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	Calculus I and Analytic Geometry	5
Highland CC	MAT 106	Calculus I	5
Hutchinson CC	MA 111	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 0122	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	Not Offered	Not Offered	
Manhattan Area TC	Not Offered	Not Offered	
North Central KTC	Not Offered	Not Offered	
Northwest KTC	MATH 240	Analytic Geometry and Calculus I	5
Salina Area TC	Not Offered	Not Offered	
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 119	Calculus I	4
Wichita St. U.	MATH 242	Calculus I	5
Washburn U.	MA 151	Calculus and Analytic Geometry	5

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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