

Calculus I
KRSN MAT2010 – Calculus I

Institution	Course ID	Course Title	Credit Hours
Allen County CC	MAT 123	Calculus with Analytic Geometry I	5
Barton County CC	MATH 1832	Analytic Geometry and Calculus I	5
Butler CC	MA 151	Calculus I with Analytic Geometry	5
Cloud County CC	MA 120	Analytic Geometry and Calculus I	5
Coffeyville CC	MATH 115	Calculus with Analytic Geometry I	5
Colby CC	MA 220	Calculus I and Analytic Geometry	5
Cowley County CC	MTH 4435	Calculus I and Analytic Geometry	5
Dodge City CC	MATH 120	Analytic Geometry and Calculus I	5
Fort Scott CC	MAT 1015	Calculus I with Analytic Geometry	5
Garden City CC	MATH 122-01	Calculus I and Analytic Geometry	5
Highland CC	MAT 106	Calculus I	5
Hutchinson CC	MA 111/112H	Analytic Geometry and Calculus I	5
Independence CC	MAT1055	Analytic Geometry and Calculus I	5
Johnson County CC	MATH 241	Calculus I	5
Kansas City KCC	MATH 122	Calculus I	5
Labette CC	MATH 130	Calculus I	5
Neosho County CC	MATH 150	Analytic Geometry and Calculus I	5
Pratt CC	MTH 191	Analytic Geometry and Calculus I	5
Seward County CC	MA 2605	Analytic Geometry and Calculus I	5
Flint Hills TC			
Manhattan Area TC			
North Central KTC			
Northwest KTC	MATH 220	Analytical Geometry & Calculus I	5
Salina Area TC			
Wichita Area TC	MTH 125	Calculus I	5
Emporia St. U.	MA 161	Calculus I	5
Fort Hays St. U.	MATH 234	Calculus I	5
Kansas St. U.	MATH 220	Calculus I	4
Pittsburg St. U.	MATH 150	Calculus I	5
U. Of Kansas	MATH 121	Calculus I	5
Wichita St. U.	MATH 242	Calculus I	5
Washburn U.	MA 151	Calculus and Analytic Geometry	5

Calculus I MAT2010 CORE OUTCOMES

Upon completion of MAT2010, students will be able to:

The course outcomes for Calculus I included in this document apply to any Kansas public college or university teaching a calculus I course that is the equivalent of the first semester in a three-semester calculus sequence.

- I. Using Limits
 - a. Evaluation of Limits
 - Evaluate the limit of a function at a point both algebraically and graphically
 - Evaluate the limit of a function at infinity both algebraically and graphically
 - Use the definition of a limit to verify a value for the limit of a function
 - b. Use of Limits
 - Use the limit to determine the continuity of a function
 - Apply the Intermediate-Value Theorem
 - Use the limit to determine differentiability of a function
 - c. Limiting Process
 - Use the limiting process to find the derivative of a function
- II. Finding Derivatives
 - Find derivatives involving powers, exponents, and sums
 - Find derivatives involving products and quotients
 - Find derivatives involving the chain rule
 - Find derivatives involving exponential, logarithmic, and trigonometric functions
 - Find derivatives involving implicit differentiation
- III. Using Derivatives
 - a. Curve Sketching
 - Use the first derivative to find critical points
 - Apply the Mean-Value Theorem for derivatives
 - Determine the behavior of a function using the first derivative
 - Use the second derivative to find inflection points
 - Determine the concavity of a function using the second derivative
 - Sketch the graph of the function using information gathered from the first and second derivatives
 - Interpret graphs of functions
 - b. Applications of Derivatives
 - Use the derivative to find velocity, acceleration, and other rates of change
 - Use the derivative to find the equation of a line tangent to a curve at a given point
 - Use optimization techniques in areas such as economics, the life sciences, the physical sciences, and geometry
 - Solve related rates problems
 - Use Newton's Method
 - Use differentials to estimate change
- IV. Finding Integrals
 - Find area using Riemann sums and integrals
 - Express the limit of a Riemann sum as a definite integral
 - Evaluate the definite integral using geometry
 - Integrate algebraic, exponential, and trigonometric functions

- Evaluate definite integrals using the Fundamental Theorem of Calculus
- Apply the Mean-Value Theorem for integrals
- Integrate indefinite integrals
- Integrate using substitution
- Approximate integrals using Simpson's Rule and the Trapezoidal Rule