

## **List of Student Learning Outcomes for Math 180**

### **Course Goal #1: Communication**

#### **Student Learning Outcomes (SLOs)**

**SLO 1:** Students will use correct mathematical notation and terminology

**SLO 2:** Students will be able to generate, read, and interpret graphs of functions

**SLO 3:** Students will be able to use functions that model real-world situations such as the profit of a business, the design of a box, and the height of a thrown ball.

**SLO 4:** Students will use the various notations for the derivative.

### **Course Goal #2: The Derivative**

#### **Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Student will be able to determine the slope of a straight line from a graph and from any of the forms of the equation, and interpret it as a rate of change.

**SLO 2:** Students will understand the slope of a curve at a point as the slope of the tangent line to the graph at that point, and will be able to determine the slope from a graphic representation and also analytically. They will be able to write the equation of the tangent line to a curve at a given point.

**SLO3:** Student will be able to determine when the limit of a function exists and when it doesn't, and to find limits algebraically and also from the graph of a function.

**SLO 4:** Students will be able to determine derivatives of simple functions using the limit definition, and will be able to apply the different rules of differentiation (power, product, quotient, chain)

**SLO 5:** Students will be able to use the graph of a function to explain why a function is or is not continuous or differentiable at a point.

### **Course Goal #3: Applications of the Derivative**

#### **Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Students will be able to describe the graph of a function as increasing or decreasing, concave up or concave down and relate these descriptions to the first and second derivatives.

**SLO 2:** Students will be able to use the first and second derivative to find relative maxima, relative minima, and inflection points.

**SLO 3:** Students will be able to sketch the graph of a function using numbers 1 and 2 above.

**SLO 4:** Students will be able to solve optimization problems using the concept of derivative.

**SLO5:** Students will be able to analyze and solve real-world problems involving exponential growth and decay.

**Course Goal #4: Integrals**

**Addresses UNM core area 2/ HED area II: Mathematics (Calculus)**

**SLO 1:** Students will be able to find anti-derivatives of various types of functions.

**SLO 2:** Students will be able to use the Fundamental Theorem of Calculus and the rules of integration to evaluate definite integrals of simple functions.

**SLO 3:** Students will be able to find areas under curves, and use the definite integral to solve applied problems