Prerequisites: MAT 171
Corequisites: None

This course is designed to develop an understanding of topics which are fundamental to the study of Calculus. Emphasis is placed on the analysis of trigonometric functions in multiple representations, right and oblique triangles, vectors, polar coordinates, conic sections, and parametric equations. Upon completion, students should be able to select and use appropriate models and techniques for finding solutions to trigonometry-related problems with and without technology. **This course has been approved to satisfy the Comprehensive Articulation Agreement for transferability as a premajor and/or elective course requirement.**
Course Hours per Week: Class, 3. Lab, 2. Semester Hours Credit, 4.

Upon completing requirements for this course, the student will be able to:
1. Use the unit circle and right triangle definitions to evaluate and graph trigonometric functions and their inverses, to derive trigonometric identities, and to simplify trigonometric expressions.
2. Use multiple methods to solve problems involving trigonometric equations, right triangles, and oblique triangles.
3. Demonstrate knowledge of vector definitions and perform vector operations.
4. Convert equations and graphs between rectangular and polar coordinate systems, and apply to complex numbers.
5. Use multiple representations to define, construct and analyze conic sections.
6. Create, graph, and analyze parametric equations.

I.   Trigonometric Functions
   A. Angles and Their Measure
   B. Right Triangle Trigonometry
   C. Trigonometric Functions: Unit Circle Approach
   D. Properties of the Trigonometric Functions
   E. Graphs of the Sine and Cosine Functions
   F. Graphs of the Tangent, Cotangent, Cosecant and Secant functions
   G. Phase Shifts; Sinusoidal Curve Fitting

II.   Analytic Trigonometry
   A. The Inverse Trigonometric Functions
   B. Trigonometric Equations
   C. Trigonometric Identities
   D. Sum and Difference Formulas
   E. Double-Angle and Half-Angle Formulas

III.   Applications of Trigonometric Functions
   A. Law of Sines
   B. Law of Cosines

IV.   Polar Coordinates; Vectors
   A. Polar Coordinates
   B. Polar Equations and Graphs
   C. Complex Numbers in Polar Form
   D. Vectors
   E. Dot Products

V.   Analytic Geometry
   A. Conics
   B. Circles
   C. The Parabola
   D. The Ellipse
   E. The Hyperbola
   F. Plane Curves and Parametric Equations

The textbook and other instructional material will be determined by the chair/instructor.