KRSN MAT2010 - Calculus I

Equivalent courses from Kansas public institutions for which core outcomes apply:

INSTITUTION	COURSE ID	COURSE TITLE	CREDIT HOURS
Allen CC	MAT 123	Calculus with Analytic Geometry I	5
Barton 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	Analytic Geometry and Calculus I	5
Cowley CC	MTH 4435	Calculus I	5
Dodge City CC	MATH 120	Analytic Geometry and Calculus I	5
Fort Scott CC	MAT 1015	Calculus I with Analytic Geometry I	5
Garden City CC	MATH 122	Calculus and Analytic Geometry I	5
Highland CC	MAT 106	Calculus I	5
Hutchinson CC	MA 111	Analytical Geometry and Calculus I	5
Independence CC	MAT 1055	Analytic Geometry and Calculus I	5
JCCC	MATH 241	Calculus I	5
KCKCC	MATH 0122	Calculus and Analytic Geometry 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
FHTC	Not Offered	Not Offered	
Manhattan Tech	Not Offered	Not Offered	
NCK Tech	Not Offered	Not Offered	
NWKTC	MATH 240	Analytic Geometry and Calculus I	5
SATC	MAT 160	Analytical Geometry and Calculus I	5
WSU Tech	MTH 125	Calculus I	5
ESU	MA 161	Calculus I	5
FHSU	MATH 234	Calculus I	5
KSU	MATH 220	Analytical Geometry and Calculus I	4
KU	MATH 125	Calculus I	4
PSU	MATH 150	Calculus I	5
Washburn	MA 151	Calculus and Analytic Geometry	5
WSU	MATH 242	Calculus I	5

For specific Institutional Transfer Articulation information, visit: [kansasregents.org/institutional-transfer-information.](kansasregents.org/institutional-transfer-information)

Revised 04/05/2018

Calculus I - *KRSN MAT2010* CORE OUTCOMES

Course Effective Date: Fall 2013
Outcome Approval Date: Fall 2017
Next Outcome Review Date: Fall 2022

Upon completion of this course, students will be able to:

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

d. Integrate algebraic, exponential, and trigonometric functions
e. Evaluate definite integrals using the Fundamental Theorem of Calculus
f. Apply the Mean-Value Theorem for integrals
g. Integrate indefinite integrals
h. Integrate using substitution
i. Approximate integrals using Simpson's Rule and the Trapezoidal Rule