



**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:**

*Calculus for Scientists and Engineers: Early Transcendentals*, 2nd OSU custom edition, by Briggs, Cochran, Gillett, Person, ISBN: 9781269753449

**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*