**MISSOURI WESTERN STATE UNIVERSITY**

**COLLEGE OF LIBERAL ARTS AND SCIENCES**

**DEPARTMENT OF COMPUTER SCIENCE, MATHEMATICS, AND PHYSICS**

*COURSE NUMBER***:**          MAT 119

*COURSE NAME***:**          Trigonometry

*COURSE DESCRIPTION***:**

The Trigonometry course includes the degree and radian measure of angles; the definition of the six trigonometric functions; the solution of triangles and appropriate application problems; the graphing of the circular functions; the solution of conditional trigonometric equations; the verification and usefulness of identities; the inverse trigonometric functions; the trigonometric form of a complex number and polar curves.  Offered Fall and Spring semesters.

*PREREQUISITE***:**

ACT math score of at least 20 or the equivalent.  (Not open to the student with credit in MAT 177)

*TEXTBOOK***:**

*TECHNOLOGY***:**

The use of a graphing calculator will be required throughout the course and each student must have his own calculator.  The calculator must have at least the capability of the TI 83. (The TI 83 or TI 83+ is recommended.)  While graphing calculators other than the TI 83 may be used, classroom instruction will be given only for the TI 83.

*COURSE OBJECTIVES***:**

The student will learn to:

1.          Measure angles in degrees and radians and convert from one type of measure to the other.

2.          Use trigonometry to solve right and oblique triangles.

3.          Use a calculator to evaluate trigonometric functions of angles.

4.	Find trigonometric functions of real numbers.

5.	Graph a trigonometric equation of the form $y = af[b(x – c)] + d.$

6.	Graph algebraic/trigonometric functions by addition of ordinates.

7.	Solve conditional trigonometric equations.

8.	Recognize and verify trigonometric identities.

9.	Memorize basic identities.

10.	Use inverse trigonometric functions.

11.	Correctly analyze the ambiguous case.

12.	Represent a complex number in trigonometric form.

13.	Use DeMoivre's formula.

14.	Plot points in polar coordinates.

15.	Graph polar equations.

## *STUDENT COMPETENCIES*:

The student will:

1.	Know how to convert DMS measure into decimal degrees.

2.	Know when an angle is in standard position.

3.	Understand radian measure.

4.	Be able to use the arc length formula.

5.	Know the basic identities.

6.	Know the sign of the trigonometric function of an angle based on the quadrant location of the angle.

7.	Be able to use a calculator to evaluate a trigonometric function of an angle, which is measured in degrees or radians.

8.	Be able to give the exact values of trigonometric functions of special angles.

9.      Learn to graph trigonometric functions of the form $y = af[b(x - c)] + d$.

10.     Know how to graph a function by the addition of ordinates.

11.     Be able to verify or refute a proposed identity.

12.     Be able to solve a conditional trigonometric equation.

13.     Understand what is meant by an inverse trigonometric function.

14.     Be able to graph the inverse trigonometric functions.

15.     Solve right triangle problems using the trigonometric functions or the Pythagorean theorem.

16.     Solve oblique triangle problems by using the law of sines and the law of cosines.

17.     Be able to correctly analyze the ambiguous case.

18.     Learn how to represent a complex number in trigonometric form.

19.     Use the trigonometric forms of complex numbers to compute products and quotients.

20.     Use DeMoivre's formula to compute powers and roots of complex numbers.

21.     Be able to plot points using polar coordinates.

22.     Be able to graph polar equations.


*COURSE OUTLINE*:

I.      Algebraic prerequisites

II.     Angles and the trigonometric functions

III.    Graphs of the trigonometric functions

IV.     Trigonometric identities

V.      Solving conditional trigonometric equations