Course Code: Title	MTH145: MATHEMATICS
Program Number: Name	4039: MECH. ENG. TN-MANUFA
Department:	MATHEMATICS
Semesters/Terms:	19F, 20W
Course Description:	This first level mathematics course for engineering technology programs begins with a review of fundamental concepts including arithmetic operations and concepts in measurement. This is followed by several algebra topics including linear equations, factoring, fractions and quadratic equations. A treatment of trigonometry of right triangles, the trigonometric functions of any angle and of oblique triangles is also included. The goals of this course are, first, to show that mathematics does play a most important role in the development and understanding of the various fields of technology and, secondly, to ensure that students acquire the mathematical and critical thinking skills necessary to analyze and solve engineering technology problems.
Total Credits:	4
Hours/Week:	4
Total Hours:	60
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	MTH142, MTH612, OEL806
This course is a pre-requisite for:	MTH146
Essential Employability Skills (EES) addressed in this course:	EES 3 Execute mathematical operations accurately. EES 4 Apply a systematic approach to solve problems. EES 5 Use a variety of thinking skills to anticipate and solve problems. EES 10 Manage the use of time and other resources to complete projects.
Course Evaluation:	Passing Grade: 50%, D
Other Course Evaluation & Assessment Requirements:	Evaluation will consist of four topic tests each contributing a 25% weight of the final average. Students with special needs and or circumstances are required to identify their specific needs with the professor. It is the student`s responsibility to notify the professor in advance of any test absences and it will be at the professor`s discretion to allow an alternative test time. Failure to do so may result in a zero grade for a missed test. If a faculty member determines that a student is at risk of not being successful in their academic pursuits and has exhausted all strategies available to faculty, student contact information may be confidentially provided to Student Services in an effort to offer even more assistance with options for success. Any student wishing to restrict the sharing of such information should make

their wishes known to the coordinator or faculty member.

Books and Required Resources:	Basic Technical Mathematics with Calculus by Allyn Washington Publisher: Pearson Edition: 11th ISBN: 9780134289915 Calculator - Sharp EL-520XTB (available in the bookstore)

Course Outcomes and Learning Objectives:	**Course Outcome 1**	**Learning Objectives for Course Outcome 1**
	1. Basic algebraic operations	1.1 Perform basic arithmetic operations on signed numbers. 1.2 Perform arithmetic operations using estimation. 1.3 Work with exponents and convert numbers between decimal, engineering, and scientific notation. 1.4 Work with roots and radicals. 1.5 Create algebraic expressions using addition, subtraction, division, and multiplication. 1.6 Solve for formulas and literal equations. 1.7 Apply word problems to solve algebraic operations.
	Course Outcome 2	**Learning Objectives for Course Outcome 2**
	2. Units of measurement and approximate numbers	2.1 Perform basic arithmetic operations on approximate numbers. 2.2 Review and compare the metric (SI), imperial and US systems of measurement. 2.3 Work with and convert between the various units of measurement.
	Course Outcome 3	**Learning Objectives for Course Outcome 3**
	3. Geometry and trigonometry	3.1 Review geometric shapes, area and volume. 3.2 Convert angles between decimal degrees, radians, degrees, minutes, seconds. 3.3 Find the trigonometric functions of an angle. 3.4 Find the missing sides and angles of a right triangle. 3.5 Solve practical problems involving the right triangle.
	Course Outcome 4	**Learning Objectives for Course Outcome 4**
	4. More trigonometry, vectors and oblique triangles	4.1 Identify the algebraic sign of a given trigonometric function for an angle in any quadrant. 4.2 Find a trigonometric function for any angle using a calculator, and determine angles in any quadrant. 4.3 Convert angles between radians, degrees and revolutions. 4.4 Determine the resultant of two or more vectors. 4.5 Resolve a vector into its components. 4.6 Solve applied problems requiring vectors. 4.7 Solve oblique triangles using the sine and cosine laws. 4.8 Solve applied problems requiring oblique triangles.
	Course Outcome 5	**Learning Objectives for Course Outcome 5**
	5. Analytic Geometry, Linear Equations, Factoring and Fractions	5.1 Apply linear equations of one and two unknowns 5.2 Determine slope and axis coordinates of linear equations 5.3 Graph linear equations 5.4 Review the definition of a straight line and how it correlates to geometric planes

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	5.5 Define the point slope form of a linear equation 5.6 Describe the characteristics of a circle and how it relates to a geometric plane 5.7 Graphically solve systems of two linear equations in two unknowns by determinants 5.8 Factor expressions by involving common factors and difference of squares 5.9 Reduce algebraic fractions and formulas

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Test 1 (outcome 1)	25%
Test 2 (outcome 2 and 3)	25%
Test 3 (outcome 4)	25%
Test 4 (outcome 5)	25%

Date: June 19, 2019

Addendum: Please refer to the course outline addendum on the Learning Management System for further information.