Precalculus
MATH 217
Fall 2025

This course continues the mathematics preparation for successful completion of calculus. Topics include the operation and use of graphing utilities, the properties and graphs of rational functions, one-to-one and inverse functions, exponential and logarithmic functions, and trigonometric functions. Prerequisite: C- or higher in MATH 203 College Algebra or MATH 203S College Algebra with Integrated Support; waiver by placement testing results; or departmental approval.

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Use a graphing utility in order to apply these skills to further topics and problems in mathematics and related courses.	1. Use the graphing function of a graphing utility. (CT,TS) 2. Use the table function of a graphing utility. (CT,TS)
Graph rational functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Graph a rational function. (CT,QS,R,TS) a) Find the domain b) Find horizontal, vertical, and/or slant asymptotes c) Identify any symmetry d) Find x & y intercepts 2. Solve rational inequalities. (CT,QS,R,TS) 3. Evaluate the difference quotient for rational function. CT,QS,R)
Demonstrate knowledge of one-to-one and inverse functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Determine whether a function is one-to-one. (CT,QS,R) 2. Find the inverse of a function algebraically and graphically. (CT,QS,R,TS) 3. Verify that two functions are inverses of each other algebraically and graphically. (CT,QS,TS) 4. Find the domain and range of a function and its inverse. (CT,QS,TS) 5. Sketch the graph of a function and its inverse. (CT,TS)
Demonstrate knowledge of logarithmic and exponential functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Evaluate and graph exponential and logarithmic functions manually and on the calculator. (CT,QS,R,TS) 2. Convert between logarithmic and exponential forms. (CT,QS,R) 3. Use the change-of-base formula to rewrite and evaluate logarithmic functions with different bases. (CT,QS,R,TS) 4. Use properties of logarithms to evaluate, rewrite, expand or condense logarithmic expressions. (CT,QS,R) 5. Solve exponential and logarithmic equations.

	(CT,QS,R,TS) 6. Solve applied problems using exponential and logarithmic functions. (CT,QS,R,TS,W)
Demonstrate knowledge of the trigonometric functions in order to apply these skills to further topics and problems in mathematics and related courses.	1. Convert between degree and radian measure. (CT,QS,R,TS) 2. Evaluate trigonometric functions of any angle. (CT,QS,R,TS) 3. Determine the domain, range, and period of a trigonometric function. (CT,QS,R) 4. Sketch the graphs of the six trigonometric functions. Such as $y = a \sin(bx + c)$ (CT,QS,R,TS) 5. Determine the period, amplitude, phase shift, and graph of a sinusoidal function. (CT,QS,R) 6. Solve problems/equations using the trigonometric identities, formulas, and properties, including the fundamental identities, even-odd properties, double-angle formulas, and half-angle formulas. (CT,QS,R) 7. Evaluate basic inverse trigonometric functions with and without a calculator. (CT,QS,R,TS) 8. Graph basic inverse trigonometric functions. (CT,QS,TS) 9. Solve trigonometric equations with and without a calculator. (CT,QS,R,TS) 10. Use trigonometric functions to model and solve applications. (CT,QS,R,TS) 11. Use the Law of Sines and the Law of Cosines. (CT,QS,R,TS)
OPTIONAL: Demonstrate knowledge of polar equations in order to apply these skills to further topics and problems in mathematics and related courses	1. Plot points using polar coordinates. (CT,QS,TS) 2. Convert back and forth between polar and rectangular coordinates. (CT,QS) 3. Graph polar equations by hand and by using a graphing utility. (CT,QS,TS)
To strengthen Core Competencies ** in order to increase success in this and other courses and in the workplace.	Referenced above

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).