COURSE OUTLINE : MATH 102S
C Credit – Not Degree Applicable
COURSE ID 010536
Created: April 2020

COURSE DISCIPLINE : MATH

COURSE NUMBER : 102S

COURSE TITLE (FULL) : Lab Support for Trigonometry

COURSE TITLE (SHORT) : Lab Support for Trigonometry

CATALOG DESCRIPTION

MATH 102S is a lab course to complement MATH 102 in the development and practice of essential study techniques and course material for success in Trigonometry. Topics include plane geometry, solving algebraic equations, simplifying algebraic expressions, coordinate plane, graphing techniques and basics of Trigonometry.

Total Lecture Units: 0.00

Total Laboratory Units: 0.50

Total Course Units: 0.50

Total Lecture Hours: 0.00

Total Laboratory Hours: 36.00

Total Laboratory Hours To Be Arranged: 0.00

Total Contact Hours: 36.00

Total Out-of-Class Hours: 0.00

Corequisite: MATH 102. Recommended Preparation: MATH 15**.**

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	MATH	15	Foundations of Algebra	Add, subtract, multiply, and divide real numbers;	Yes
2	MATH	15	Foundations of Algebra	convert between percents, decimals and fractions;	Yes
3	MATH	15	Foundations of Algebra	solve introductory linear equations and inequalities;	Yes
4	MATH	15	Foundations of Algebra	simplify introductory exponential expressions;	Yes
5	MATH	15	Foundations of Algebra	add, subtract, multiply and divide polynomials;	Yes
6	MATH	15	Foundations of Algebra	graph introductory linear equations and inequalities;	Yes
7	MATH	15	Foundations of Algebra	find the equation of a line;	Yes
8	MATH	15	Foundations of Algebra	solve linear systems using graphing, substitution and elimination methods;	Yes
9	MATH	15	Foundations of Algebra	factor polynomials;	Yes
10	MATH	15	Foundations of Algebra	use algebra to solve applied problems;	Yes
11	MATH	15	Foundations of Algebra	demonstrate knowledge of test-taking strategies and study skills.	Yes
12	MATH	102	Trigonometry	Identify special triangles and their related angle and side measures;	Yes
13	MATH	102	Trigonometry	Evaluate the trigonometric function of an angle in degree and radian measure;	Yes
14	MATH	102	Trigonometry	Manipulate and simplify a trigonometric expression;	Yes
15	MATH	102	Trigonometry	Solve trigonometric equations, triangles, and applications;	Yes
16	MATH	102	Trigonometry	Graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs;	Yes
17	MATH	102	Trigonometry	Evaluate and graph inverse trigonometric functions;	Yes
18	MATH	102	Trigonometry	Prove trigonometric identities;	Yes
19	MATH	102	Trigonometry	Convert between polar and rectangular coordinates and equations;	Yes
20	MATH	102	Trigonometry	Graph polar equations;	Yes
21	MATH	102	Trigonometry	Calculate powers and roots of complex numbers using DeMoivre's Theorem;	Yes

22	MATH	102	Trigonometry	Represent a vector (a quantity with magnitude and direction) in the form <*a,b*> and ***ai+bj***.	Yes

EXIT STANDARDS

1 Identify special triangles and their related angle and side measures;
2 evaluate the trigonometric function of an angle in degree and radian measure;
3 manipulate and simplify a trigonometric expression;
4 solve trigonometric equations, triangles, and applications;
5 graph the basic trigonometric functions and apply changes in period, phase and amplitude to generate new graphs;
6 evaluate and graph inverse trigonometric functions;
7 prove trigonometric identities;
8 convert between polar and rectangular coordinates and equations;
9 graph polar equations;
10 calculate powers and roots of complex numbers using DeMoivre's Theorem;
11 represent a vector (a quantity with magnitude and direction) in the form <a,b> and ai+bj.

STUDENT LEARNING OUTCOMES

1 Demonstrate the ability to use algebraic skills in support of Trigonometry.

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	The Trigonometric Functions • Multiply simple rational expressions • Use rational expressions in conversions • Find area and circumference of a circle • Simplify square roots • Perform operations with square roots • Use the Pythagorean Theorem to find missing sides of a right triangle • Find the center and radius of a circle given the equation for the circle • Find the inverse of a function • Similar triangles • Angle relationships ◦ Supplementary angles ◦ Complimentary angles ◦ Corresponding angles	**0**	**6**	**6**
2	Radian Measure and Graphing • Shift graphs of algebraic functions horizontally and vertically • Find domain and range of algebraic functions • Reflecting, stretching and shrinking of algebraic functions • Write equations of horizontal and vertical lines • Perform arithmetic with fractions involving pi • Find horizontal and vertical asymptotes for rational functions • Identify domain and range of rational functions	**0**	**6**	**6**
3	Trigonometric Identities • Recognize identities in algebra • Use the Fundamental Identity from Trigonometryto simplify expressions • Use reciprocal identities to simplify expressions • Multiply binomials • Square a binomial • Factor expressions into a product of two binomials • Find compositions of algebraic functions • Prove that an equation is not an identity • Operations with rational expressions in algebra	0	4	4

4	Trigonometric Equations and the Inverse Trigonometric Functions • Evaluate a composition of algebraic functions • Identify identities in Trigonometry • Solve proportions for a variable • Solve for a variable in an algebraic equation • Solve quadratic equations by factoring • Solve quadratic equations by using the square root property • Solve quadratic equations by using the quadratic formula • Squaring both sides of an equation and getting extraneous roots • Domain and range of the trigonometric functions • Finding the exact values of all six trigonometric functions	0	6	6
5	Oblique Triangles • Solve proportions for x • Solve proportions using the inverse sine on inverse cosine function • Find the area of a triangle using the standard formula • Solve right triangles • Find the distance between two points with the distance formula	0	4	4
6	Complex Numbers and Polar Coordinates • Simplify square roots • Add and subtract binomials • Multiply binomials • Find nth roots with 1/n notation • Solve cubic equations • Find sine and cosine of large angles	0	4	4
7	Affective Doman • Study plans • Mindset (growth, resilience, hardiness and grit) • Reading and cognitive techniques • Study and test taking skills	0	6	6
				36

OUT OF CLASS ASSIGNMENTS

1 computer or graphing calculator assignments;
2 reading and working exercises (e.g. working selected problems from textbook exercise sets).

METHODS OF EVALUATION

1 worksheets reinforcing trigonometric concepts;
2 quizzes;
3 examinations.

METHODS OF INSTRUCTION

- [x] Lecture
- [x] Laboratory
- [ ] Studio
- [x] Discussion
- [ ] Multimedia
- [ ] Tutorial
- [ ] Independent Study
- [ ] Collaboratory Learning
- [x] Demonstration
- [ ] Field Activities (Trips)
- [ ] Guest Speakers
- [ ] Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
Trigonometry	Required	Pearson	5	Print	Dugopolski, Mark	0135207338	2019