COURSE OUTLINE: MTH142 - MATHEMATICS

Prepared: Mathematics Department
Approved: Bob Chapman, Chair, Health

Course Code: Title	MTH142: MATHEMATICS
Program Number: Name	4127: ELECTRICAL TN-TRADES
Department:	MATHEMATICS
Semesters/Terms:	20F
Course Description:	This first level mathematics course for engineering technology programs begins with a review of fundamental concepts including arithmetic operations, ratios, proportions and variation, and concepts in measurement. This is followed by several algebra topics including linear equations, factoring, fractions, and quadratic equations. Trigonometric functions and degree and radian measures are also included.
Total Credits:	5
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:	MTH612, OEL806
This course is a pre-requisite for:	MTH143, OEL840
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 A minimum program GPA of 2.0 or higher where program specific standards exist is required for graduation.
Books and Required Resources:	Basic Technical Mathematics with Calculus (11th Edition) Washington, SI Version by Washington and Boue Publisher: Pearson Edition: 11 ISBN: 9780134289915 Calculator - Sharp EL-520XTB (available in the bookstore)

In response to public health requirements pertaining to the COVID19 pandemic, course delivery and assessment traditionally delivered in-class, may occur remotely either in whole or in part in the 2020-2021 academic year.

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Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Algebraic Operations	1.1 Perform arithmetic operations on signed numbers. 1.2 Take powers, roots, and reciprocals of signed numbers and algebraic quantities. 1.3 Evaluate multi-step mathematical expressions, including exponential and square root expressions and absolute values, with numbers in their various forms: whole, integers, and rational numbers. 1.4 Convert numbers between ordinary notation, scientific notation, and engineering notation. 1.4 Simplify expressions by removing grouping symbols and combining like terms. 1.6 Add, subtract, multiply, and divide algebraic expressions. 1.7 Solve linear equations, and solve literal equations for the indicated variable.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Units of Measurement and Approximate Numbers	2.1 Convert units of measurement within the metric system without the use of a conversion chart. 2.2 Perform basic arithmetic operations on approximate numbers and determine the appropriate number of significant digits or precision in answers.
Course Outcome 3	**Learning Objectives for Course Outcome 3**
3. Ratios, Proportions and Variation	3.1 Solve application problems involving ratios and proportions. 3.2 Develop formulas and solve application problems involving direct, indirect, and joint variation.
Course Outcome 4	**Learning Objectives for Course Outcome 4**
4. Linear Equations	4.1 Determine the slope and x-y intercepts of a line algebraically. 4.2 Determine the equation of a line given two points or a point and a slope. 4.3 Solve systems of two variable linear equations by graphing, substitution, and addition/subtraction methods. 4.4 Solve systems of three variable linear equations algebraically. 4.5 Solve a systems of two or three variable linear equations using determinants.
Course Outcome 5	**Learning Objectives for Course Outcome 5**
5. Factoring and Fractions	5.1 Factor expressions by removing common factors. 5.2 Factor binomials that are the difference of squares or a sum or difference of cubes. 5.3 Factor trinomials. 5.4 Reduce algebraic fractions. 5.5 Add, subtract, multiply and divide algebraic fractions. 5.6 Solve fractional equations.

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Course Outcome 6	Learning Objectives for Course Outcome 6
6. Quadratic Equations	6.1 Solve quadratic equations by factoring. 6.2 Solve quadratic equations using the Quadratic Formula.

Course Outcome 7	Learning Objectives for Course Outcome 7
7. Trigonometric Functions	7.1 Convert angles between decimal degrees, radians, degrees, minutes and seconds, and revolutions. 7.2 Find the trigonometric functions of angles in right triangles and of any angle in any quadrant. 7.3 Find an angle given a trigonometric function. 7.4 Find the missing sides and angles of a right triangle. 7.5 Solve practical problems involving the right triangle. 7.6 Solve application problems for arc length, sector area, and angular velocity and acceleration.

Evaluation Process and Grading System:

Evaluation Type	Evaluation Weight
Tests	100%

Date: August 13, 2020

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

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