COURSE OUTLINE: MTH142 - MATHEMATICS

Prepared: Mathematics Department
Approved: Martha Irwin - Dean

Course Code: Title	MTH142: MATHEMATICS
Program Number: Name	4127: ELECTRICAL TN-TRADES
Department:	MATHEMATICS
Academic Year:	2025-2026
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:	56
Prerequisites:	There are no pre-requisites for this course.
Corequisites:	There are no co-requisites for this course.
Substitutes:	MTH612
This course is a pre-requisite for:	MTH143
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.
Other Course Evaluation & Assessment Requirements:	Smart watches, smart phones and similar devices are not allowed during tests or quizzes and must be removed. Smart phones are not acceptable for use as a calculator during a exam or quiz.
Books and Required Resources:	Basic Technical Mathematics with Calculus (SI Version) by Washington Publisher: Pearson Education Canada Edition: 11th ISBN: 9780134289915

or eBook 9780136963813

Calculator -
Casio FX-991 ES Plus 2

Course Outcomes and Learning Objectives:

Course Outcome 1	Learning Objectives for Course Outcome 1
1. Evaluate arithmetic expressions, simplify algebraic expressions, and solve linear equations.	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 Simplify expressions by removing grouping symbols and combining like terms. 1.5 Add, subtract, multiply, and divide algebraic expressions. 1.6 Solve linear equations, and solve literal equations for the indicated variable.
Course Outcome 2	**Learning Objectives for Course Outcome 2**
2. Convert between different number notations and different units of measurement and apply the rules for performing calculations with approximate numbers.	2.1 Convert numbers between ordinary notation, scientific notation, and engineering notation. 2.2 Convert units of measurement within the metric system without the use of a conversion chart. 2.3 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. Apply concepts of ratios, proportions, and variation to simplify expressions and solve problems.	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. Analyze linear equations, formulate equations of lines, and solve systems of linear equations in two or three variables	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. Factor algebraic expressions, simplify and evaluate expressions	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.

	involving fractions, and solve fractional equations.	5.3 Factor trinomials. 5.4 Reduce algebraic fractions. 5.5 Add, subtract, multiply and divide algebraic fractions. 5.6 Solve fractional equations.
	Course Outcome 6	**Learning Objectives for Course Outcome 6**
	6. Solve 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. Convert between different angle measurements, apply trigonometric functions to right triangles, and analyze applications involving arc length, sector area, and angular motion.	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 Identify reference angles and utilize them to determine angles in any quadrant. 7.4 Find angles given a trigonometric function. 7.5 Find the missing sides and angles of a right triangle. 7.6 Solve practical problems involving the right triangle. 7.7 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 1, 2025

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