open to students with credit for any math course numbered 1152 or higher, or for the quarter-system math courses 151.xx and 152.xx, or for any quarter-system course numbered 162.xx or higher.
For 1161.02: Intended for students in Freshman Engineering Honors.

Text:

Topics:
2.1; 2.2 The Idea of Limits; Definition of Limits
2.2; 2.3 Definition of Limits; Limit Laws
2.4; 2.5 Infinite Limits; Limits at Infinity
2.5; 2.6 Limits at Infinity; Continuity, the Intermediate Value Theorem
2.7 Precise Definition of Limits
3.1 Introducing the Derivative
3.2; 3.3 Rules of Differentiation; Product and Quotient Rules
3.4; 3.5 Derivatives of Trig Functions; Derivatives as Rate of Change
3.5; 3.6 Derivatives as Rate of Change; The Chain Rule
3.7 Implicit Differentiation

Midterm 1
3.8; 3.9 Derivatives of Logarithms and Exponential Functions; Derivatives of Inverse Functions
3.10 Related Rates
4.1 Maxima and Minima
4.2; 4.3 What derivatives Tell Us; Graphing
4.4 Optimization Problems
4.5; 4.6 Linear Approximations and Differentials; Mean Value Theorem
4.6; 4.7 Mean Value Theorem; L'Hopital's Rule
4.9 Antiderivatives
5.1 Approximating Areas under Curves, Sigma Notation
5.2 Definite Integrals

Midterm 2

5.3 Fundamental Theorem of Calculus
5.4; 5.5 Working with Integrals; Substitution Rule
5.5; 6.1 Substitution Rule; Velocity and Net Change
6.2 Regions between Curves
6.3 Volumes by Slicing
6.4 Volumes by Shells
6.5; 6.6 11.5 Lengths of Curves; Surface Area
6.7 Physical Applications: Density & Mass, Work, Lifting Problems, Force & Pressure
6.8; 6.9 Log and Exponential Functions Again; Exponential Growth and Decay
7.1; 7.2 Integration: Basic Approaches; Integration by Parts

Midterm 3

7.3 Trig Integrals
7.4 Trig Substitutions
7.5 Partial Fractions
7.8 Improper Integrals

Final