

University of South Carolina Lancaster
Division of Science and Mathematics

Math 141 Calculus I Course Outline

Instructor: Dr. Dwayne C. Brown (e-mail: dwayneb@gwm.sc.edu)

Office: 117 Hubbard Hall (Telephone: 313-7037)

Office Hours: Monday and Wednesday 8:30am to 9am and 12noon to 1pm
Tuesday and Thursday 12:15pm to 1pm and 2:15pm to 3pm
Friday 9am to 10am and 11am to 12noon
& by appointment

Required Text: 'Calculus-Early Transcendentals', by Anton, Bivens & Davis; 8th ed.

Grading Policy: There will be 6 in-class exams (worth 100pts each), 1 Homework Journal (worth 100pts), 1 Maple/Equation Editor exam (worth 100pts), and 1 cumulative final (worth 200pts). Grades will be determined by the percentage of points accumulated (1000 possible points).

Attendance Policy: Attendance is required and no unexcused absences are given. No late homework is accepted and you may make up exams only if arrangements are made prior to the date of the exam. Students are obligated to complete all assignments by the due dates and to participate in all class discussions.

Exam Schedule:

Exam #1	1/29	Ch2
Exam #2	2/12	Ch3
Exam #3	2/26	Ch4
Exam #4	3/20	Ch5
Exam #5	4/3	Ch6
Exam #6	4/22	Ch7
Maple Equation Editor	4/24	
Final Exam	5/6	(@ 8:30am)

Chapters and Sections Covered:

Chapter 2 Limits and Continuity

- 2.1 Limits (An Intuitive Approach)
- 2.2 Computing Limits
- 2.3 Limits at Infinity; End Behavior of a Function
- 2.4 Limits (Discussed More Rigorously)
- 2.5 Continuity
- 2.6 Continuity of Trigonometric and Inverse Functions

Chapter 3 The Derivative

- 3.1 Tangent Lines, Velocity, and General Rates of Change
- 3.2 The Derivative Function
- 3.3 Techniques of Differentiation
- 3.4 The Product and Quotient Rules
- 3.5 Derivatives of Trigonometric Functions
- 3.6 The Chain Rule
- 3.7 Related Rates
- 3.8 Local Linear Approximation; Differentials

Chapter 4 Derivatives of Logarithmic, Exponential and Inverse Trigonometric Functions

- 4.1 Implicit Differentiation
- 4.2 Derivatives of Logarithmic Functions
- 4.3 Derivatives of Exponential and Inverse Trigonometric Functions
- 4.4 L'Hopital's Rule; Indeterminate Forms

Chapter 5 The Derivative in Graphing and Applications

- 5.1 Analysis of Functions I: Increase, Decrease, and Concavity
- 5.2 Analysis of Functions II: Relative Extrema; Graphing Polynomials
- 5.3 More on Curve Sketching: Rational Functions and Other Curves;
- 5.4 Absolute Maxima and Minima
- 5.5 Applied Maximum and Minimum Problems
- 5.6 Newton's Method
- 5.7 Rolle's Theorem; Mean Value Theorem
- 5.8 Rectilinear Motion

Chapter 6 Integration

- 6.1 An Overview of the Area Problem
- 6.2 The Indefinite Integral
- 6.3 Integration by Substitution
- 6.4 The Definition of Area as a Limit; Sigma Notation
- 6.5 The Definite Integral
- 6.6 The Fundamental Theorem of Calculus
- 6.7 Rectilinear Motion Revisited Using Integration
- 6.8 Evaluating definite Integrals by Substitution
- 6.9 Logarithmic Functions from the Integral Point of View

Chapter 7 Applications of the Definite Integral in Geometry, Science
and Engineering

- 7.1 Area Between Two Curves
- 7.2 Volumes by Slicing; Disks and Washers
- 7.3 Volumes by Cylindrical Shell
- 7.4 Length of a Plane Curve
- 7.5 Area of a Surface of Revolution
- 7.6 Average Value of a Function and its Applications
- 7.7 Work
- 7.8 Fluid Pressure and Force

- 7.9 Hyperbolic Functions and Hanging Cables

Grading Scale (%):

*** See General Education Goals Below**

- A : 92-100
- B+: 88-91
- B : 82-87
- C+: 78-81
- C : 72-77
- D+: 68-71
- D : 60-67
- F : Below 60