# MAT 310 – Calculus I

## Course Description

This course introduces the fundamental concepts of calculus. It includes geometric interpretation of the derivative and integral, techniques of differentiation, the first and second derivative test, curve sketching, the fundamental theorem of calculus, techniques of integration, and the area between two curves.

## Instructional Materials

Bittinger, M. L., & Ellenbogen, D. J. (2011).*Calculus and its applications* (10th ed.). Boston, MA: Pearson Custom Publishing.

## Course Learning Outcomes

1. Define and calculate limits.
2. Use difference quotients to express rates of change.
3. Differentiate using the limit of a difference quotient.
4. Use differentiation techniques, including the power rule, the sum-difference rule, the product rule, the quotient rule, the extended power rule, and the chain rule.
5. Relate the first and second derivatives of a function to the maxima, minima, critical values, inflection points, and concavity of that function.
6. Solve maximum-minimum problems using calculus.
7. Solve problems involving exponential and logarithmic functions.
8. Solve problems involving exponential growth and decay.
9. Communicate information about solving math problems in writing.